

Two new species of *Trichodorus* from South Africa, with a note on *T. petrusalberti* (Nemata : Trichodoridae)

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Summary – Two new species of the genus *Trichodorus* are described from South Africa. *Trichodorus magnus* n. sp. is characterized in males, by the presence of one medioventral cervical papilla, shape of spicules (stout with indentation) and non-thickened terminal cuticle; in females, by the shape of the vaginal sclerotizations, the pore-like vulva in ventral view and a pair of postadulvar sublateral body pores and in both sexes by the long body and long onchiostyle (62.5-71 μm). *Trichodorus kilianae* n. sp. is characterized in males by presence of a single cervical medioventral papilla, a non-thickened terminal tail cuticle and shape of spicules (slender, with septum in front of a clear but irregular indentation); in females by small vaginal sclerotizations and pore-like vulva in ventral view and in both sexes by a slender and long body, onchiostyle length of 45-49 μm and anterior position of the excretory pore. For the first time an inner stylet was observed in adults of a *Trichodorus* species : *T. petrusalberti* De Waele, 1988. Additional details are given for *T. petrusalberti*.

Résumé – Deux nouvelles espèces de *Trichodorus* provenant d'Afrique du Sud, et note sur *T. petrusalberti* (Nemata : Trichodoridae) – Deux nouvelles espèces du genre *Trichodorus* provenant d'Afrique du Sud sont décrites. *Trichodorus magnus* sp. n. est caractérisé, pour le mâle, par la présence d'une papille cervicale médioventrale, la forme du spicule (robuste et indenté) et la cuticule terminale non épaissie; pour la femelle, par la forme des sclérotisations vaginales, la vulve poriforme en vue ventrale et la présence d'une paire de pores sublataux et post-adulvaires du corps; pour les deux sexes, par une grande taille et un long stylet (62,5-71 μm). *Trichodorus kilianae* sp. n. est caractérisé, pour le mâle, par la présence d'une papille cervicale, la cuticule terminale non épaissie et par la forme du spicule (mince, avec présence d'un septum juste avant une constriction, nette, mais irrégulière); pour la femelle, par les sclérotisations vaginales petites, la vulve poriforme en vue ventrale; pour les deux sexes, par le corps fin et long, un stylet long de 45 à 49 μm et la position antérieure du pore excréteur. Pour la première fois, un stylet interne a été observé chez des adultes d'une espèce de *Trichodorus* : *T. petrusalberti* De Waele, 1988. Des informations complémentaires sont données sur cette dernière espèce.

Key-words : Nematodes, *Trichodorus*, South Africa.

During a survey in the eastern Transvaal, South Africa, two new *Trichodorus* species were found : *Trichodorus magnus* sp. n. in a soil sample collected from the rhizosphere of natural grass vegetation and *Trichodorus kilianae* sp. n. in a soil from the rhizosphere of a shiny gum, *Eucalyptus nitens* (Deane & Maid) Maid.

The specimens were extracted from the soil according to the sugar centrifugal-flotation method described by Jenkins (1964), killed in water by gradual application of heat, fixed and preserved in TAF and mounted in anhydrous glycerin on aluminium slides according to the slow method of Goodey (1957).

Trichodorus magnus n. sp.

(Figs 1, 4 A, B)

MEASUREMENTS

See Table 1.

DESCRIPTION

Male : General appearance typical of the genus. Body long, posterior end curved ventrad. Lip region with dis-

tinct labial papillae. Amphidial aperture sublateral, elliptical, often with protruding *corpus gelatum*. Amphidial fovea and sensillar pouch conspicuous. Cuticle slightly to clearly swollen after fixation, 5-8 μm thick at the level of pharyngo-intestinal junction. Two optical different layers may be distinguished : a thick outer one (4-5.2 μm) showing further subdivisions and a thin inner one (less than 1 to 2 μm); base of inner cuticular layer appearing annulated. Pharynx gradually widening posteriorly to a relative slender bulb with five gland nuclei. Position of the dorsal gland nucleus variable, situated at mid-bulb to posterior half of bulb, at level of, or just anterior to the posterior pair of large ventro-sublateral gland nuclei. The small anterior ventro-sublateral gland nuclei are rather indistinct and situated usually in front, rarely at level of the dorsal gland nucleus. No dorsal intestinal overlap of the pharynx or subventral pharyngeal overlap of the intestine present. Nerve ring at level of anterior part of isthmus. One distinct ventromedian cervical papilla (CP) present, posterior to the onchiostyle region, opposite the isthmus or anterior part of the

pharyngeal bulb (between nerve ring and anterior end of bulb when pharynx outstretched). CP anterior to the excretory pore (EP) in the holotype and three paratype specimens, but posterior to the EP in four other paratype males. Distance between CP1 and EP varies from 2 to 13 μm . One pair of lateral cervical pores present. Position of the pores variable (up to 15 μm apart), either of them can be situated anterior, at the level of or posterior to CP or EP. Testis single, outstretched. Sperm cells large with granular sausage-shaped nucleus. Spicules curved ventrad and apparently smooth. Manubrium slightly widened, calomus of equal width except for a clear indentation at 41-45 % of the spicule length from its anterior end and a narrower distal end provided with a septum. At most one pair of bristles visible at level of indentation. Gubernaculum distally keeled and mostly situated in between the spicules. Three precloacal medioventral supplements: the posterior one (SP1) situated just anterior to or at the level of the spicule head i.e. 72.5-94.5 % of spicule length (measured along the ventral body wall). The two other supplements (SP2 and SP3) lie out of reach of the retracted spicules. The distance between SP2 and SP3 is larger than that between SP1 and SP2 and also than that between SP1 and cloacal aperture. Tail with one pair of small postcloacal subventral papillae just posterior to the protruding cloacal lips, and a pair of subterminal subventral pores shortly behind the papillae. Cuticle at tail end not thickened. Ventral body wall protrudes slightly, resembling a minute bursa, from just anterior to the cloacal aperture to the level of the caudal pores, flanking the protruding cloacal lips.

Female: Body straight or slightly curved ventrad upon fixation. No dorsal intestinal overlap or subventral to ventral overlap of the pharynx. Excretory pore at 1.8-2.0 times the onchiostyle length from anterior end i.e. at level isthmus, from slightly posterior to the nerve ring to opposite the anterior end of pharyngeal bulb. Reproductive system didelphic-amphidelphic with reflexed ovaries, each branch with a large spermatheca, obvious when filled with sperm. Vulva a pore in ventral view. Vagina shape more or less cylindrical, 22-24.5 μm long, i.e. 41-47 % of corresponding body width. Vaginal sclerotizations well developed, rounded triangular to oval shaped, about parallel with vaginal lumen in lateral view. One pair of advulvar sublateral body pores, with corresponding pores not always at the same level (up to 13 μm apart), 24-41 μm posterior of the vulva i.e. 0.4-0.8 body widths. Tail rounded. Anus and one pair of caudal pores ventro-subterminal.

Juveniles (third-stage): Resembling adult females in most respects. Onchiostyle 56-66 μm long, with a 19-26 μm long replacement onchium. Reproductive system 31-70 μm long in young females, 46-63.5 μm in young males where a spicular primordium was observed.

TYPE HABITAT AND LOCALITY

Sandy-loam soil from the rhizosphere of grass (natural vegetation) along a track in Jessievale Staatsbos (26° 15' S. lat; 30° 33' E. long.), South Africa, eastern Transvaal, Ermelo district, State Forest (*Rec. M. Marais*, November 8th 1990).

TYPE MATERIAL

Holotype male (slide 27340), four paratype males, two paratype females and six paratype juveniles (slides 27339 to 27342) deposited in the National Collection of Nematodes, Biosystematics Division, Plant Protection Research Institute, Pretoria, South Africa. Eight paratype specimens (3 males, 3 females, 2 juv.), slides RIT 412-413, deposited in the Nematode Collection of the Department of Invertebrates, Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels, Belgium.

DIAGNOSIS AND RELATIONSHIPS

Trichodorus magnus n. sp. is characterized by a long body (970-1295 μm) and by a relative long onchiostyle (62.5-71 μm). In male, the new species is identified by the possession of one medioventral cervical papilla, situated just anterior or posterior to the excretory pore, by the shape of the ventral curved spicules (widened manubrium, stout corpus with indentation at 41-45 % of spicule length from anterior end and with narrower distal end with septum), and by a short broadly rounded tail with non-thickened cuticle. Females are characterized by well developed rounded triangular to oval vaginal sclerotizations about parallel with the vaginal lumen in lateral view, by a pore-like vulva in ventral view and by the presence of a pair of postadvulvar sublateral body pores.

T. magnus sp. n. most closely resembles *T. proximus* Allen, 1959, in body length, onchiostyle and spicule length, presence of one ventromedian cervical papilla close to the excretory pore, a non-thickened terminal tail cuticle, position of posteriormost precloacal supplement (just anterior to or at level of manubrium), vulva a pore in ventral view, shape of the vaginal sclerotizations (variability wider in *T. proximus*) and pharyngeal bulb small and gradually widening, not always clearly offset. In both sexes, the new species differs most distinctly from *T. proximus* by the presence of large sperm cells with long sausage-shaped nucleus instead of small sperm cells with small nucleus in *T. proximus*. Females of *T. magnus* n. sp. can be distinguished from those of *T. proximus* by possessing only one pair of postadvulvar sublateral body pores *vs* one pair of postadvulvar ventrosublateral body pores and one pair of lateral body pores anterior to the vulva in *T. proximus*. Males of *T. magnus* n. sp. differ from those of *T. proximus* by the position of the ventromedian cervical papilla which is just anterior or just posterior to the excretory pore *vs* always anterior to the excretory pore in *T. proxi-*

Table 1. Morphometric data of *Trichodorus magnus* n. sp. and of *Trichodorus kilianae* n. sp. (all measurements are in $\mu\text{m} \pm \text{S.D.}$).

	<i>Trichodorus magnus</i> n.sp.			<i>Trichodorus kilianae</i> n.sp.		
	Holotype (male)	Males (paratypes)	Females (paratypes)	Holotype (male)	Males (paratypes)	Females (paratypes)
n		7	5		7	7
L	1202	1059-1232 (1184 \pm 54.2)	970-1295 (1128 \pm 118.7)	993	830-1048 (926 \pm 76.4)	878-962 (927 \pm 32.7)
Body diam.	65	42-65 (51 \pm 9.3)	47-59 (52 \pm 4.4)	30	28-38 (32 \pm 3.5)	30-37.5 (33 \pm 2.6)
Pharynx	173	147-232 (188 \pm 31.3)	167-198 (185 \pm 13.0)	132	133-163 (146 \pm 9.3)	112-168 (146 \pm 18.1)
Onchiostyle	68.5	62.5-71 (66.5 \pm 3.9)	68-70 (69 \pm 0.8)	46	45-49 (47 \pm 1.4)	46-49 (47.7 \pm 1.1)
Ant. end to excr. pore (EP)	129	127-151 (139 \pm 9.5)	124-136.5 (131 \pm 5.0)	106	88.5-109 (102 \pm 7.8)	81-117 (97 \pm 11.3)
Ant. end to CP1	124.5	119-150 (138 \pm 11.4)		96	82-112 (94 \pm 6.3)	
Spicule	60	52-57 (55.5 \pm 1.6)		46	43-46.5 (45 \pm 1.2)	
Gubernaculum	26	23.5-26 (25 \pm 1.1)		20	16-20 (19 \pm 1.8)	
Cloaca to SP1	51	41-51 (45 \pm 3.3)		31	30.5-36 (34 \pm 2.5)	
SP1 to SP2	55	37-58 (46 \pm 8.3)		33	27.5-37.5 (33.5 \pm 3.5)	
SP2 to SP3	79	50-79 (61 \pm 10.0)		45	33.5-47 (41 \pm 4.7)	
Ant. genital br.			150-212 (181 \pm 43.7)			95-154 (125 \pm 28.4)
Post. genital br.			214-224 (220 \pm 7.0)			128-214 (155 \pm 34.9)
a	18.4	18.4-28.6 (23.7 \pm 4.0)	19.1-22.8 (21.8 \pm 1.6)	33.1	23.5-34.7 (28.9 \pm 4.4)	23.8-32.3 (28.9 \pm 2.9)
b	6.9	5.1-7.2 (6.5 \pm 0.8)	5.7-7.7 (6.4 \pm 0.9)	7.5	5.5-7.3 (6.3 \pm 0.6)	5.7-8.3 (6.5 \pm 1.0)
V			51.1-57.6 (55.5 \pm 2.5)			47.1-56.9 (51.4 \pm 3.2)
T	47.4	47.4-71.8 (58.0 \pm 9.1)		58.5	50.6-62.6 (57.0 \pm 4.1)	
G1			13.9-18.3 (16.1 \pm 3.1)			10.7-16.5 (13.4 \pm 2.8)
G2			17.3-18.8 (18.1 \pm 1.1)			13.8-22.3 (16.6 \pm 3.3)
Ant. end to EP/pharynx length (%)	74.5	63.2-90.6 (78.8 \pm 11.3)	65.3-31.5 (71.3 \pm 7.5)	80.3	63.7-75.2 (70.7 \pm 4.9)	56.3-72.1 (66.0 \pm 6.0)
Onchiostyle length/pharynx length (%)	39.6	35.2-42.6 (38.5 \pm 3.3)	34.7-41.7 (37.4 \pm 3.0)	34.8	27.6-35.4 (32.0 \pm 2.7)	27.6-33.1 (30.9 \pm 2.1)
Cloaca to SP1/spicule length (%)	51	72.5-94.5 (79.7 \pm 6.9)		67.4	66.5-84.1 (75.3 \pm 7.4)	
Cloaca to SP2/spicule length (%)	55	142-196 (164 \pm 21.0)		139.1	127.7-169.3 (150.7 \pm 14.5)	
Cloaca to SP3/spicule length (%)	79	240-342 (270 \pm 38.5)		236.9	208.4-278.1 (242.8 \pm 25.4)	

mus; by the indentation of the spicule corpus which is slightly more pronounced in the new species and by the narrower distal end provided with a septum. The tail seems also slightly shorter and the position of the excretory pore slightly more anterior although the latter is influenced by the pharynx which may be fully extended or not.

T. magnus sp. n. resembles *T. eburneus* in the presence of a single ventromedian cervical papilla, the position of the excretory pore and the posteriormost precloacal supplement. It differs from *T. eburneus* in the ventrad curved spicules *vs* spicules with proximal half dorsally convex, distal half straight and corpus without indentation, by the position of the SP1 (anterior to manubrium *vs* opposite manubrium), by the shape of the vaginal sclerotizations (rounded triangular to oval *vs* smaller triangular), by the position of the pair of posterior ad-vulvar body pores sublateral *vs* subventral and in both sexes by the following morphometric data: longer spicules (52-57 *vs* 42-55 μm), longer onchiostyle length (62.5-71 *vs* 42-67.5 μm), by a longer body length with a far lower minimal value in *T. eburneus* (970-1295 *vs* 485-1210 μm ; based upon type population and five other populations from West Africa, see Baujard, 1983).

So far, *T. proximus* is only reported from North America. Baujard (1983) reported *T. proximus* from West Africa, but according to De Waele (1986) these specimens belong to *T. eburneus* De Waele & Carbonell, 1983.

***Trichodorus kilianae* n. sp.**

(Figs 2, 4 C-E)

MEASUREMENTS

See Table 1.

DESCRIPTION

Male: General appearance typical of the genus, body long and slender, with posterior region curved ventrad. Lip region with raised papillae. Amphidial aperture a sublateral lateral slit; amphidial fovea and sensillar pouch often conspicuous. Cuticle non-swollen to slightly swollen, 3-4.8 μm at the level of the pharyngo-intestinal junction. Two optical different layers may be distinguished: a thick outer one (2.2-3.7 μm) showing further subdivisions into two to three layers, and a thin inner layer (1.5 μm thick or less) with annulated base, observed as striae in tail region. Pharyngeal bulb about one third of the total pharynx length with five gland nuclei. Position of dorsal gland nucleus varying between mid-bulb and the pair of large ventrosublateral gland nuclei near the posterior end of the bulb. Small ventrosublateral gland nuclei, obscure, apparently in anterior half of pharyngeal bulb. Pharyngeal bulb offset, or with a short dorsal intestinal overlap. Nerve ring at level of

anterior part of isthmus. One distinct ventromedian cervical papilla (CP) anterior to the excretory pore (EP), except in one specimen where the situation is reversed. CP and EP very close to one another situated opposite isthmus, from just posterior to nerve ring to opposite anterior end of pharyngeal bulb; or CP and EP may be more dispersed, situated up to 16 μm apart, with EP opposite anterior half of bulb. Lateral cervical pores anterior or posterior to CP or EP. Testis single, outstretched, with large sperm cells with granular sausage-shaped nucleus. Spicules 43-46.5 μm long, with conspicuous manubrium. Calomus fine, anterior part dorsally convex with a clear but irregular (twisted) indentation at 38-48 (43) % of the spicule length from anterior, posterior half straight except at distal end. One or two bristles may be present at indentation level. In front of constriction, corpus with distinct septum. Gubernaculum fine, with distal keel. Three medioventral precloacal supplements (one specimen with four): the posterior one (SP1) situated at the level of the spicule manubrium when the spicules are retracted i.e. at 66.4-84.1 (75.3) % of total spicule length from the cloacal aperture (measured along the ventral body wall). The distance between SP2 and SP3 is slightly larger than between SP1 and SP2 and between SP1 and the cloacal opening. Tail with a pair of postcloacal papillae and a pair of subterminal subventral pores slightly behind the papillae. Cuticle not thickened on tail end. Subventral body wall with a slight bursa-like protrusion which flanks the cloacal region as in former species.

Female: Body straight or slightly curved ventrad upon fixation. Onchiostyle 46-49 μm long. Pharyngeal bulb offset, apart from a specimen with a minute dorsal intestinal overlap. Excretory pore at 81-117 μm (= 1.8-2.5 times the onchiostyle length) from anterior end and situated opposite the isthmus from posterior to the nerve ring up to the level of the anterior half of the pharyngeal bulb. Reproductive system didelphic-amphidelphic with reflexed ovaries, each branch with a spermatheca with large sperm. Vulva a pore in ventral view. Vagina, 14-18 μm long, i.e. 42-54 % of corresponding body width, its shape is more or less cylindrical (influenced by fixation). Vaginal sclerotizations small rounded triangular to oval shaped in optical lateral view at an oblique angle to the vaginal lumen. One pair of postad-vulvar sublateral body pores, located 14-23 μm posterior to the vulva, not always at the same level on right and left body side. One specimen with one lateral body pore one body-width posterior to the vulva on the right side, but two sublateral postvulvar pores respectively at 0.4 and 1.4 times the corresponding body-width on the left side. Tail with a pair of subventral, subterminal pores.

Juveniles (third-stage): Resembling females in most respects. Onchiostyle 40-44 μm long with a 15.5 μm long replacement onchium. Genital system 32-40 μm long; in juvenile males a spicular primordium was observed.

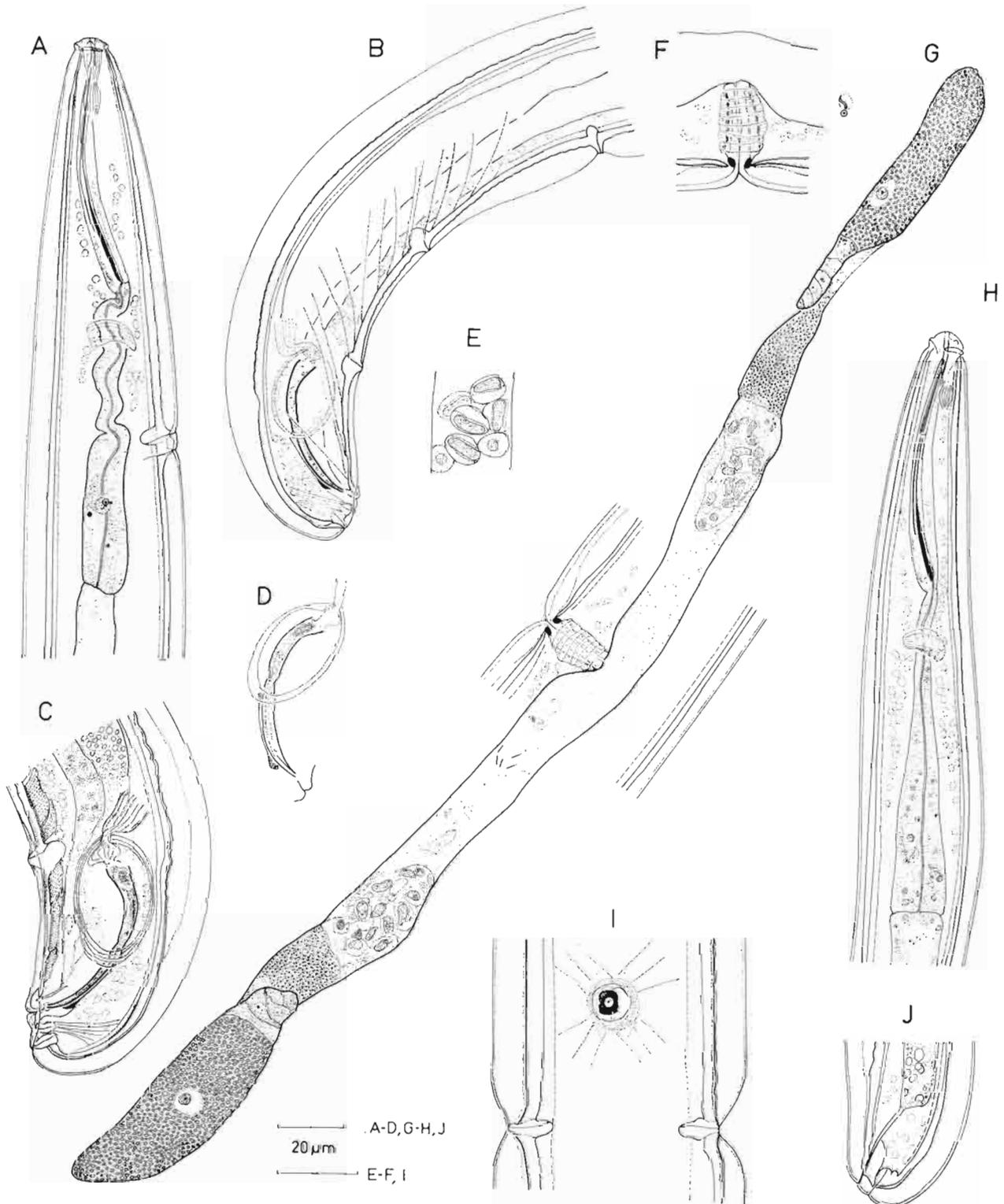


Fig. 1. *Trichodorus magnus* n. sp. Holotype male. A: Anterior body region; B: Posterior body region. Paratype males. C: Copulatory apparatus and tail; D: Spicule; E: Sperm cells. Paratype females. F: Vagina in lateral view; G: Female reproductive system; H: Anterior body region; I: Vulvar region in ventral view; J: Tail region.

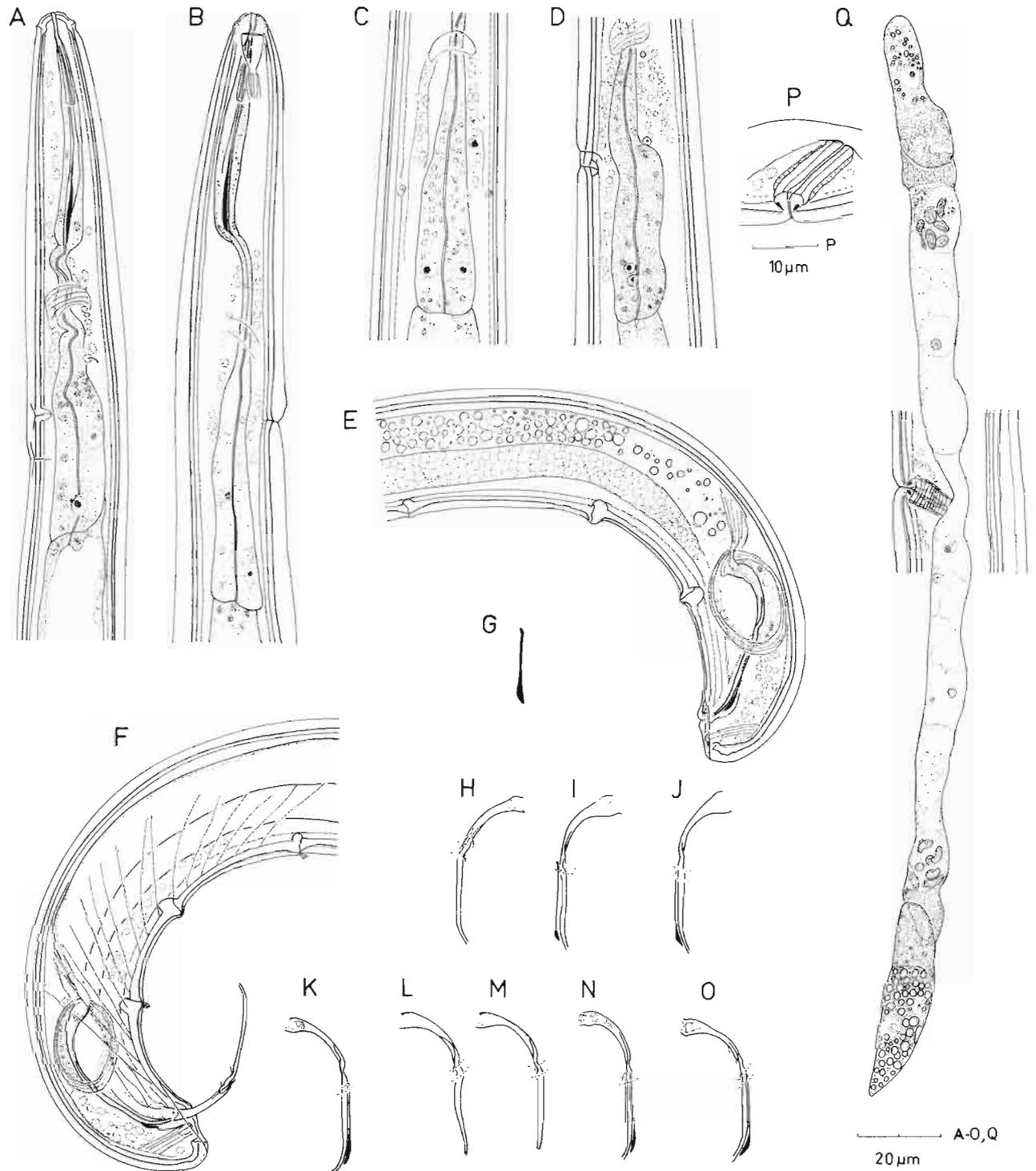


Fig. 2. *Trichodorus kilianae* n. sp. Holotype male. A : Anterior body region; E : Posterior body region; G : Gubernaculum. Paratype males. C, D : Pharyngeal bulb, in ventral view and in lateral view, respectively; F : Posterior body region; H-O : Copulatory apparatus; L-M : Respectively right and left spicule of a single specimen. Paratype females. P : Vagina in lateral view; Q : Reproductive system.

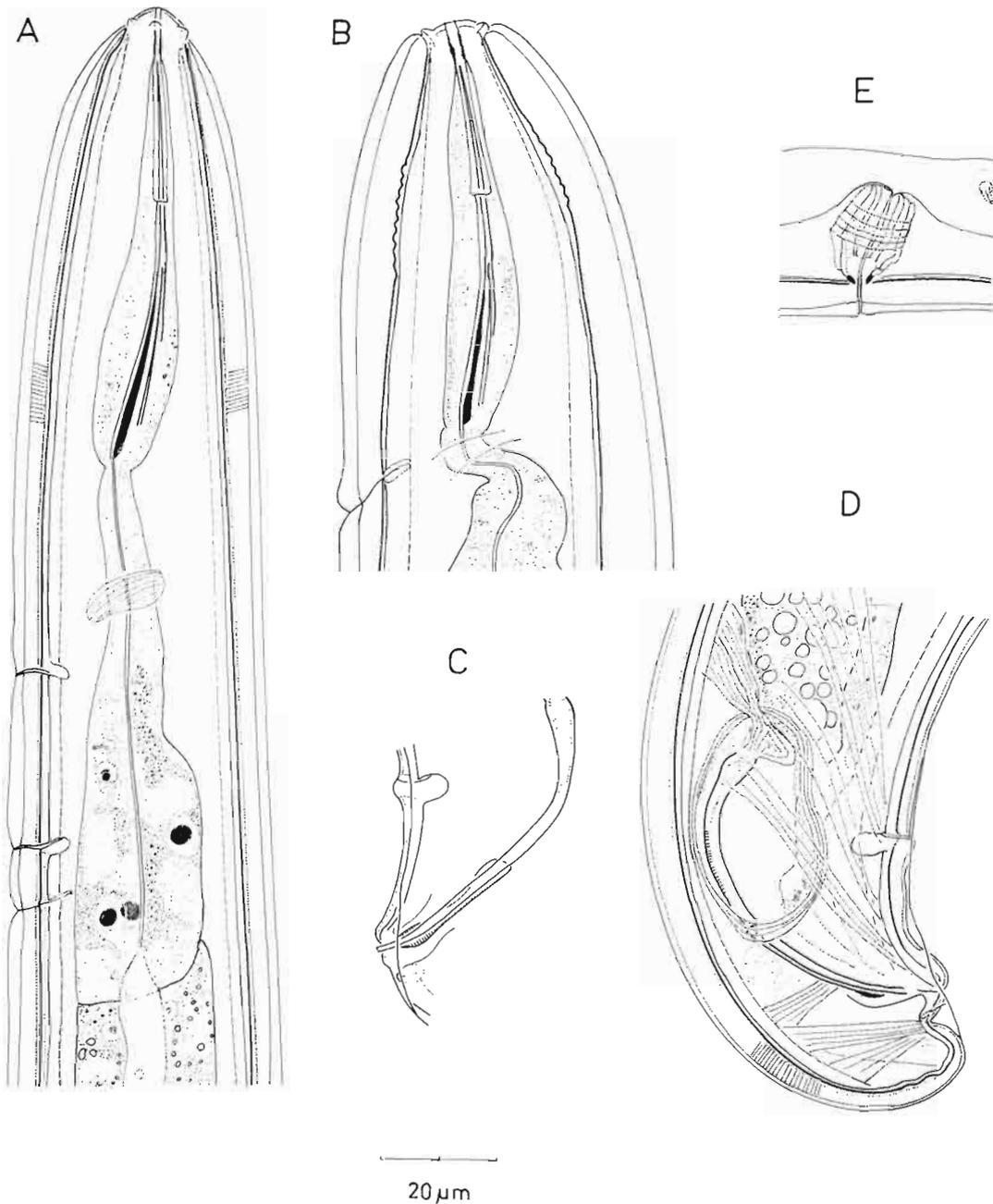


Fig. 3. *Trichodorus petrusalberti* De Waele, 1988. Paratype males. A : Pharyngeal region; B : Onchiostyle region; C : Copulatory apparatus; D : Copulatory apparatus and tail. Paratype female. E : Vaginal region, lateral.

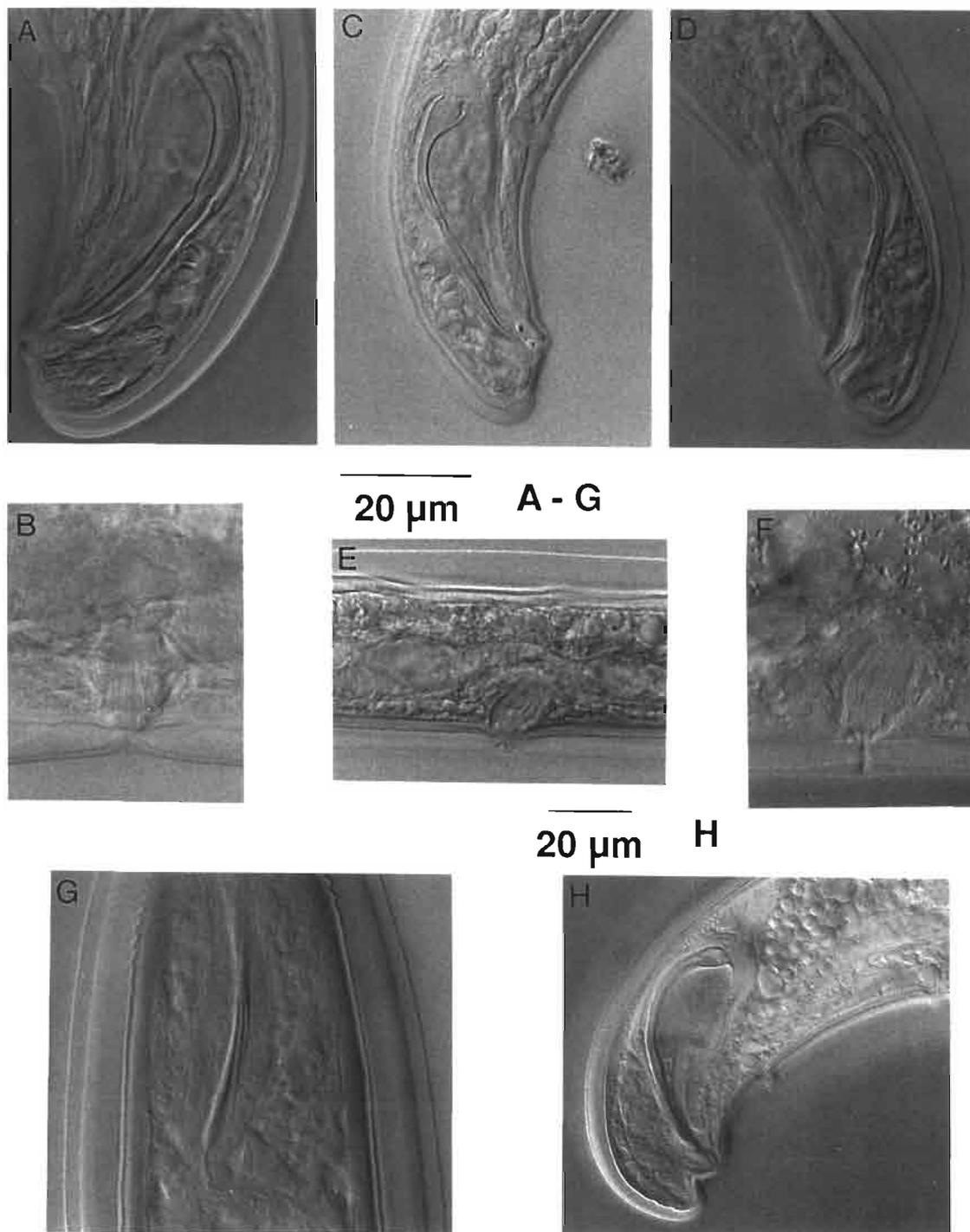


Fig. 4. *Trichodorus magnus* n. sp. A : Copulatory apparatus and tail (holotype); B : Vaginal region lateral (paratype) – *Trichodorus kilianae* n. sp. C, D : Copulatory apparatus and tail (paratype); E : Vaginal region lateral (paratype) – *Trichodorus petrusalberti* De Waele, 1988. F : Vaginal region lateral (paratype); G : Anterior body region with onchiostyle and inner stylet (male paratype); H : Copulatory apparatus and tail (paratype).

TYPE HABITAT AND LOCALITY

Loam soil, around the rhizosphere of *Eucalyptus nitens*, at the Ndubazi plantage of Sappi Forests (Pty) Ltd 25°50' S. lat., 30°25' E. long, South Africa, eastern Transvaal, Carolina district. (*Rec. et beg.* C. Scheepers, March 26th 1991.)

TYPE MATERIAL

Holotype male (slide 27346), nine paratype males, nine paratype females and three paratype juveniles (slides 27343 to 27348) deposited in the National Collection of Nematodes, Biosystematics Division, Plant Protection Research Institute, Pretoria, South Africa. Five males, two females and one juvenile paratype specimens (slide RIT 414-416) deposited in the Nematode Collection of the Department of Invertebrates, Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels, Belgium.

DIAGNOSIS AND RELATIONSHIPS

Trichodorus kilianae n. sp. is characterized by a rather long (830-1048 μm) and slender body, a relative short onchiostyle (45-49 μm) and the anterior position of the excretory pore in males and females. Males are further distinguished from other species of the genus by the length (43-46.5 μm) and shape of the spicules (with marked manubrium, a slender corpus - anterior half convex dorsally, with septum visible in front of a distinct constriction, posterior half straight except for distal end), by the presence of a single ventromedian cervical papilla, usually situated just anterior to the excretory pore, and by a non-thickened terminal tail cuticle. Females are further characterized by small rounded triangular to oval vaginal sclerotizations in lateral optical view, by a pore-like vulva in ventral view and the presence of one pair of postadulvar sublateral body pores.

Trichodorus kilianae n. sp. closely resembles *T. vandenberga* De Waele & Kilian, 1992 by the anterior position of the excretory pore, by a pharyngeal bulb usually offset in males and females; in males, by the possession of a single ventromedian cervical papilla, a more or less comparable spicule shape and the presence of a few bristles (also observed in a paratype male of *T. vandenberga* although not described in original description), comparable spicule length and non-thickened terminal tail cuticle; in females, by the pore-like vulva in ventral view.

The new species differs from *T. vandenberga* by a somewhat longer body (830-1048 *vs* 681-801 μm) and shorter onchiostyle length (45-49 *vs* 50-58 μm). In male, it differs by shape of spicules, finer with a longer, irregular and more pronounced constriction and septum just anterior of it, by the more anterior position of SP1 (i.e. opposite the manubrium of the retracted spicules instead of opposite the anterior half of the spicules), by the smaller distance between ventromedian cervical papilla and excretory pore (3.8-16.4 *vs* 13.4-28.6 μm). In

females, it differs by small rounded triangular vaginal sclerotizations in lateral view *vs* larger rounded or larger rounded triangular pieces in *T. vandenberga*, by the single sublateral postadulvar body pore on both sides *vs* one pair of subventral postadulvar pores and one lateral prevulvar pair (1.7-4.5 body widths anterior to the vulva).

***Trichodorus petrusalberti* De Waele, 1988**

(Figs 3, 4 F-H)

Male and female paratype specimens of *T. petrusalberti*, deposited in the Nematode Collection of the Instituut voor Dierkunde, University of Gent (slides RUG 801-804), were examined.

Trichodorus petrusalberti has a stout and often very corpulent habitus, with a body cuticle as swollen as in species of the genus *Paratrichodorus*. However, males have the posterior body region curved ventrad, well developed copulatory muscles reaching to the anterior-most supplement and a distinct capsule of spicular suspensor muscles typical of the genus. The spicules, originally described as smooth, appear to be striated, clearly observable in protruding spicules. The gubernaculum is prominent, well sclerotized and striated, especially marked in the thickened distal keel. The subventral body wall has a slight bursa-like protrusion, flanking the cloacal region as previously described. In female, the vaginal sclerotizations are distinct but small. They have a fine triangular or tear-drop-like shape in optical lateral view. The lined oblong objects in the uterus mentioned in the original description, appear to be swollen (deteriorated?) uterus cells filled with fungi. The vulva seems pore-like in ventral view. In adult specimens, the onchiostyle is 65-74 μm long, provided with an inner spear, 23-27.5 (26) μm long and inserted in the posterior half of the anterior or outer spear.

For the first time, an inner stylet is observed in a species of the genus *Trichodorus*. So far, a second or inner stylet of the same nature and in the same position as replacement stylets in juvenile specimens has been observed in two trichodorid species only, both of the genus *Paratrichodorus*: *P. minor* (Colbran, 1956) Siddiqi, 1973 (= *P. christiei* (Allen, 1957) Siddiqi, 1973) and *P. nanus* (Allen, 1957) Siddiqi, 1973 (Hirumi *et al.*, 1968; Seinhorst, 1970). Apparently, *T. petrusalberti* is one of the rare species of the Trichodoridae where the formation of a vestigium is not inhibited in the adult stage.

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