Longidorus jagerae sp.n., another longidorid species with globular inclusions in the prerectum (Nematoda: Longidoridae)

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Longidorus jagerae sp.n. is described from the Western Cape Province, South Africa. It is characterised by the possession of globular inclusions in the prerectum, expanded lip region, posteriorly situated guiding ring, and distinct flanges at the odontophore base. It is compared with the South African species *L. fursti* and *L. mobae*, from which it differs among other things in the presence of prerectal inclusions, and with *L. pisi* and *L. latocephalus*, from which it can be differentiated mainly by the much longer odontostyle, more posteriorly situated guiding ring, and shorter tail.

Key words: *Longidorus*, *L. jagerae*, *L. fursti*, *L. pisi*, *L. latocephalus*, *L. mobae*.

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Introduction

During a survey conducted by M. de Jager in the Gamkaskloof Nature Reserve in the Western Cape Province, several new species were found, among which a new *Longidorus* closely resembling *L. fursti* Heyns, Coomans, Hutsebaut & Swart, 1987, but with prerectal inclusions similar to those found in *L. pisi* Edward, Misra & Singh, 1964. The new species is herein described as *Longidorus jagerae* sp.n.

Jacobs & Heyns (1982) first reported the presence of inclusions of an unknown nature in the prerectum of *L. pisi*. Soon thereafter Lamberti *et al.* (1983) described a second longidorid, viz. *L. latocephalus* Lamberti, Choleva & Agostinelli, 1983, with similar inclusions in the prerectum. In 1984 Heyns *et al.* studied and illustrated the prerectal inclusions in *L. pisi* specimens from several areas in South Africa, India, Israel, Iran, Nigeria and Cameroun. The validity of *L. latocephalus* has since been the subject of dispute (see Choleva *et al.* 1991; Navas, Baldwin, Barrios & Nombela 1993; Navas, Baldwin & Lamberti 1993; Lamberti *et al.* 1996). It is not our intention to enter into this dispute in the present paper, and in the diagnosis of the new species it is compared with *L. pisi sensu* Jacobs 1985, and with Balkan specimens of *L. latocephalus* as described by Lamberti *et al.* (1983).

Description

Longidorus jagerae sp n.

(Figs 1–21)

Body cylindroid, tapered only at the extremities, rather slack when relaxed by heat, assuming a slightly ventrally arcuate posture, or an open s-shape, with the anterior part twisted so that the head is often seen in a dorso-ventral view. Cuticle 1–1.2 µm thick behind lip region, 2–2.5 µm around midbody, 3.2–4 µm dorsally on tail near tail tip, and 4.5–7 µm around tail end (= h). Minute trans-

verse striae barely visible under LM, but distinct under SEM. Inner radial lines not visible. Dorsal and ventral pores not seen. Lateral chord 8–11 µm wide over greater part of body, which represents 25–30 % of the corresponding body diameter; with numerous indistinct glandular bodies, from which minute ducts lead outwards. However, definite lateral pores cannot be seen, except towards the tail end in the region of the prerectum. Lip region expanded, evenly rounded, 12.0 (11.5–12.5) µm wide, 4.9 (4.5–5.5) µm high. Amphideal fovea pouch-like, its base situated about 17–19 µm from anterior body end. Amphid aperture not seen under either LM or SEM. Odontostyle base with a weakly developed, asymmetrical collar, inserted a short distance into anterior end of odontophore. Odontophore base weakly flanged, the flanges 5–6.5 µm wide. Guiding ring situated around posterior third of retracted odontostyle, at 71 (64–77) % of stylet length. Wall of cheilostome folded concertina-like when stylet is protruded. Vestigium not observed. Nerve ring located at 188 (184–193) µm from anterior end, hemizonid at 172 (166–177) µm from anterior end. Hemizonion not observed. Basal bulb of pharynx typical, 74 (68–81) µm long, 13.4 (11–15) µm wide. Ventrosublateral gland nuclei large, mostly distinct, but not seen in all specimens. Dorsal gland nucleus small, only seen in a few specimens. Nuclei and their outlets located as follows: DN (n = 3) = 10.1–13.8; SN^1 (n = 8) = 42.4(38–47); SN^2 (n = 6) = 45.5 (41–51); SO (n = 3) = 76–85. Cardia variable, from hemispherical to elongate-hemispherical. Prerectum variable in length: 260 (210–378) µm, containing a variable number of inclusions, these being more well-defined in some specimens than in others, mostly 20–24 in number, but only 7 in one specimen, and 32 in another. These inclusions are also highly variable in shape and size, from almost round and about 5 µm in diameter to elongated and varying from 4 x 7 µm to 6 x 24 µm. Rectum 26.1 (23–32) µm in length, which is 1.22 (1.07–1.45) times the anal body diameter. Tail convex-conoid, bluntly rounded, with two pairs of caudal pores.

Female reproductive system amphidelphic, with both branches about equally developed, the anterior branch constituting 8.7 (7.4–12.0) % and the posterior one 7.9 (6.9–10.1) % of the body length (n = 6). Each branch composed of an ovary (anterior 55–85 µm; posterior = 60–102 µm), oviduct (anterior = 140–160 µm; posterior = 111–160 µm), indistinct sphincter, rather broad uterus (anterior 90–110 µm; posterior 90–112 µm). There is no clearly demarcated ovejector. Vagina strongly muscularised, perpendicular to body wall, 19–22 µm long, reaching across 59–63 % of the body diameter. No uterine eggs or sperm present in any specimen.

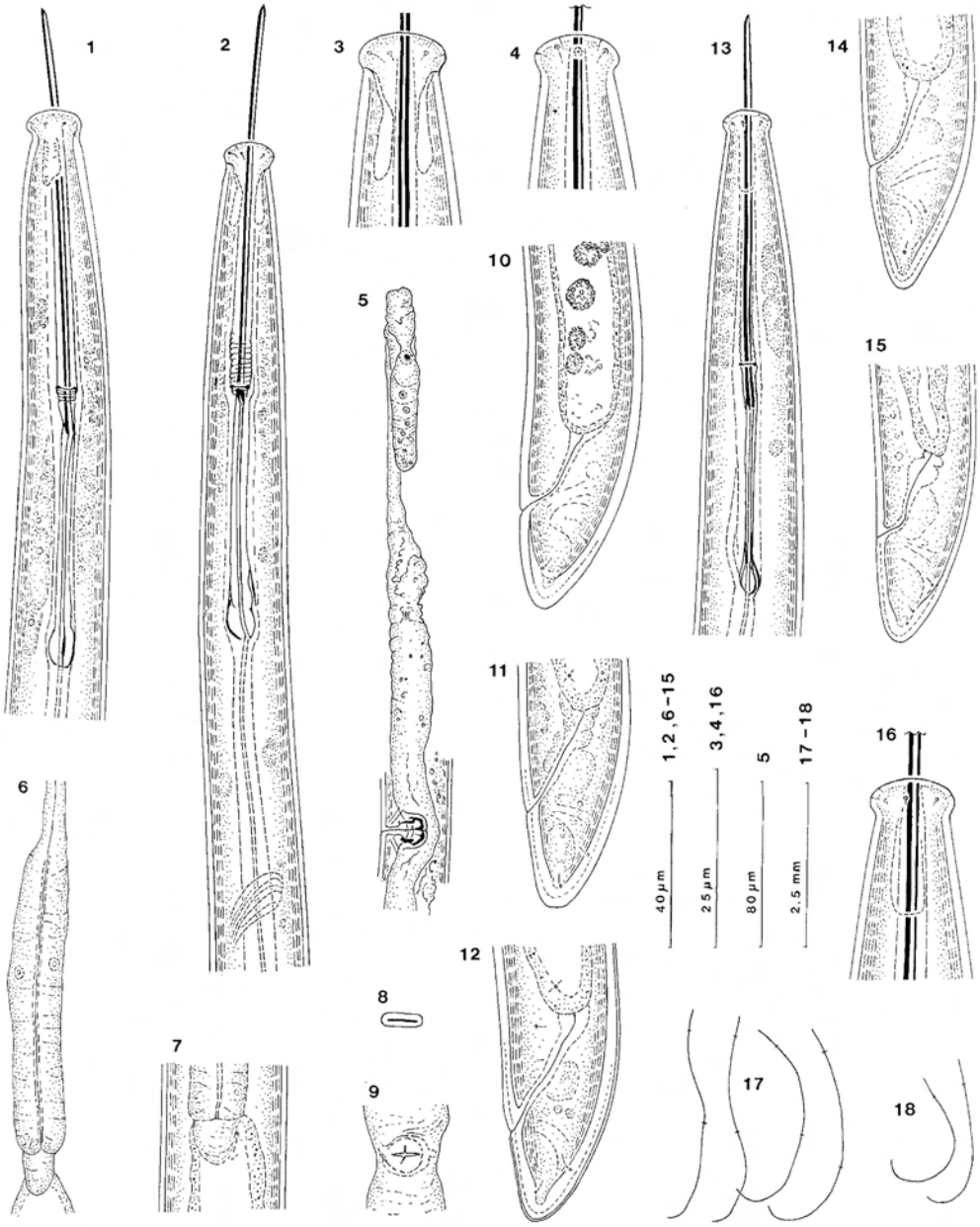
Male not found. Only fourth stage juveniles found. These resemble adult females in general appearance, except for the slightly longer tail, resulting in different c and c´ ratios.

Type locality and habitat

Thirteen females and three juveniles from soil around the roots of *Galenia africana* in Gamkaskloof (also known as The Hell), Western Cape Province, South Africa; 33°31'S, 21°25'E, collected by M. de Jager, 20 April 1995.

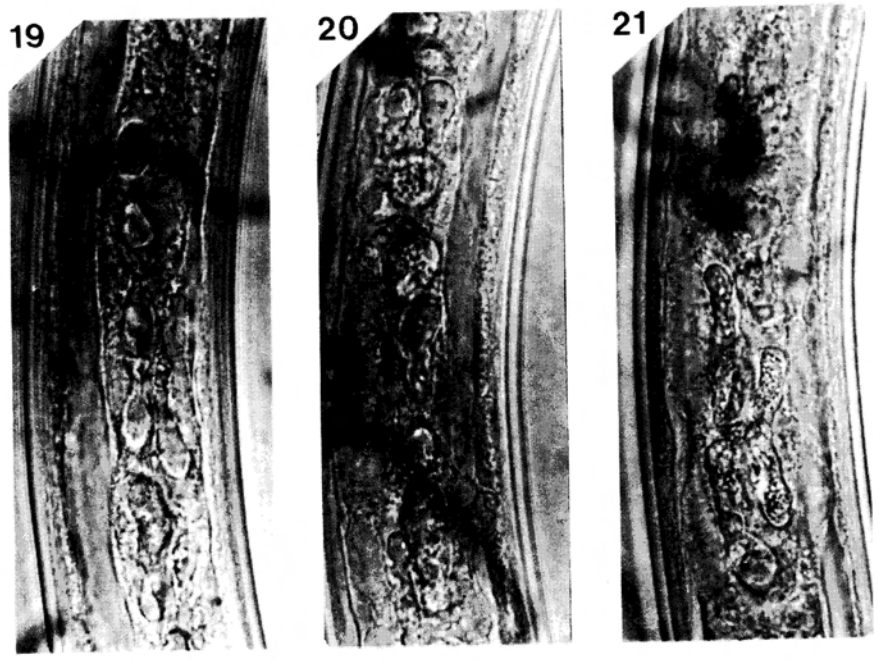
Type Material

Holotype and three paratypes on slide 31796, four paratypes on slide 31797 in the collection of the Biosystematics Division, ARC-Plant Protection Research Institute, Pretoria. Two paratypes each deposited in the collections of the Instituut voor Dierkunde, University of Ghent, Belgium

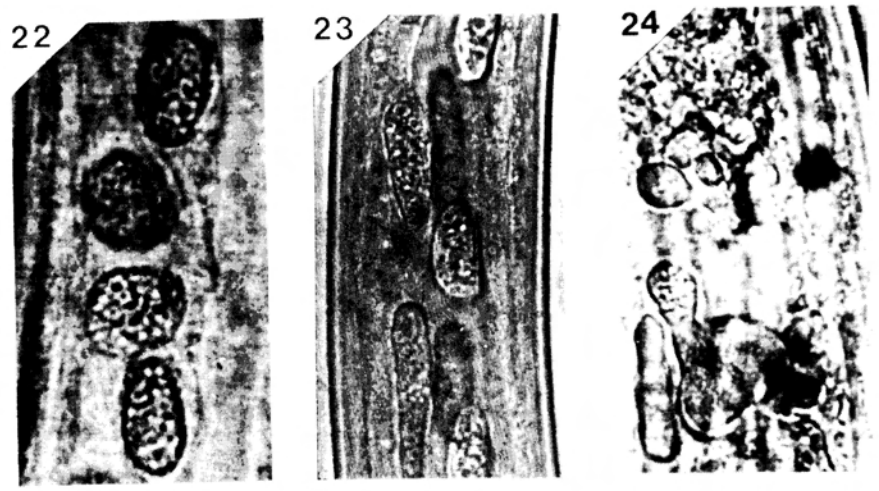


Figs 1 – 18. *Longidorus jagerae* sp.n.

1: anterior part of holotype female, lateral view; 2: anterior part of paratype female, dorso-ventral view; 3: head, dorso-ventral; 4: head, lateral; 5: anterior branch of female reproductive system; 6: basal bulb and cardia: 7: cardiac region of another specimen; 8: ventral view of vulva; 9: optical cross section through vagina; 10, 11 & 12: tail region of female; 13: anterior region of J4; 14 & 15: tail region of J4; 16: head of J4; 17 & 18: body posture of female and J4 respectively.



Figs. 19-21. *Longidorus jagerae* sp.n., prerectal inclusions. 19 & 20: female specimens; 21: juvenile specimen. Original; about x 1100.



Figs. 22-24. *Longidorus pisi*, prerectal inclusions, female specimens from KwaZulu-Natal, South Africa. Figs. 22 & 24: after Heyns *et al.* (1984); 23: after Jacobs & Heyns (1982), courtesy *Phytophylactica.*

Table 1
Biometrics of Longidorus jagerae *sp.n. and* Longidorus fursti

	Holotype Female	*L. jagerae* Paratype females *n*=11	J4 *n*=3	*L. fursti* [a] Paratype females *n*=7 or 8	J4 *n*=5
L(mm)	3.49	3.48(3.10–3.87)	2.54–2.59	4.57(3.93–5.08)	3.30–3.57
a	98	99 (89–107)	81–94	121(105–137)	87–104
b	9.7	10.2(8.7–11.6)	7.1–8.2	11.2(10.3–12.3)	8.3–10.8
c	166	168(150–205)	88–111	173(148–220)	96–115
c´	0.9	50.96(0.80–1.02)	1.10–1.2	11.01(0.90–1.14)	1.24–1.42
V	55.0	53.8(51.5–56.3)	–	52.6(51.5–53.6)	–
Odontostyle (µm)	103	103(95–109)	94–98	104(99.5–108)	89.5–95
Odontophore (µm)	56	56.4(51–61)	49–50	67(63–70)	59–61
Total stylet (µm)	159	159(152–169)	143–148	168(164–174)	149–151
Replacement odontostyle (µm)	–	–	107–113	–	103–106
Guide ring (µm)	67	70(62–81)	62–696	7.5(64–73)	57–61.5
Body width: middle (m)	35.5	34.7(31.5–38)	27.5–31.5	38.2(35–44)	32–38
: anus (m)	22	21.5(19–23)	20–24	26.8(25–29)	25–26
Tail length (m)	21	22.5(17.5–23)	23–29	26.9(23–32)	31–37

a: Data adapted from Heyns *et al.* 1987

and Musée National d'Histoire Naturelle, Paris, France.

Diagnosis and relationships

Longidorus jagerae sp.n. is characterised by an expanded lip region; guiding ring at about 64–77 % of odontostyle length; small but distinct flanges at the base of the odontophore; and globular inclusions in the prerectum. In general appearance the new species closely resembles *L. fursti*, but differs in having a shorter, less slender body (as reflected in L and a-ratio), and shorter tail (see Table 1), as well as in the presence of prerectal inclusions, shape of fovea (roughly pouch-like *vs* stirrup-shaped), absence of a demarcated ovejector, and more anteriorly situated SN^1 and SN^2. *L. jagerae* sp.n. differs from *L. mobae* Jacobs & Heyns, 1987 in the presence of prerectal inclusions, absence of males, smaller body size (L female = 3.10–3.87 mm *vs* 4.67–6.08 mm), less drastically expanded lip region, shorter odontostyle (female: 95–109 µm *vs* 112–120 µm), and more posteriorly situated guide ring (female: 62–81 µm *vs* 48–50 µm). From *L. latocephalus* it differs in having a shorter more conoid tail (tail length 17.5–23 µm *vs* 37–45 µm and c´ = 0.80–1.02 *vs* 1.9–2.3), longer odontostyle (95–109 µm *vs* 75–83 µm), more posteriorly situated vulva (51.5–56.3 *vs* 48–51) and more posteriorly situated guiding ring (62–81 µm *vs* 39–45 µm). Likewise it differs from *L. pisi* in having a shorter more conoid tail (female tail length 17.5–23 µm *vs* 33–53 µm and c´ = 0.80–1.02 *vs* 1.6–3.0), longer odontostyle (female: 95–109 µm *vs* 56–86 µm), more posteriorly situated guiding ring (female: 62–81 µm *vs*

36–42 µm), and broader lip region (female: 11.5–12.5 µm *vs* 8–10 µm). The fact that males are occasionally found in *L. pisi* but that none was found in *L. jagerae* sp.n. may not be significant since only one population of the latter species is thus far known.

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