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STUDIES OF PLANT AND SOIL NEMATODES. 13.
TYLENCHULUS CLAVICAUDATUS N.SP. (NEMATODA:
TYLENCHULIDAE), A PARASITE OF THE LIANA
DEERINGIA ARBORESCENS (R.BR.) DRUCE

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SUMMARY

Tylenchulus clavicaudatus n.sp. is described. This species is distinguished from *T. semipenetrans* Cobb, *T. mangenoti* Luc, *T. obscurus* Colbran and *T. floridensis* (Raski) by the clavate tail terminus of second-stage larvae.

In 1964, larvae and males of the species described in this paper were found in rain-forest soil from Cunningham's Gap National Park in southern Queensland. Examination of plants growing in the area revealed females partially embedded in the smaller roots of the liana *Deeringia arborescens* (R.Br.) Druce under small scales similar to those associated with *Tylenchulus obscurus* Colbran (see Colbran 1964, p. 107).

Tylenchulus clavicaudatus n.sp.

Females (10)*.—L = 341–383 μ ; a = 4.6–5.8; b = 2.5–3.5; c = 11.6–15.0; V = 76.2–80.0; stylet = 12.6–14.0 μ ; P.E. = 44–56.

Holotype.—L = 380 μ ; a = 5.8; b = 3.5; c = 15.0; V = 80.0; stylet = 14 μ ; P.E. = 56.

Body saccate, coiled ventrally. Lip region hemispherical, internal sclerotization very weak. Neck irregularly lobed by pressure of host tissues. Cuticle with fine transverse striae. Stylet knobs small, rounded, 2 μ wide. Dorsal oesophageal

*L was measured through the middle of the body; V, c and P.E. were calculated from measurements along the mid-ventral line.

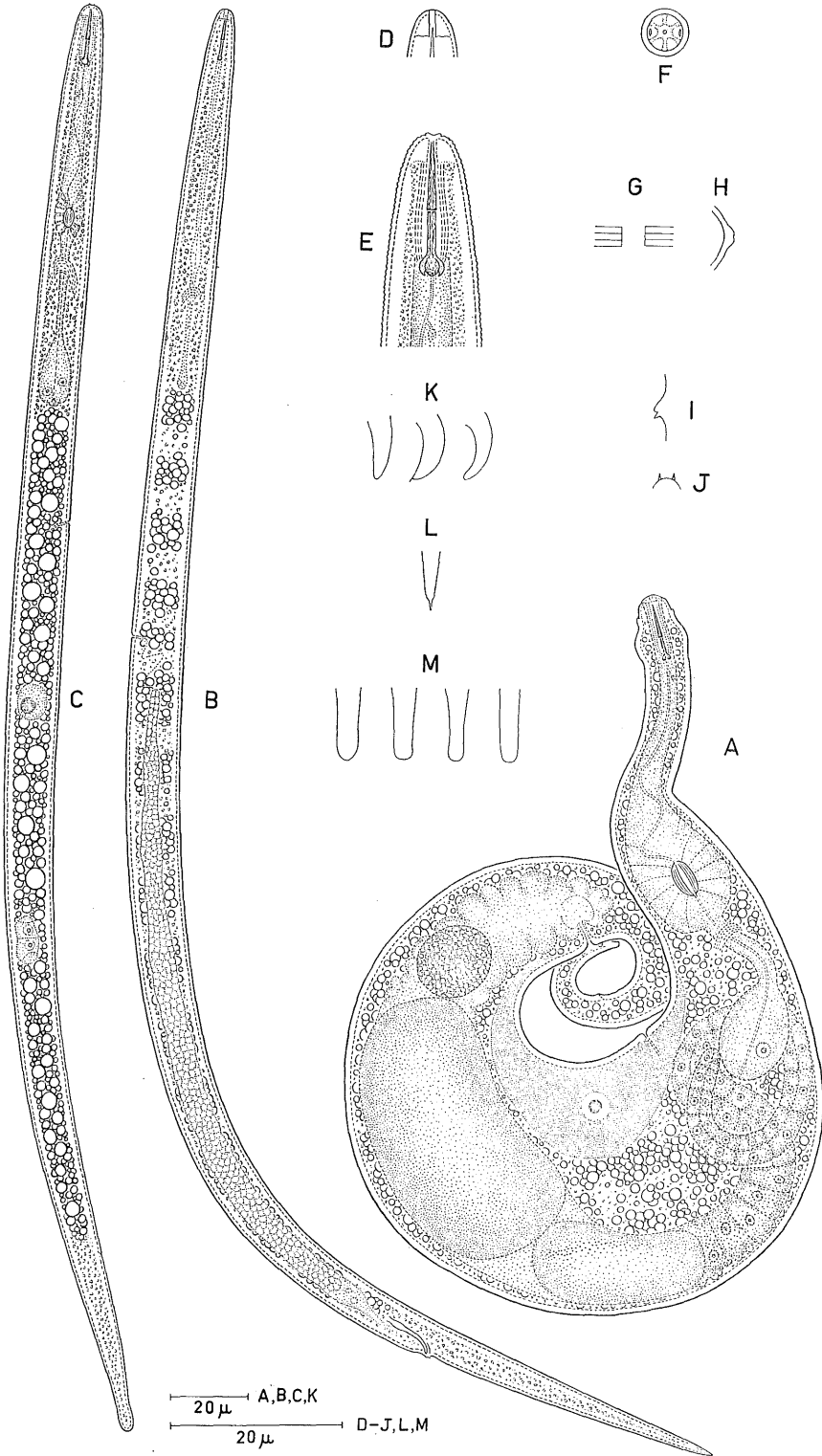


Fig. 1.—*Tylenchulus clavicaudatus* n.sp. A, female; B, male; C, second-stage larva; D, male lip region; E, larval head; F, en face view of larva; G, lateral field of larva; H, cross-section of lateral field of larva; I, spicular sheath; J, ventral view of posterior edge of spicular sheath; K, female tail termini; L, male tail terminus; M, larval tail termini.

gland orifice $8.8 (6.3-9.4)\mu$ behind stylet; prorhabdion half stylet length. Oesophagus with club-shaped corpus containing crescentic valve, slender isthmus and pyriform terminal bulb. Nerve ring crossing anterior part of isthmus. Excretory gland located ventrally; nucleus $6.6\mu (5.8-7.5\mu)$ in diameter. Vulvar lips prominent. Ovary single, prodelphic, coiled, extending to oesophagus; oocytes in double row; spermatheca at junction of ovary and oviduct. Anus pore-like, marked by slight elevation of cuticle. Tail short, conoid-arcuate; terminus bluntly rounded.

Males (5).—L = $325-452\mu$; a = $25.5-32.5$; c = $6.0-6.7$; P.E. = $31.3-37.9$; stylet = $10.0-12.4\mu$; spicules = $13.8-15.0\mu$; gubernaculum = $4.0-4.5\mu$.

Allotype.—L = 325μ ; a = 26.0 ; c = 6.7 ; P.E. = 31.3 ; stylet = 10.0μ ; spicules = 13.9μ ; gubernaculum = 4.2μ .

Relaxed body curved dorsally anterior to anus. Lip region hemispherical; not set off; without sclerotization or circumoral ridge. Transverse striae fine, 0.8μ apart in mid-body. Lateral fields without longitudinal ridges; incisures not observed. Excretory canal directed posteriorly from pore. Stylet weak; knobs small, rounded, tapering anteriorly to shaft. Oesophagus degenerate; metacarpus a slender ovate swelling without valves; terminal bulb rudimentary. Hemizonid opposite middle of isthmus. Caudal alae absent. Spicules curved near distal end. Gubernaculum thin, trough-like. Body slightly constricted behind cloaca. Tail conoid, $6.0 (6.0-8.0)$ anal body widths long, tapering to mucronate terminus. Posterior edge of spicular sheath bearing two minute lateral processes.

Larvae (second stage) (10).—L = $331-371\mu$; a = $23.5-27.0$; b = $3.0-3.5$; c = $6.6-7.1$; stylet = $14.1-15.6\mu$; P.E. = $36.4-38.1$.

Body slender, straight when relaxed. Cuticle with fine transverse striae 0.6μ apart in mid-body. Lateral fields with two well-defined outer incisures and a faint inner incisure (single longitudinal ridge with a shallow apical groove). Lip region hemispherical, not set off; internally hexaradiate with lips of equal size; sclerotization light; circumoral ridge present. Stylet knobs well-developed, bearing posterior extensions. Dorsal oesophageal gland orifice $4.2-5.0\mu$ behind stylet. Oesophagus with procorpus widening to ovate metacarpus containing sclerotized valve, slender isthmus $2.1-2.5$ mid-body widths in length and pyriform terminal bulb. Oesophago-intestinal valve conoid. Nerve ring crossing middle of isthmus. Excretory pore $0.7-1.5$ mid-body widths behind oesophagus; canal directed posteriorly; nucleus of excretory gland prominent. Tail conoid, $6.0-7.0$ anal body widths long, tapering to clavate or subclavate terminus.

Eggs.— $67-84\mu \times 32-35\mu$.

Types.—Holotype (female) slide Reg. No. G. 4775 and allotype (male) slide Reg. No. G. 4776 in the Queensland Museum; paratypes in the Queensland Department of Primary Industries Nematology Collection.

Type host.—*Deeringia arborescens* (R.Br.) Druce.

Type locality.—Southern Queensland: beside the waterfall about 50 yards from the Cunningham Highway half a mile east of the summit at Cunningham's Gap.

Diagnosis.—Characters of value in identifying the species of *Tylenchulus* are presented in Table 1.

TABLE 1
DIAGNOSTIC CHARACTERS OF VALUE IN IDENTIFYING SPECIES OF *Tylenchulus*
Females

Species	Length (μ)	Shape	Postvulvar Region	P.E.	Matrix
<i>T. clavicaudatus</i>	341–383	Spiral	Arcuate	44–56	Hard
<i>T. floridensis</i>	440	Spiral	Arcuate	33·0	Soft
<i>T. mangenoti</i>	330–410	Spiral	Arcuate	50–61	Hard
<i>T. obscurus</i>	264–333	Spiral	Arcuate	46	Hard
<i>T. semipenetrans</i> *	531–584	Straight	Straight	79·5–84·0	Soft

Males

Species	Length (μ)	P.E.	Direction of Excretory Canal†	Tail	Tail Terminus
<i>T. clavicaudatus</i>	379–452	31·3–37·9	Posterior	Straight	Mucronate
<i>T. floridensis</i>	410–580	39·5	Posterior	Arcuate	Blunt
<i>T. mangenoti</i>	326	61·6	Anterior	Arcuate	Subacute
<i>T. obscurus</i>	319–417	38·0	Posterior	Straight	Subacute
<i>T. semipenetrans</i>	330–411	53·1–58·4	Anterior	Arcuate	Blunt

Second-stage Larvae

Species	Length (μ)	P.E.	Direction of Excretory Canal	Tail Terminus	Circumoral Ridge
<i>T. clavicaudatus</i>	331–371	36·4–38·1	Posterior	Clavate	Present
<i>T. floridensis</i>	410–480	38·4–44·0	Posterior	Blunt	Present
<i>T. mangenoti</i>	276–287	57–62	Anterior	Blunt	Present
<i>T. obscurus</i>	250–300	39–45	Posterior	Blunt	Present
<i>T. semipenetrans</i>	284–364	50·7–56·4	Anterior	Subacute	Absent

* Data from Van Gundy (1958).

† From excretory pore.

Tylenchulus clavicaudatus n.sp. is readily distinguished from *T. semipenetrans* Cobb, 1913, *T. obscurus* Colbran, 1961 and *T. floridensis* (Raski, 1957) Maggenti, 1962, by the swollen tail terminus of second-stage larvae, and from *T. mangenoti* Luc by the position of the excretory pore and direction of the excretory canal in males and larvae.

Larvae of *T. obscurus* and *T. clavicaudatus* have stylet knobs with distinctive posterior projections not reported for other species of *Tylenchulus*.

Discussion.—Maggenti (1962) pointed out that larvae of *T. mangenoti*, *T. semipenetrans* and *T. floridensis* have two incisures in each lateral field and cited this feature as a reason for synonymizing *Trophotylenchulus* Raski and *Tylenchulus* Cobb.

An examination of larvae of *T. obscurus* indicated that each lateral field consists of a prominent ridge bearing two small longitudinal grooves. In lateral view, there are two conspicuous lines corresponding to the outer margins of the ridge and two faint inner lines corresponding to the longitudinal grooves. In *T. clavicaudatus* there are two conspicuous lines and a faint inner line.

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