

Description of *Dolichodoros grandaspicatus* n. sp. (Nematoda: Dolichodoridae)¹

R. T. ROBBINS²

Abstract: *Dolichodoros grandaspicatus* n. sp., collected from soil about roots of a red maple (*Acer rubrum* L.) in a creek bottom near Ludwig, Johnson County, Arkansas, is described. It differs from two closely related species, *D. marylandicus* and *D. heterocephalus*, by the longer spike on the female tail, the length of the female tail, and the shape of the extrudable portion of the gubernaculum of the males. It further differs from *D. marylandicus* by having heavily sclerotized accessory pieces of the vulva and from *D. heterocephalus* by having a shorter stylet.

Key words: taxonomy, morphology, new species.

Journal of Nematology 14(4):507-511. 1982.

There are 10 described species of *Dolichodoros*. Lewis and Golden (2) recently published a key to nine of the species with reference to literature pertinent to the genus and to the sub-family Dolichodorinae. Jairajpuri and Rahmani (1) described the species *D. kishansinghi*, which was not included in the above.

In July 1979 samples were taken from a creek bottom near Ludwig, Johnson County, Arkansas, to find and identify a *Dolichodoros* species found in the general area by Dr. R. D. Riggs a few years earlier. In one sample a few specimens of an undescribed species of *Dolichodoros* were recovered. A later sample from about the roots of red maple (*Acer rubrum* L.) yielded numerous specimens of both sexes as well as second-, third-, and fourth-stage juveniles.

MATERIALS AND METHODS

Specimens were killed and fixed by hot 2% formalin and processed to glycerin by a modified Seinhorst rapid method as described by Robbins (3). Specimens were prepared for SEM observation by gold coating glycerine impregnated specimens using the method of Sher and Bell (4). Observations were made on an ISI-60 SEM.

In the following description, all measurements are given in μm , unless otherwise stated; ratios and counts have no units. Means are given first, followed by the range,

standard deviation, and coefficient of variation (as a percentage) in parentheses. Only mean and range given in descriptive text. The specific name is derived from the Latin words granda (large) and spica (spike).

DESCRIPTION

Dolichodoros grandaspicatus n. sp.

MEASUREMENTS (16 ♀♀ paratypes): Length = 2.40 mm (2.13-2.65; 0.17; 7.2); width = 38.1 (33-42; 3.0; 7.9); a = 63.0 (56.1-76.7; 6.2; 9.8); b = 10.1 (9.2-11.0; 0.6; 6.0); c = 27.4 (22.6-34.6; 3.2; 11.6); c' = 2.6 (2.0-3.4; 0.36; 13.5); V = 54.3 (51.4-56.3; 1.4; 2.6); stylet = 89.6 (84-93; 2.7; 3.1); stylet conus = 53.4 (48-60; 4.0; 7.4); distance from anterior end to excretory pore (ex.p.) = 170.2 (152-186; 10.0; 5.9); tail = 88.4 (68-106; 9.6; 10.8).

HOLOTYPE (♀): Length = 2.58 mm; a = 64.6; b = 11.1; c = 31.5; c' = 2.42; V = 54.5; stylet = 90.6; stylet conus = 53.8; distance from base of stylet to dorsal esophageal gland orifice (DGO) = 5.3; distance from anterior end to median bulb valve (MBV) = 141; ex. p. = 171; distance from anterior end to hemizonid (hemizonid) = 194; distance from anterior end to hemizonion (hemizonion) = 216; spike length = 66; annule width = 1.6-1.7.

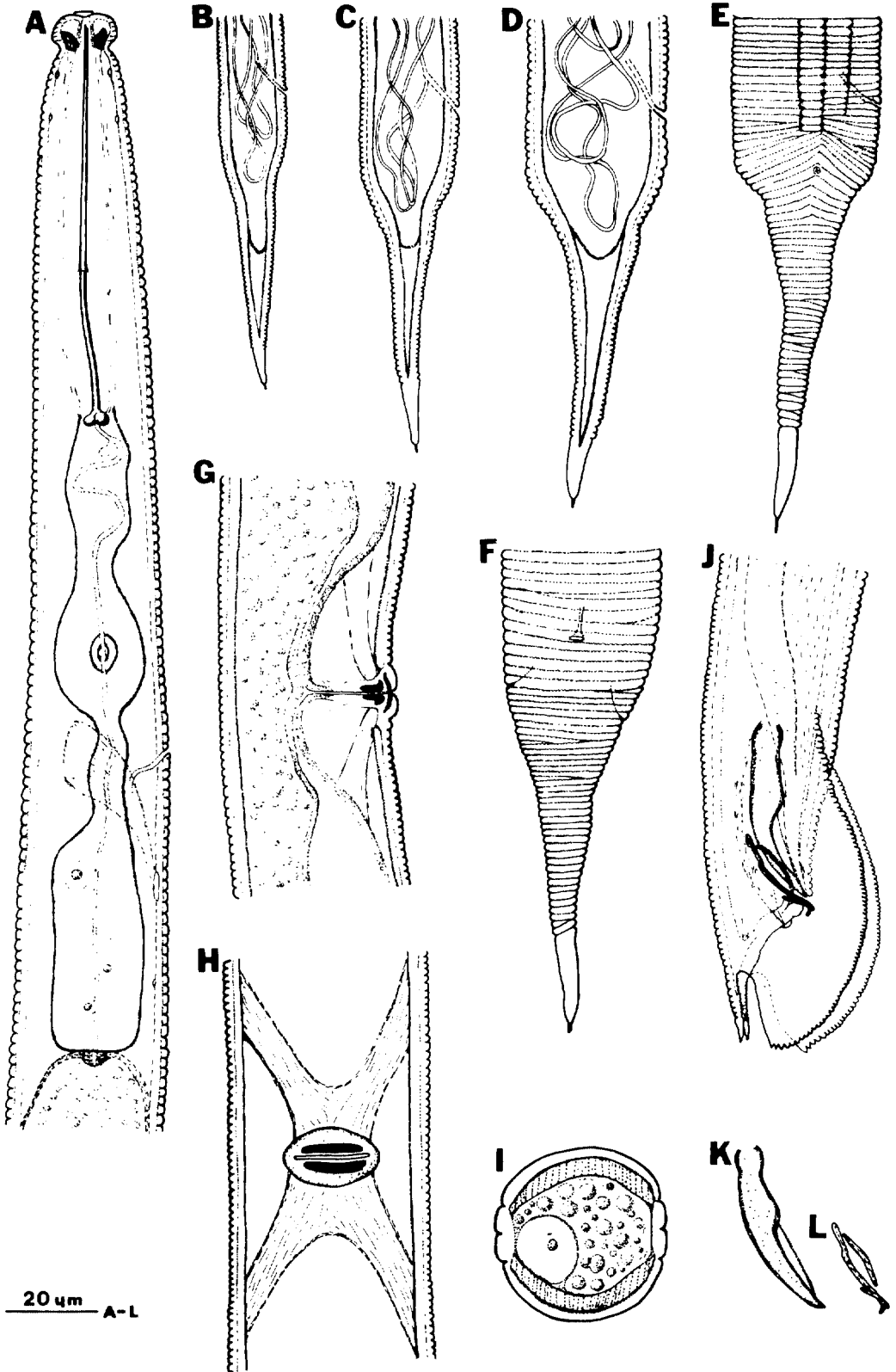
DESCRIPTION OF FEMALE (paratypes): Body vermiform, slightly arcuate. Lip region prominent, markedly offset from body (Figs. 1A, 2C), with 5-6 very fine inconspicuous lip annules. Lip region en face with four lobes, a slightly oval oral disc (Fig. 2A), strong cephalic framework, and heavily sclerotized basal plate. Amphids lateral, longitudinal slits. Cephalids as shown (Fig. 1A). Stylet conus 60% of stylet length, stylet knobs rounded, directed pos-

Received for Publication 9 March 1982.

¹Published with approval of the director of the Arkansas Agricultural Experiment Station.

²Assistant Professor, Department of Plant Pathology, University of Arkansas, Fayetteville, AR 72701.

Appreciation is expressed to Dr. S. A. Lewis, Associate Professor of Plant Pathology, Clemson University, for providing specimens, to E. M. Martin, Research Assistant, University of Arkansas, for SEM technical help, and to Dr. R. D. Riggs, Professor of Plant Pathology, University of Arkansas, for suggesting areas to sample.



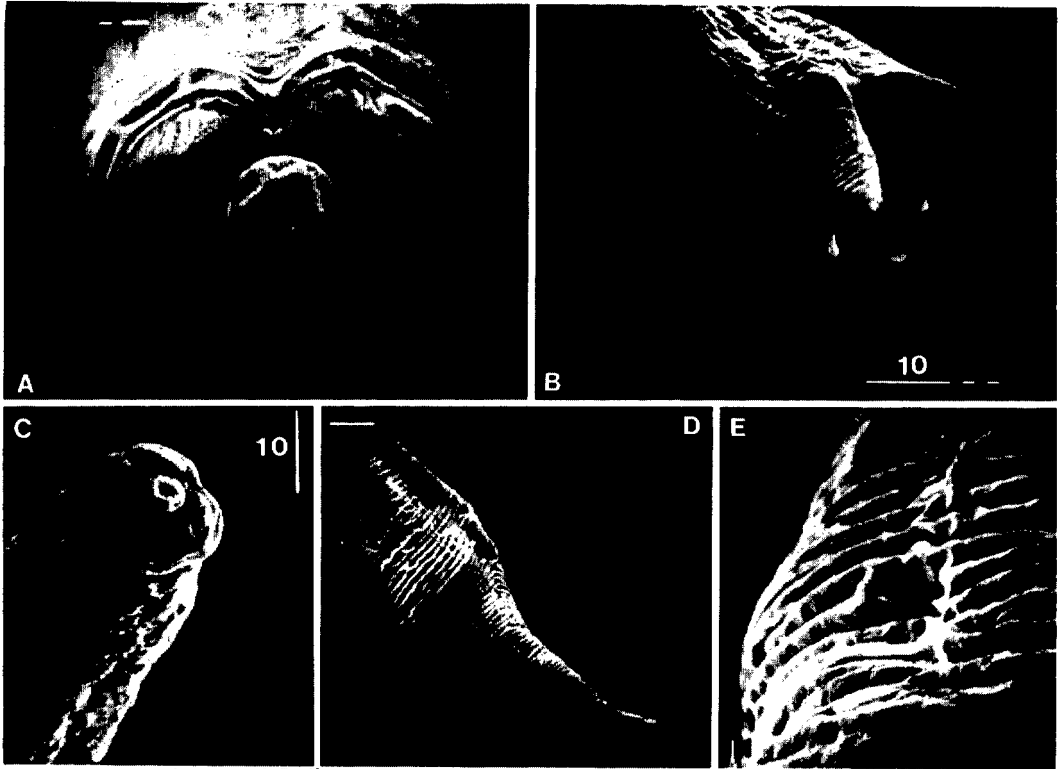


Fig. 2. SEM pictures of *Dolichodoros grandaspicatus* n. sp. A) Female en face. B) Male tail, dorsal. C) Female, oblique head. D) Female tail, dorsal. E) Female, anus.

teriorly. Excretory pore clearly visible, variable in position, from mid-median bulb to anterior basal bulb. Hemizonid 24.8 (13–36) posterior to excretory pore. Hemizonion inconspicuous, about as far posterior to hemizonid as semizonid is from ex. p. Vulva a transverse slit (Fig. 1C–H), with sclerotized, opposed, accessory pieces observed in lateral view (Fig. 1G). Vagina strongly sclerotized near vulva. Vagina about half the body width. Ovaries amphidelphic, outstretched. Spermatheca oval, conspicuous, at proximal end of oviduct. Cuticle with annules slightly wider at level of excretory pore (≈ 1.8) than at mid-body (≈ 1.5). Lateral field with three lines, completely areolated. Midline starts about two lip widths from anterior end, extends to phasmid, outerlines start in region of median bulb, extend to level of anus. Serpen-

tine canals conspicuous in most specimens. Tail, when viewed laterally, with “shoulders,” tapering to a spike which may be acute or rounded (Figs. 1E–F, 2D). Tail, when viewed dorsally or ventrally, without “shoulders,” origin of spike inconspicuous (Figs. 1F, 2D). Most tails end in a small mucor (Figs. 1B–E, G, 2B), others acute to conical rounded. Anus a transverse slit (Fig. 2E). Anal body width 33.8 (30–38).

MEASUREMENTS (18 ♂♂ paratypes): Length = 2.13 mm (1.88–2.44; 0.14; 6.7); width = 33.8 (27–39; 3.1; 9.1); a = 63.3 (55.9–73.7; 5.0; 7.9); b = 9.3 (8.7–10.6; 0.4; 4.6); c = 70.1 (62.2–81.0; 5.1; 7.3); stylet = 84.8 (78–90; 3.5; 4.1); stylet conus = 50.7 (44–55; 2.8; 5.6); spicules = 40.4 (36–44; 2.1; 5.3); gubernaculum = 23.9 (22–27; 1.3; 5.4); tail = 30.6 (24–34; 2.9; 9.6); ex. p. = 161 (136–190; 13.2; 8.2).



Fig. 1. *Dolichodoros grandaspicatus* n. sp. A) Female anterior. B) Second-stage juvenile tail. C) Third-stage tail. D) Fourth-stage tail. E) Female tail, lateral. F) Female tail, ventral. G) Vulva region, lateral. H) Vulva region, ventral. I) Cross section through ovary. J) Male tail. K) Spicule. L) Gubernaculum and accessory structure.

ALLOTYPE (δ): Length = 2.16 mm; a = 59; b = 9.4; c = 83; stylet = 89.7; stylet conus = 53.8; DGO = 4.4; MBV = 133; spicules = 38; gubernaculum = 21.3; tail = 26; ex. p. = 179; hemizonid = 201; annule width = 1.4 (mid-body), 1.8 (median-bulb region).

DESCRIPTION (δ δ): Body similar to female in head shape, annule width, lateral lines (except tail regions); however, slightly smaller with posterior region (20%) markedly more curved than anterior region (80%), and with bifurcate tail terminus. Caudal alae typical for the genus. Testis outstretched. In lateral view, gubernaculum with extrudable, slightly curved distal end that is characteristically hook shaped (Fig. 1J, L); accessory structure interposed with adjacent spicule (Fig. 1J).

JUVENILES (J-2, n = 14; J-3, n = 14; J-4, n = 14), measurements: See Table 1.

DESCRIPTION (J-2, J-3, J-4): Body similar to female in overall shape, head shape. Tails with definite spike, generally with definite mucor at terminal end. Serpentine canals conspicuous in most specimens (Fig. 1B-D).

HOLOTYPE (φ): Collected 15 October 1979 by R. T. Robbins. Slide T-354t, USDA Nematode Collection (USDANC), Beltsville, Maryland.

ALLOTYPE (δ): Same data as holotype. Slide T-355t, USDANC, Beltsville.

PARATYPES (φ φ , δ δ , juveniles): USDANC, Beltsville, Maryland; California Nematode Survey Collection, Davis; Department of Nematology Collection, Riverside, California; Nematology Department, Rothamsted Experimental Station, Harpenden, Herts., England; Laboratorium

Voor Nematologie, Wageningen, The Netherlands; Laboratoire des vers, Muséum, 61 Rue de Buffon, Paris, France; Institute voor Dierkunde, Laboratorium voor Morfologie en Systematiek der Dieren, Ledeganckst, 35, B-9000, Gent, Belgium; Canadian National Collection of Nematodes, Ottawa, Canada; remaining specimens retained in the author's collection.

TYPE HOST AND LOCALITY: Soil from about the roots of red maple (*Acer rubrum* L.) in a sandy-silt creek bottom with high organic matter, one mile north and one mile east of Ludwig, Johnson County, Arkansas, USA.

DIAGNOSIS: *Dolichodorus grandaspicatus* n. sp. is more similar to *D. marylandicus* Lewis & Golden 1981 and *D. heterocephalus* Cobb 1914 than the other *Dolichodorus* spp. It differs from both species by the much longer tail and spiked portion of the female tail. It further differs from *D. marylandicus* females by the narrower body, 38 (33-42) vs. 45.3 (39.2-54.6); "a" ratio, 63.0 (56.1-76.7) vs. 45.5 (36-54); "c" ratio, 27.4 (22.6-34.6) vs. 38.8 (30.2-51.4); and by having a heavily sclerotized structure exterior to the heavily sclerotized distal portion of the vulva. It further differs from *D. heterocephalus* females by having a shorter stylet 90 (84-93) vs. 99 or more. The males differ from both the above species by the characteristically hook shaped extrudable portion of the gubernaculum.

LITERATURE CITED

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Table 1. Measurements, in μ m, and ratios of second-, third-, and fourth-stage juveniles of *Dolichodorus grandaspicatus* n. sp.

Measurement or ratio	Stage of juveniles		
	Second (n = 14)	Third (n = 14)	Fourth (n = 14)
Length	676 (611-785)*	1,075 (944-1,245)	1,627 (1,412-2,038)
a	39.8 (34.1-43.9)	49.5 (41.0-57.5)	55.8 (47.3-62.7)
b	4.6 (4.3-5.1)	6.0 (5.2-6.9)	7.7 (7.2-9.2)
c	13.0 (11.0-14.5)	15.4 (13.5-18.0)	21.8 (17.4-25.3)
Stylet	46.1 (43-48)	62.5 (60-66)	77.9 (74-86)
Width	17.1 (15-20)	21.8 (19-24)	29.3 (24-36)
Tail	52.2 (46-60)	70 (64-78)	75 (60-90)

*Mean followed by range in parentheses.

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