

DESCRIPTION OF TWO NEW SPECIES OF *DORYLAIMELLUS* COBB, 1913 (NEMATODA: DORYLAIMIDA) FROM KUMBHALGARH WILDLIFE SANCTUARY, UDAIPUR

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Summary. Two new species of the genus *Dorylaimellus* Cobb, 1913, collected from Kumbhalgarh Wildlife Sanctuary, Udaipur, Rajasthan, India, are described and illustrated. *Dorylaimellus stylus* n. sp. is characterized by L = 0.42-0.53 mm, a = 28.8-35.6, b = 2.4-2.9, c = 22.3-35.2, c' = 1.4-1.7, V = 56.2-61.8, cuticularised pieces in lip region, odontophore with distinct basal knobs and dorsal arm curved ventrally above basal knob, amphidelphic female with symmetrical ovaries, rectum 0.6-0.9 anal body diameter long and tail dorsally convex, ventrally straight with rounded terminus. *Dorylaimellus longus* n. sp. is characterized by L = 1.41-1.48 mm, a = 54.3-59.0, b = 8.0-9.1, c = 36.9-47.1, c' = 1.6-1.9, V = 49.5-51.5, cuticle with fine transverse and longitudinal lines, odontophore with distinct flanges, amphidelphic female with symmetrical ovaries, rectum 0.5-0.6 anal body diameter long and tail convex-conoid with broadly rounded terminus.

Keywords: *Dorylaimellus longus* n. sp., *D. stylus* n. sp., India, taxonomy.

This article provides the description of two new species of the genus *Dorylaimellus* Cobb, 1913 belonging to the family Belondiridae Thorne, 1939 of the superfamily Belondiroidea Thorne, 1939 collected from Kumbhalgarh Wildlife Sanctuary, Udaipur, Rajasthan, India.

MATERIAL AND METHODS

The soil samples were processed using Cobb's (1918) sieving and decanting and modified Baermann's funnel techniques (Baermann, 1917). The extracted nematodes were fixed in 4% formaldehyde, processed to anhydrous glycerin and mounted on glass slides using the wax-ring method. Measurements and drawings were made with the help of a drawing tube mounted on a Nikon Eclipse E600 microscope and photographs were taken using a Nikon digital camera DS-Fi1.

DESCRIPTIONS

DORYLAIMELLUS STYLUS sp. n.

(Table I; Figs 1 and 2)

Female. Body small sized, slightly curved ventrally upon fixation, tapering towards both extremities. Cuticle thin, smooth; sub-cuticle with fine transverse striation. Lateral hypodermal chord one third of body diameter. Glandular bodies indistinct. Lip region set off from adjacent body contour by a weak constriction. Labial disc distinct, depressed in the centre. Four cuticularised pieces present around entrance to stoma. Amphids inconspicuous. Odontostyle attenuated, almost equal to lip region diameter in length, aperture more than 1 μ m long.

Guide ring indistinct. Odontophore with distinct cuticularised basal knobs, 1.1-1.5 times length of odontostyle. Dorsal arm of odontophore curved ventrally above basal knob. Nerve ring encircles slender part of pharynx at 33-35% of pharyngeal length. Expanded part of pharynx enveloped by a sheath of spiral muscles, 93-113 μ m long, occupying 49-59% of the pharyngeal length. Dorsal gland nucleus conspicuous, located at 51-57% of the pharyngeal length; sub-ventral gland nuclei not observed. Cardia tongue-shaped, 6-7 \times 5-6 μ m in size. Intestine granular, lumen narrow. Reproductive system didelphic, amphidelphic. Ovaries symmetrical, anterior ovary 18-43 μ m, posterior 15-48 μ m long, reflexed. Oviduct 9-13 μ m long. Uterus muscular, 14-18 μ m long. Vulva a transverse slit. Vagina straight, one third of corresponding body diameter long; *pars proximalis vaginae* 4-5 μ m long and 3-4 μ m wide; *pars refringens vaginae* absent; *pars distalis vaginae* 1-2 μ m long. Pre-rectum 3.5-5.1 and rectum 0.6-0.9 times anal body diameter long. Tail dorsally convex, ventrally straight with rounded terminus.

Male. Not found.

Type habitat and locality. Collected from soil around roots of Babul (*Acacia* sp.) at Moti-Magra forest block (Latitude 24°35'N; Longitude 75°49'E), Kumbhalgarh Wildlife Sanctuary, Udaipur, Rajasthan, India.

Type Specimens. Holotype female along with one paratype female mounted on slide No. IV/2242. Four paratype females mounted on slide no IV/2243. The type specimens are deposited in the National Zoological Collection (NZC) of Desert Regional Centre, Jodhpur, Rajasthan, India.

Diagnosis and relationship. *Dorylaimellus stylus* sp. n. is characterized by having a small body; set off lip region; attenuated odontostyle 5-7 μ m long; odontophore with distinct basal knobs; female reproductive system

amphidelphic, vulva transverse; tail less than two anal body widths long, dorsally convex, ventrally straight with broadly rounded terminus. *Dorylaimellus stylus* comes close to *D. himilus* Mohilal, Gambhir *et* Dhanac-

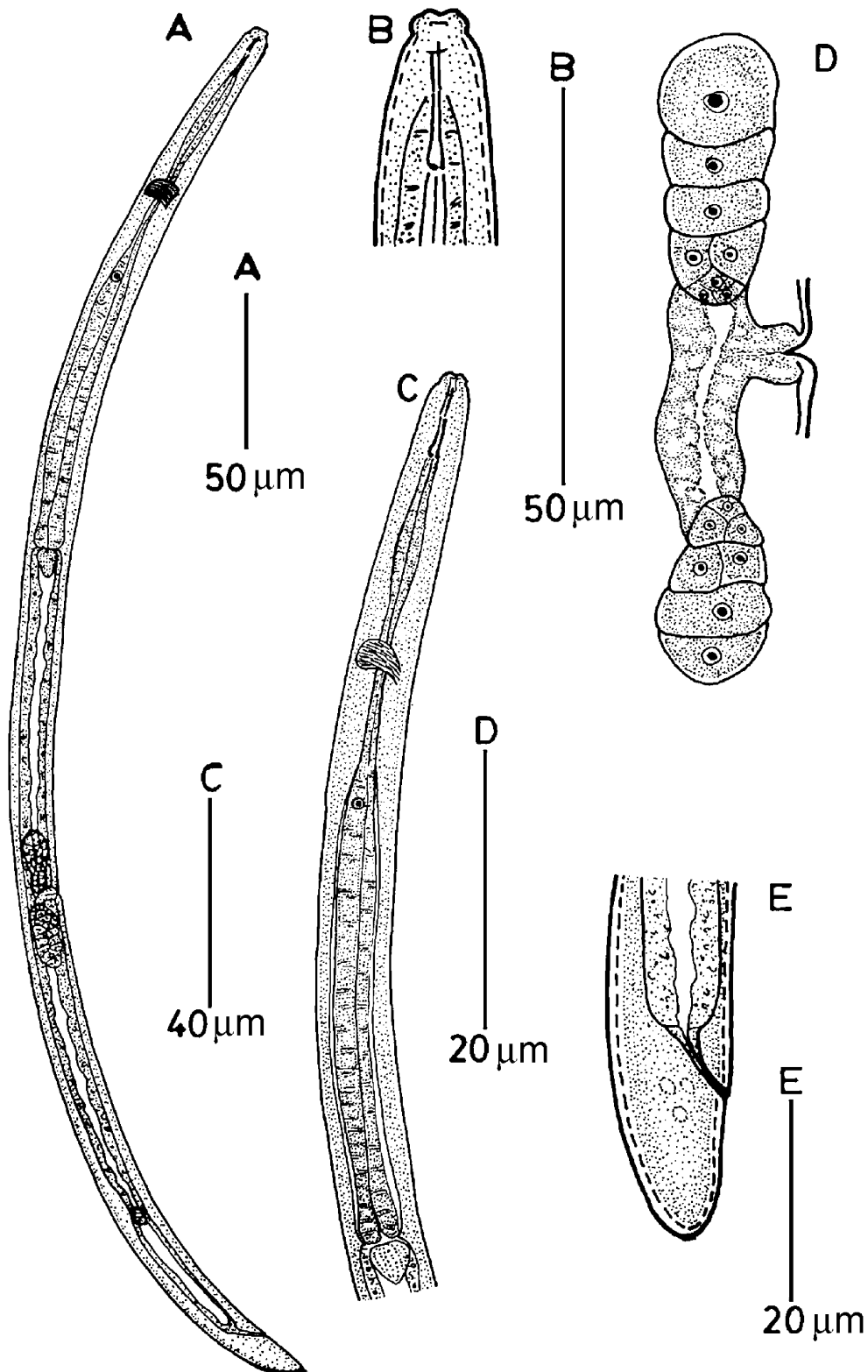


Fig. 1. *Dorylaimellus stylus* sp. n. A, entire female; B, anterior end; C, pharyngeal region; D, female reproductive system; E, posterior end.

hand, 2000 in all morphometric values but differs in having a smaller odontostyle, presence of cuticularised pieces in lip region and morphologically different odontophore (odontostyle 6.5-8.8 µm long; cuticularised

pieces in lip region not reported; distinctly flanged odontophore in *D. himilus*).

Dorylaimellus stylus differs from *D. chakpilus* Mohilal, Gambhir *et* Dhanachand, 2000 in having a smaller body,

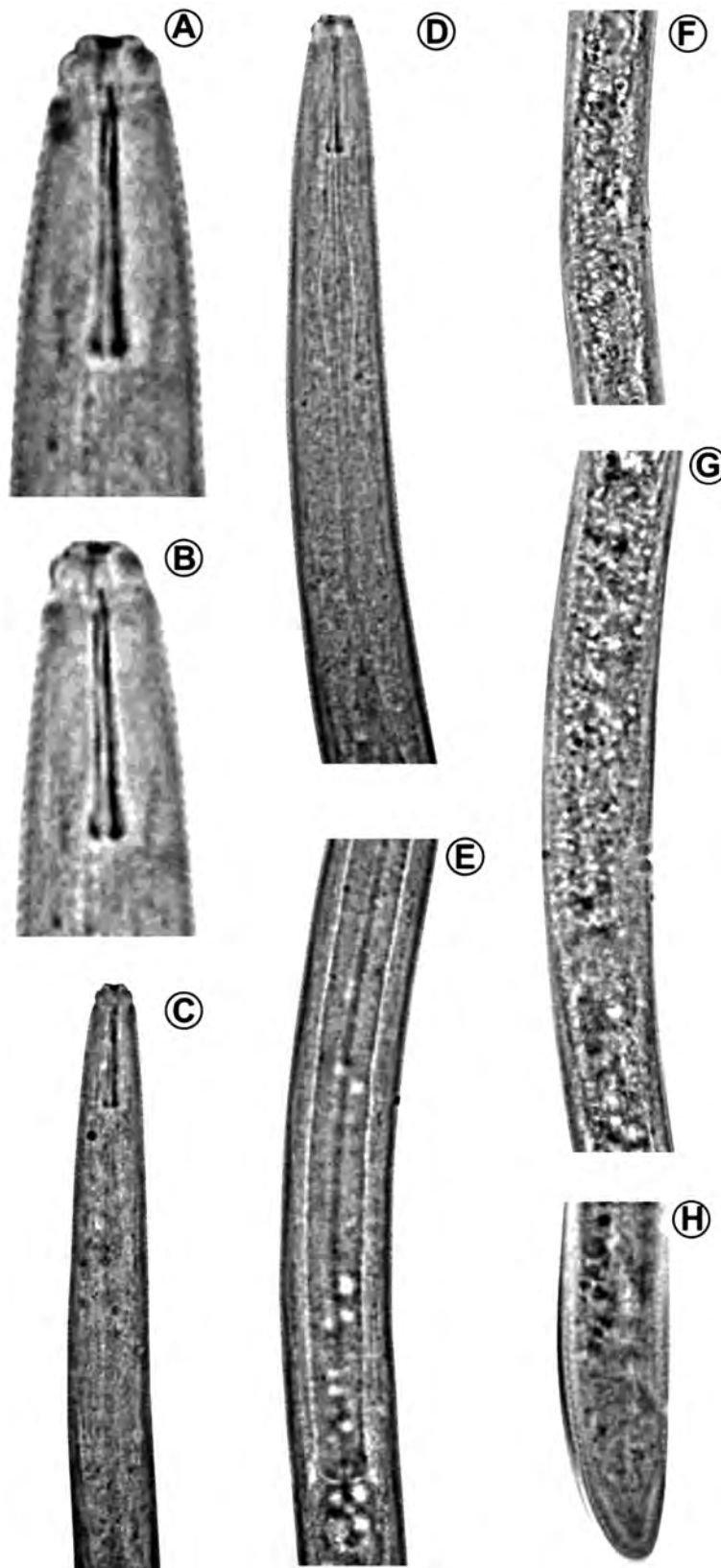


Fig. 2. *Dorylaimellus stylus* sp. n. A-C, anterior end; D, anterior part of pharynx; E, expanded part of pharynx; F-G, female reproductive system; H, posterior end.

Table I. Morphometric characteristics of *Dorylaimellus stylus* sp. n. Measurements are in μm , and in the form: mean \pm standard deviation (range).

Character	Holotype female	Paratype females (n = 5)
L	471	485 \pm 36.4 (422-530)
a	33.6	32.4 \pm 2.5 (28.8-35.6)
b	2.7	2.6 \pm 0.1 (2.4-2.9)
c	31.4	28 \pm 5.6 (22.3-35.2)
c'	1.5	1.5 \pm 0.1 (1.4-1.7)
V	61.7	59.6 \pm 2.2 (56.2-61.8)
G1	11.8	8.1 \pm 2.8 (5.1-11.7)
G2	11.1	8.6 \pm 2.5 (4.9-11.5)
Maximum body diameter	14	15 \pm 1.7 (14-18)
Lip region height	3	3 \pm 0 (3-3)
Lip region diameter	5	5.5 \pm 0.5 (5-6)
Odontostyle length	6	6.1 \pm 0.8 (5-7)
Odontophore length	8	8.7 \pm 0.4 (8-9)
Nerve ring from anterior end	59	60 \pm 2.1 (58-63)
Pharynx length	174	180 \pm 8.5 (168-191)
Pre-rectum	46	48 \pm 3.9 (43-52)
Rectum	8	7.5 \pm 0.5 (7-8)
Tail length	14	17.8 \pm 2.5 (14-20)
Anal body diameter	9	10.8 \pm 1.4 (9-13)

smaller c' value, greater c and V values, presence of cuticularised pieces in lip region, morphologically different odontophore and different tail shape ($L = 0.57\text{-}0.60$ mm; $b = 3.2\text{-}3.5$; $c = 13.9\text{-}15.6$; $c' = 4.2\text{-}5.4$; $V = 49.7\text{-}53.2$; cuticularised pieces in lip region not reported; distinctly flanged odontophore and tail elongate conoid, with minutely rounded terminus in *D. chakpilis*).

Dorylaimellus stylus differs also from *D. vexator* Heyns, 1963 in having a smaller body, smaller odontophore with basal knobs, vagina straight and absence of males ($L = 0.80\text{-}0.92$ mm; odontophore twice as long as odontostyle with distinct flanges; $V = 50\text{-}53$; vagina directed somewhat backwards and presence of male in *D. vexator* Heyns, 1963).

Table II. Morphometric characteristics of *Dorylaimellus longus* sp. n. Measurements are in μm , and in the form: mean \pm standard deviation (range).

Character	Holotype female	Paratype females (n = 7)
L	1481	1456.2 \pm 30.5 (1414-1482)
a	56.9	56.5 \pm 1.9 (54.3-59.0)
b	8.8	8.7 \pm 0.4 (8.0-9.1)
c	43.5	42.8 \pm 4.2 (36.9-47.1)
c'	1.6	1.7 \pm 0.1 (1.6-1.9)
V	49.5	50.2 \pm 0.9 (49.5-51.5)
G1	8.3	8.1 \pm 0.1 (7.9-8.3)
G2	7.8	8.2 \pm 0.3 (7.8-8.5)
Maximum body diameter	26	25.7 \pm 0.5 (25-26)
Lip region height	4	4 \pm 0 (4-4)
Lip region diameter	8	8.5 \pm 0.5 (8-9)
Odontostyle length	8	7 \pm 0.8 (6-8)
Odontophore length	11	11.5 \pm 0.5 (11-12)
Nerve ring from anterior end	70	69.2 \pm 0.9 (68-70)
Pharynx length	167	166.2 \pm 6.3 (161-175)
Vagina length	13	14.2 \pm 1.2 (13-16)
Pre-rectum	40	42.5 \pm 6.4 (35-50)
Rectum	13	12.5 \pm 1.7 (10-14)
Tail length	34	34.2 \pm 4.1 (30-40)
Anal body diameter	21	19.5 \pm 1.9 (17-21)

DORYLAIMELLUS LONGUS sp. n
(Table II; Figs 3 and 4)

Female. Body medium sized, open C shaped upon fixation, slightly curved ventrally in anterior half,

strongly arcuate in posterior half, tapering at both extremities. Cuticle 1 μ m thick, with fine transverse and longitudinal striations. Body pores indistinct. Lateral hypodermal chord about half of body diameter. Lateral glandular organs 79-85 in number, 38-44 from anterior

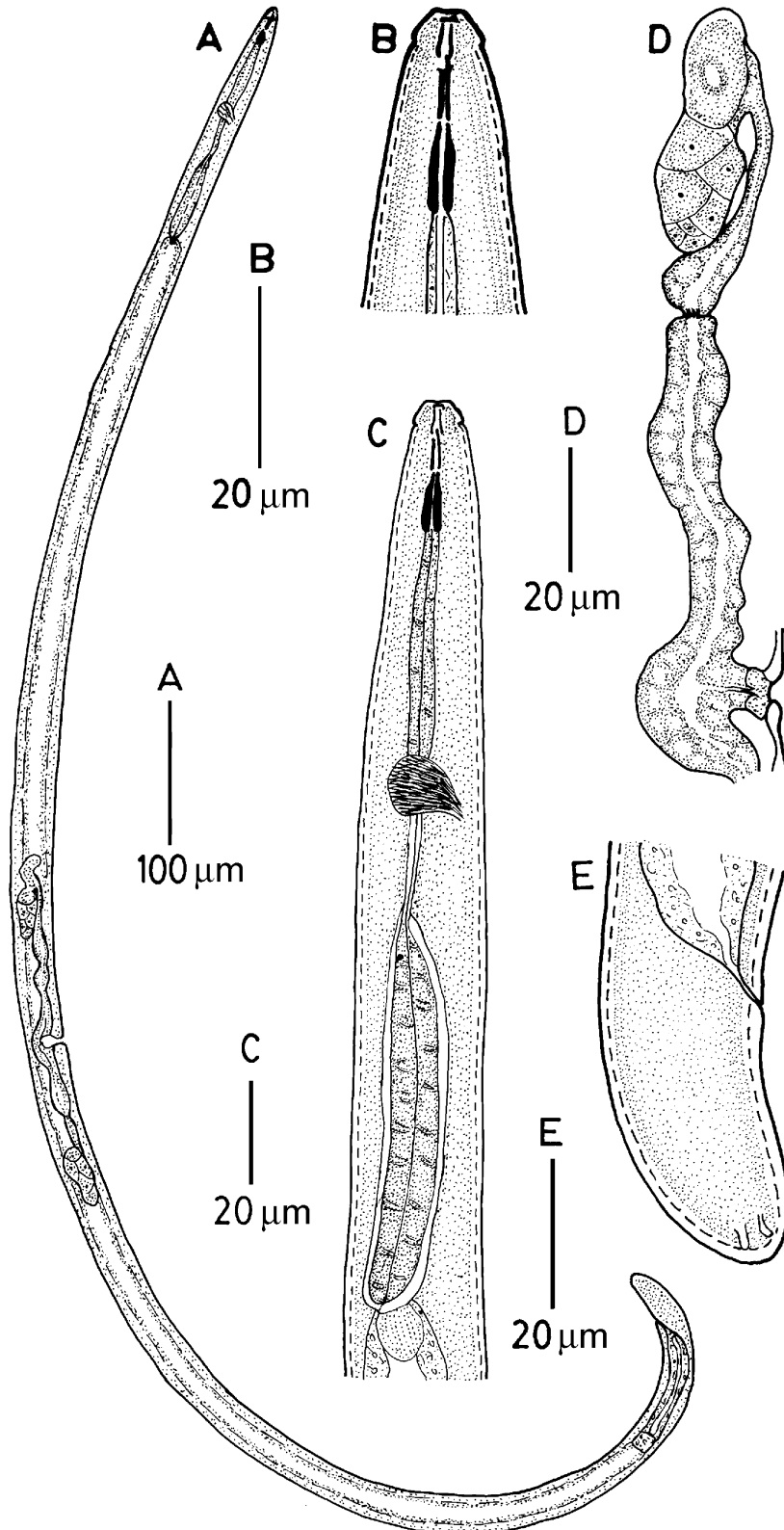


Fig. 3. *Dorylaimellus longus* sp. n. A, entire female; B, anterior end; C, pharyngeal region; D, anterior branch of female reproductive system; E, posterior end.

end to vulval region. Ventral glandular organs 44-49 in number, 25-27 anterior to vulva. Lip region truncate, set off from adjacent body contour by a distinct constriction, slightly narrower than adjoining body. Labial disc

absent. Four cuticularised pieces present around entrance of stoma. Odontostyle attenuated, less than lip region diameter in length, aperture one fourth of odontostyle length. Guide ring indistinct. Odontophore with

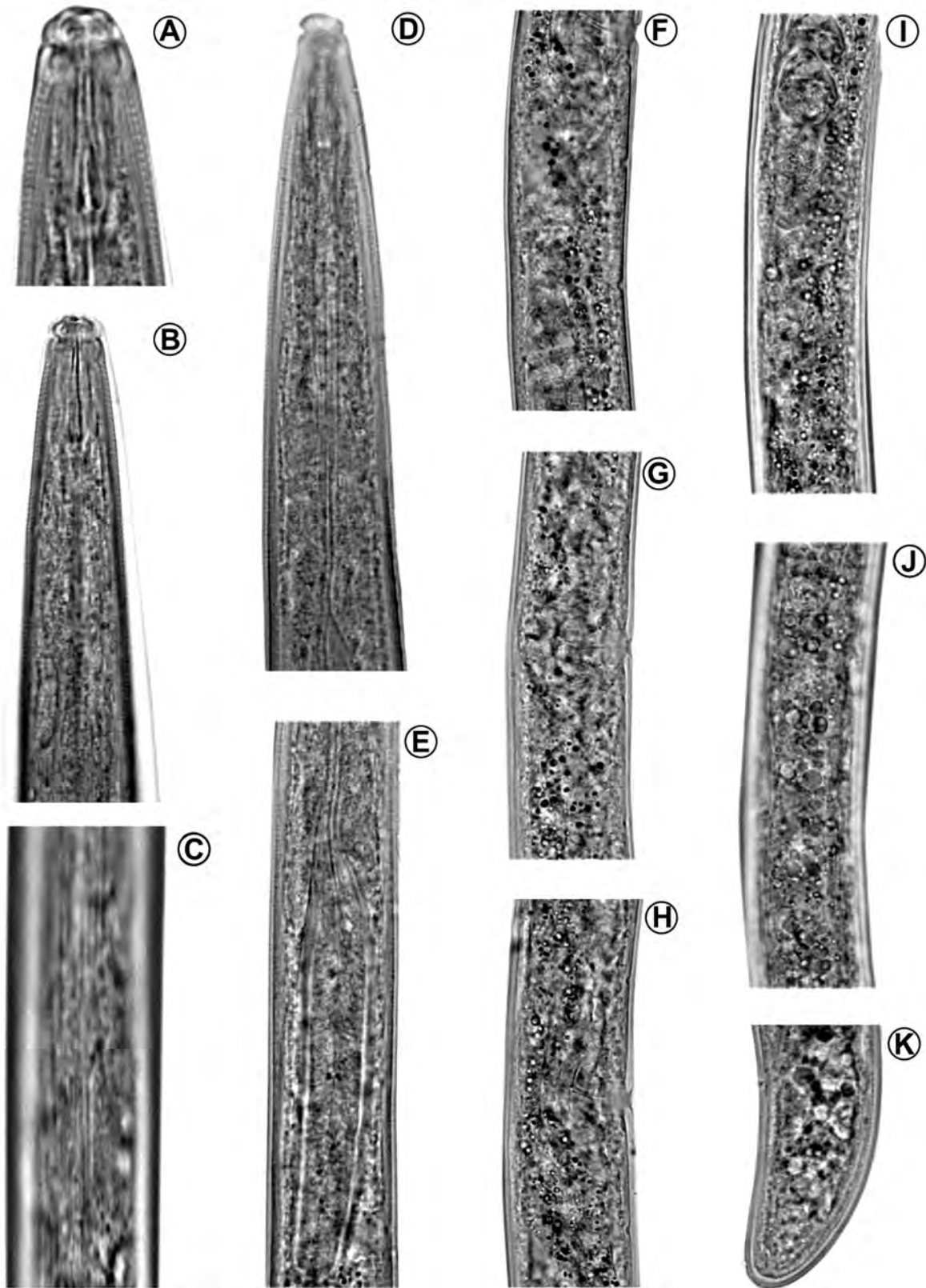


Fig. 4. *Dorylaimellus longus*, sp. n. A-B, anterior end; C, body showing longitudinal lines; D, anterior part of pharynx; E, expanded part of pharynx; F, posterior genital branch; G-H, female reproductive system; I-J, lateral glandular organs; K, posterior region.

distinct basal flanges, 1.3-1.8 times length of odontostyle. Nerve ring encircles slender part of pharynx at 41-43% of pharyngeal length. Expanded part of pharynx 60-76 μm long, occupying 37-43% of pharyngeal length, enveloped by a sheath of spiral muscles. Cardia cylindroid, 10-11 \times 8-9 μm in size. Intestine granular with indistinct lumen. Reproductive system didelphic, amphidelphic. Ovaries symmetrical, anterior ovary 49-60 μm , posterior 40-49 μm long, reflexed dorsally. Oviduct 34-42 μm long. Uterus and oviduct separated by a sphincter. Sperm not observed in uterus. Vulva a longitudinal slit. Vagina slightly more than half of corresponding body diameter long; *pars proximalis vaginae* 14-15 μm long and 7-9 μm wide; *pars refringens vaginae* absent; *pars distalis vaginae* 2-3 μm long. Pre-rectum 1.9-2.6 and rectum 0.5-0.6 times anal body diameter in length. Tail convex-conoid, slightly ventrally curved, with broadly rounded terminus.

Male. Not found.

Type habitat and locality. Collected from soil around roots of unidentified host plant at Kankroli range (Latitude 25°4'N; Longitude 73°52'60E), Kumbhalgarh Wildlife Sanctuary, Rajsamand, Rajasthan, India.

Type Specimens. Holotype female mounted on slide No. IV/2244. Five paratype females mounted on slide no IV/2245. The type specimens are deposited in the National Zoological Collection (NZC) of Desert Regional Centre, Jodhpur, Rajasthan, India.

Diagnosis and relationship. *Dorylaimellus longus* sp. n. is characterized by having a medium-sized body; distinctly set off lip region; attenuated odontostyle 6-8 μm long; odontophore with basal flanges; female reproductive system amphidelphic, vulva a longitudinal slit, and tail almost two anal body widths long, convex-conoid, slightly ventrally curved, with broadly rounded terminus. *Dorylaimellus longus* sp. n. differs from *D. imitator* Heyns, 1963 in having longer body, greater a and b values, cuticle with fine longitudinal lines, smaller rectum, absence of sclerotized bodies in vagina (L = 1.0-1.41 mm; a = 32-44; b = 6.1-7.7; longitudinal lines not observed; rectum one anal body diameter long; and presence of two small refractive sclerotized bodies in muscular wall of vagina in *D. imitator*).

Dorylaimellus longus sp. n. differs from *D. bambesae* De Coninck, 1962 in having smaller body, cuticle with fine longitudinal lines, odontophore with well-developed flanges, longitudinal vulva and different tail shape (L = 1.69-1.83 mm; longitudinal lines not observed; poorly developed flanges on odontophore; vulva transverse; and tail 1.0-1.3 anal body diameter long, terminus not broadly rounded, with internal peg in *D. bambesae*).

Dorylaimellus longus sp. n. also differs from *D. andrassyi* Heyns, 1963 in having cuticle with distinct transverse and longitudinal striations, greater a and c values, large number of lateral glandular bodies and different shape of tail (cuticle smooth, sub-cuticle with fine transverse striae; a = 35-47; c = 24-34; lateral glandular bodies 45-48 in number and tail conoid, dorsally convex, ventrally concave, terminus minutely rounded in *D. andrassyi*).

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