Opusc. Zool. Budapest, 2010, 41(1): 77–81

A new species of the genus *Lagenonema* Andrássy, 1987 (Nematoda: Dorylaimidae) from West Bengal, India

V. V. GANTAIT [1]*, T. BHATTACHARYA[2] and A. CHATTERJEE[1]

Abstract. During a taxonomic survey in Paschim Medinipur district of West Bengal, India, a new nematode species belonging to the genus *Lagenonema* Andrássy, 1987 was collected from the rhizosphere of banana roots. *Lagenonema thornei* n. sp. is characterized by having medium-sized body (female: 1.48–1.55 mm); abruptly narrowed, bottle-shaped cephalic region; amalgamated lips; tongue-shaped cardia; mono-opisthodelphic reproductive system with short pre-vulval uterine sac and long filiform tail. It closely resembles *L. longicaudatum* (Jairajpuri, Ahmad and Dhanachand, 1979) Andrássy, 1987 in V value, long filiform tail and tongue-shaped cardia. But differs in having longer body, odontostyle, odontophore and pre-vulval uterine sac; values of a, b, c and c' are also different.

INTRODUCTION

A new dorylaimoid nematode, *Lagenonema thornei* of the family Thornenematidae is being described and illustrated herein. The genus *Lagenonema* was erected by Andrássy (1987) by differentiating it from *Thornenema* Andrássy, 1959 in having abruptly narrowed, bottle-shaped anterior region, well sclerotized spatulate cephalic framework, smaller amphids and opisthodelphic female gonad. Jairajpuri and Ahmad (1992) did not agree with him and noted that *Lagenonema* was close to *Thornenema.* We however agree with Andrássy's opinion that *Lagenonema* is a well defined, distinct genus. Andrássy (1987) shifted four species under the genus *Lagenonema* from *Thornenema*, namely *L caudatum* (Jairajpuri, Ahmad & Dhanachand, 1979), *L. longicaudatum* (Jairajpuri, Ahmad & Dhanachand, 1979), *L. loofi* (Jairajpuri, Ahmad & Dhanachand, 1980) and *L. wickeni* (Yeates, 1970). At the same time, he described *L. tropicum* Andrássy, 1987. Subsequently, another species, *L. clavicaudatum* Gambhir & Dhanachand, 1990 was added to the genus.

MATERIAL AND METHODS

Nematodes were collected from a rhizospheric soil sample (250 gm) around banana plantation (*Musa paradisiaca* L. cv. Kanthali). Soil sample was taken from a small area of 10 cm × 10 cm up to the depth of 20 cm, at a distance of 25 cm from the main bole of the orchard. The specimens were extracted from soil by Cobb's sieving technique (Cobb, 1918) and decanting method followed by Modified Baermann's funnel technique (Christie and Perry, 1951); processed by Seinhorst's slow dehydration method (Seinhorst, 1959). They were mounted on slides in anhydrous glycerin and sealed. Measurements were taken with the help of an ocular micrometer using Olympus research microscope with drawing-tube attachment; model no. BX 41. Dimensions were presented in accordance with de Man's formula (de Man, 1884). Positions of the oesophageal gland nuclei with Andrássy's formula (Andrássy, 1998). Diagrams were drawn with the help of a camera lucida.

[1]*Viswa Venkat Gantait* and *Dr. Amalendu Chatterjee*, Nemathelminthes Section, Zoological Survey of India, M-Block, New Alipur, Kolkata-700053, West Bengal, India.

[2]*Prof. Tanmay Bhattacharya*, Department of Zoology, Vidyasagar University, Medinipur-721102, Paschim Medinipur, West Bengal, India.

Corresponding author: e-mail: v.gantait@rediffmail.com

DESCRIPTION OF SPECIES

***Lagenonema thornei* n. sp.**
(Fig. 1 A–E)

Measurements in Table I.

Female. Body slightly curved ventrally upon fixation, mainly at posterior region; tapering towards both the extremities. Cuticle with fine transverse striations; 2–3 µm thick at the base of lip region, 1.5–2.0 µm at midbody and 3-4 µm on tail. Lateral hypodermal chords occupying about 1/3 of body width at midbody. Body pores indistinct.

Lip region amalgamated, narrow and cylindroid-truncated in shape; 1/6–1/5 as wide as body width at neck base. Labial framework strongly sclerotized, post-labial sclerotization also well developed. Amphid cup-shaped with slit-like aperture, occupying about 1/3 of corresponding body width. Odontostyle cylindroid, 2.5–2.7 times the lip region width long; aperture about 1/4–1/3 of its length. Guiding ring single, at 1.3–1.5 times the lip region width from anterior end. Odontophore simple, rod-like, 1.3–1.4 times the odontostyle length. Nerve ring at 40-42% of neck length from anterior extremity. Basal expanded part of oesophagus (cylindrus) occupying 46–48% of the total oesophageal length. Glandularium 118–121µm long. Cardia tongue-shaped. Positions of oesophageal gland nuclei are as follows: D = 60–61%; AS_1 = 19–20%; AS_2 = 33%; PS_1 = 58–59%; PS_2 = 58–59%.

Reproductive system opisthodelphic; prevulval uterine sac short, 3.5 µm long. Vulva a transverse slit; vagina thick-walled, extending inwards about half of corresponding body width. Oviduct separated by a sphincter from uterus. Ovary reflexed, 67–71 µm long; genital cells arranged in a single row except at the tip.

Prerectum 2.0–2.5 times anal body width long. Rectum as long as anal body diameter. Tail long, filiform, not constricted, with subacute terminus, about 9 times anal body width long. Two caudal pores present on each side of tail.

Male. Not found.

Differential diagnosis and relationships. Lagenonema thornei n. sp. is characterized by having abruptly narrowed, bottle-shaped anterior region, amalgamated lips, tongue-shaped cardia, monoopisthodelphic reproductive system with short prevulval uterine sac and long filiform tail.

In the characteristic shape of lip region and the long filiform tail the new species closely resembles *Lagenonema longicaudatum* (Jairajpuri, Ahmad and Dhanachand, 1979) Andrássy, 1987. Besides, the V value and tail length also show similarities between them (V = 33–41%; tail 175–225 µm long in *L. longicaudatum*). Cardia tongue-shaped and male unknown in both species.

The new species differs from its relative in having longer body, odontostyle and odontophore (*vs.* L = 0.67–0.75 mm; odontostyle 10–11 µm; odontophore 12–13 µm long). The values a, b, c and c' are also different in both species (a = 26–31; b = 4.3–4.7; c = 3–4; c' = 13–15 in *L. longicaudatum*). Prevulval uterine sac almost absent in *L. longicaudatum*, but a short sac is present in the new species.

Type habitat and locality. Rhizospheric soil of banana plantation (*Musa paradisiaca* L. cv. Kanthali) at Baroi village under Mohanpur block of Paschim Medinipur district, West Bengal, India. Collected by the first author on 24. July, 2005.

Type specimens. Specimens are deposited with the National Zoological Collections of Zoological Survey of India, Kolkata, West Bengal, India, under the Registration No. WN 1255 (Holotype) and WN 1256 (Paratypes).

Etymology. This new species is named after the late Professor Gerald Thorne, the outstanding authority on the order Dorylaimida.

Acknowledgements. We are thankful to the Director, Zoological Survey of India, Kolkata for providing laboratory and other facilities. We express our deep sense of gratitude to the Vice Chancellor, Vidyasagar University, Medinipur, as well as Dr. A. K. Sanyal, Additional Director-in-Charge, Nemathelminthes Section, Zoological Survey of India, Kolkata for their kind coope-

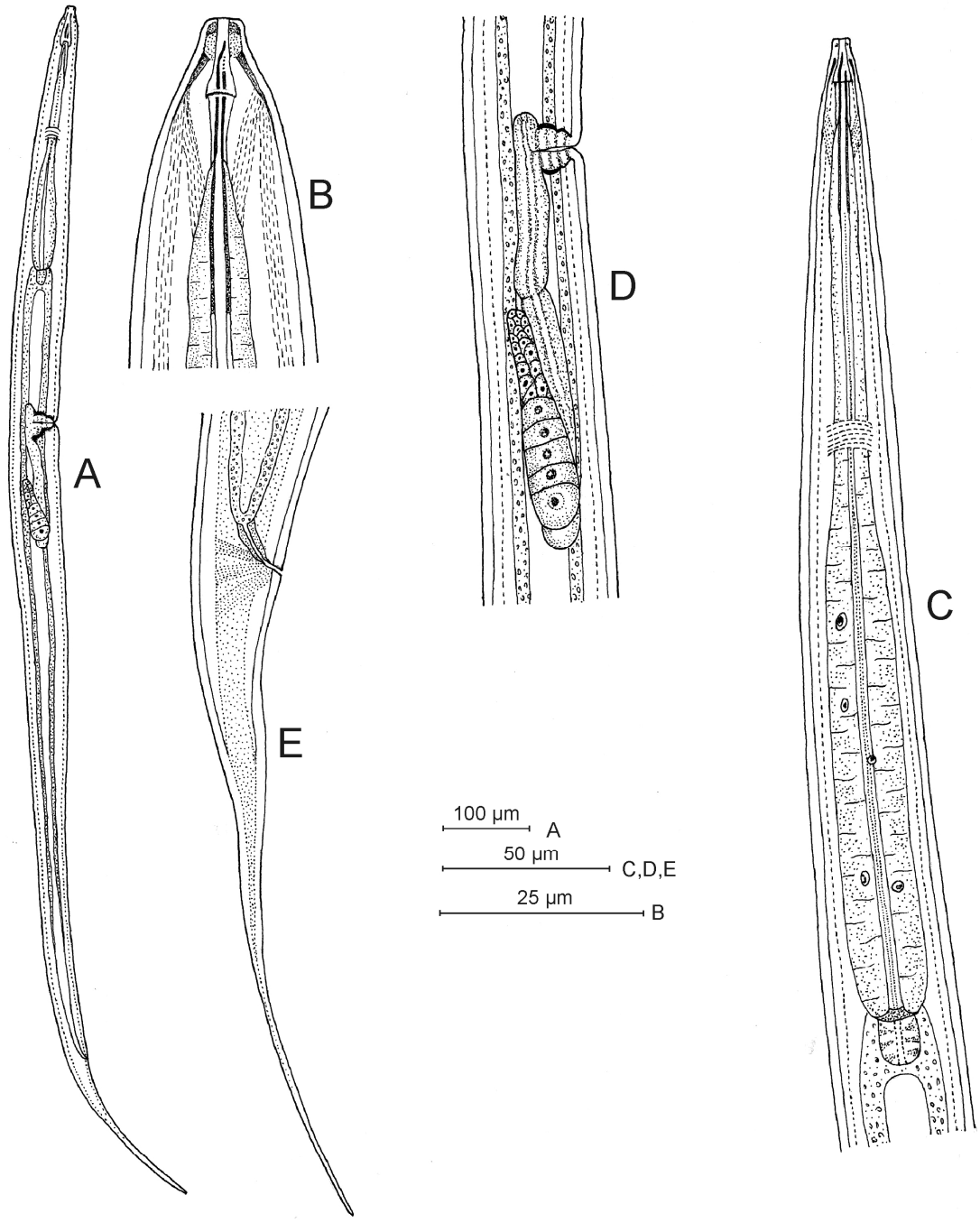

Figure 1. Camera lucida drawings of female *Lagenonema thornei* n. sp. A: entire body; B: anterior portion; C: neck region; D: vulva with posterior gonad; E: posterior portion

ration. We are truly indebted to Profs István Andrássy, Mahammad Shamim Jairajpuri and Wasim Ahmad for providing literature, valuable suggestion and continuous encouragement.

REFERENCES

ANDRÁSSY, I. (1959): Taxonomische Übersicht der Dorylaimen (Nematoda), I. *Acta Zoologica Hungarica*, 5**:** 191–240.

ANDRÁSSY, I. (1987): The superfamily Dorylaimoidea (Nematoda) – a review. Families Thorniidae and Thornenematidae. *Acta Zoologica Hungarica*, 33 (3- 4) 277–315.

ANDRÁSSY, I. (1998): Once more: the oesophageal gland nuclei in the dorylaimid nematodes. *Opuscula Zoologica Budapestinensis*, 31: 165–170.

CHRISTIE, J. R. & PERRY, V. G. (1951): Removing nematodes from soil. *Proceedings of Helminthological Society of Washington,* 18**:** 106–108.

COBB, N. A. (1918): Estimating the nema population of the soil. *Agricultural Technology Circular I. Bureau of Plant Industry, United States, Department of Agriculture*, 48 pp.

DE MAN, J. G. (1884): *Die frei in der reinen Erde und im süssen Wasser lebenden Nematoden der niederländischen Fauna. Leiden, 206 pp.*

JAIRAJPURI, M. S. & AHMAD, W. (1992): *Dorylaimida*: *free-living, predaceous and plant parasitic nematodes.* Oxford and IBH Publishing Company Private Limited, New Delhi, 458 pp.

JAIRAJPURI, M. S., AHMAD, M. & DHANACHAND, CH. (1979): Two new species of *Thornenema* Andrássy, 1959 from Manipur, India. *Nematologica*, 25: 136 –141.

JAIRAJPURI, M. S., AHMAD, M. & DHANACHAND, CH. (1980): Nomenclatorial notes on *Thornenema thienemanni* with a key to species of *Thornenema* (Nematoda: Dorylaimida). *Nematologica*, 26: 182–186.

SEINHORST, J. W. (1959): A rapid method for the transfer of nematodes from fixative to anhydrous glycerine. *Nematologica*, 4: 67–69.

YEATES, G. W. (1970). Four Dorylaimina (Nematoda) from Wicken Fen, Cambridgeshire. *Nematologica*, 16: 273–283.

Table I. Measurements of *Lagenonema thornei* n. sp. **(**All measurements in μm, except L, in mm**)**.

Morphometric characters	Holotype female	Paratype females (n = 10)	Mean ± SD
L	1.54	1.48-1.55	1.51 ± 0.02
a	39.8	39.5-39.8	39.6 ± 0.1
b	5.2	5.0-5.2	5.1 ± 0.1
c	7.9	7.7-7.9	7.8 ± 0.1
c'	9.2	9.1-9.2	9.2 ± 0
V	33.2	33.1-34.4	33.7 ± 0.4
V'	38.0	38.0-38.2	38.1 ± 0.1
G_2	11.9	10.8-12.0	11.5 ± 0.4
Height of lip region	3.6	3.6-3.6	3.6 ± 0
Width of lip region	6.4	6.3-6.4	6.3 ± 0
Amphid from anterior end	4.3	4.2-4.3	4.2 ± 0
Odontostyle length	17.7	16.9-17.9	17.4 ± 0.3
Length of stylet aperture	5.2	4.8-5.2	5.0 ± 0.1
Odontophore length	24.3	23.4-24.4	23.9 ± 0.3
Guiding ring from ant. end	9.6	9.1-9.6	9.3 ± 0.2
Nerve ring from ant. end	121.6	119.7-121.4	120.7 ± 0.7
Oesophageal length	294.5	291.8-296.1	294.1 ± 1.4
Basal part of oesophagus	141.3	137.1-142.1	139.8 ± 1.6
Length of cardia	13.2	12.9-13.2	13.0 ± 0.1
Body width at neck base	37.1	36.8-37.1	37.0 ± 0.1
Body width at vulva	38.8	37.4-38.9	37.7 ± 0.4
Body width at anus	21.1	20.8-21.2	21.0 ± 0.2
Vulva from anterior end	514.5	491.3-520.7	507.9 ± 8.4
Length of posterior gonad	185.7	160.5-187.2	178.4 ± 9.9
Prerectum	46.7	44.7-47.7	46.0 ± 0.9
Rectum	21.4	20.8-21.4	21.1 ± 0.2
Tail length	195.1	191.7-196.4	193.9 ± 1.5