

Xiphidorus amazonensis n. sp. (Nematoda: Longidoridae) from the Brazilian Amazon Basin¹

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Abstract: *Xiphidorus amazonensis* n. sp. was found in the rhizospheres of *Jatropha curcas*, *Musa* sp., *Anona muricata*, *Cassia tora*, *Panicum laxum*, *Paspalum fasciculatum*, *Aeschynomene sensitiva*, *Saccharum officinarum*, *Manihot esculenta*, *Abelmoschus esculentus*, *Tamarindus indica*, *Mangifera indica*, *Vigna unguiculata*, *Zea mays*, *Commelina* sp., *Cyperus rotundus*, *Fimbristylis miliacea*, *Citrus sinensis*, and *Eichhornia crassipes* on the Amazon River island of Xiborena, approximately 40 km southeast of Manaus, capital of the State of Amazonas. The type habitat is flooded annually for about 6 months by the Amazon River. *Xiphidorus amazonensis* n. sp. differs from the closely related species *Xiphidorus yepesara* Monteiro, 1976 by the larger size, by a, b, and c values, and by the rounded tail terminus. It also resembles *Xiphidorus tucumanensis* Chaves and Coomans, 1984, but can be distinguished by its larger size, larger a, b, and c values, more conical female tail, bilobed amphidial pouch, and the presence of a spermatheca full of sperm.

Key words: taxonomy, Brazil, morphology.

The genus *Xiphidorus* Monteiro, 1976 was proposed to include nematodes having characters of *Xiphinema* Cobb, 1913 and *Longidorus* (Micoletzky, 1922) Thorne & Swanger, 1936 (5). Six species have been described so far; i.e., *Xiphidorus yepesara* Monteiro, 1976 (5) and *X. parthenus* Monteiro, Lordello & Nakasono, 1981 (6) from Brazil, and *X. balcarceanus* Chaves & Coomans, 1984 (1), *X. tucumanensis* Chaves & Coomans, 1984 (1), *X. saladillensis* Chaves & Coomans, 1984 (1), and *X. achalae* Luc & Doucet, 1984 (4) from Argentina. We found a seventh species commonly present in a nematode survey of the Amazon River island of Xiborena, about 40 km southeast of Manaus. The new species is described here.

MATERIALS AND METHODS

Specimens were killed with gentle heat (60 C for 1 minute) within 24 hours after extraction and fixed in formalin-glycerine-water (8:2:90) (2). Permanent specimens were dehydrated and glycerine impregnated according to Seinhorst (2) and mounted by the adhesive tape ring method (3). Measurements and morphological studies were made from permanent mounted specimens.

SYSTEMATICS

Xiphidorus amazonensis (Fig. 1A-F)

Dimensions are given in Table 1.

Female ($n = 8$): Body extremely elongated, assuming open to spiral form when fixed. Lip region rounded with slight constriction at the lip-body junction. Amphidial pouch with two asymmetric lobes. Odontostyle elongated, bifurcated at the base. Odontophore simple with moderately developed flanges. Stylet guiding ring near base of odontostyle. Nerve ring at about 50% of the anterior part of the esophagus. Posterior part of the esophagus lageniform, 62 (60-70) μm long and 15 (15-18) μm wide. Dorsal esophageal gland nuclei elongated, smaller than subventral gland nuclei. Vaginal walls moderately thickened, extending transversely to more than 50% of the body width. Ovaries two, nearly symmetrical, reflexed. Spermatheca irregularly saccate, filled with oblong sperm, separated from uterus by a sphincter. Intestine not overlapping rectum. Tail conoid, terminus rounded. Two pairs of caudal papillae.

Male ($n = 7$): Similar to female except in sexual characters. Testes extended. Spicules dorylaimoid. Copulatory muscles well developed. Ventromedian supplements 6-7 in the posterior body, well separated from adanal pair. Tail short, conoid, distally rounded but dorsally truncate. Two pairs of caudal papillae.

Juvenile ($n = 13$): Morphologically similar to female. Body posture strongly arcuate when fixed.

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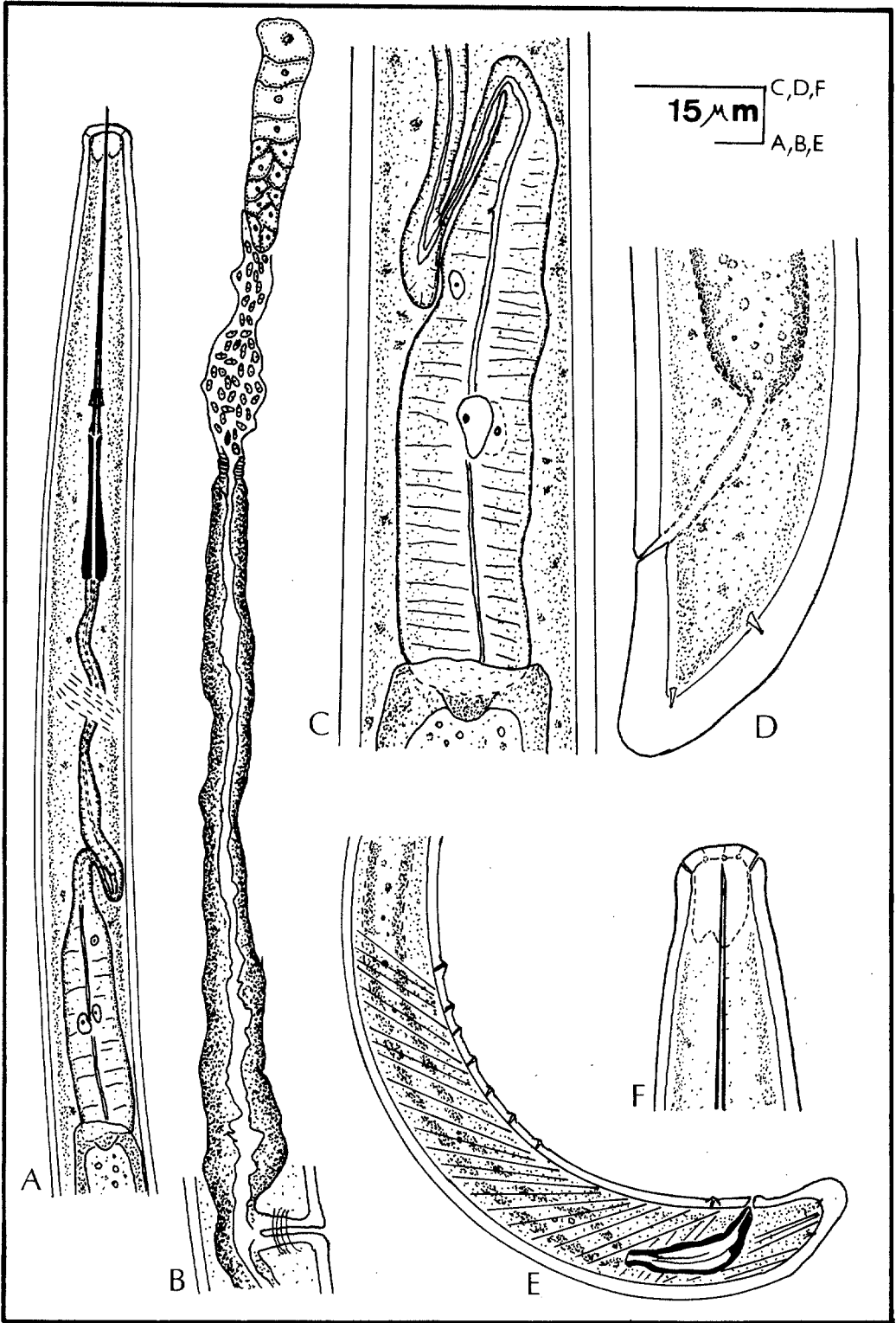


FIG. 1. *Xiphidurus amazonensis* n. sp. A) Anterior body. B) Anterior gonad. C) Esophageal bulb. D) Female tail. E) Posterior body of male. F) Head of female showing amphidial pouch with two asymmetric lobes.

TABLE 1. Dimensions of females and males of *Xiphidiorus amazonensis* n. sp.

Parameters	Holotype ♀	Allotype ♂	Paratypes 7 ♀	Paratypes 6 ♂
L (mm)	4.95	4.60	5.35 (4.85–6.03)	4.76 (4.30–5.25)
Odontostyle (μm)	91	94	96 (92–100)	94 (88–99)
Odontophore (μm)	43	41	43 (40–46)	42 (40–46)
Guiding ring from head end (μm)	82	70	83 (70–91)	82 (79–87)
a	141.4	148.4	148.1 (143.7–158.3)	147.8 (130.0–164.1)
b	16.9	19.3	18.2 (16.3–21.9)	17.3 (15.2–19.1)
c	176.8	184.0	191.9 (168.3–205.2)	166.4 (147.1–181.4)
c'	1.3	1.0	1.2 (1.1–1.3)	1.1 (1.0–1.2)
V (%)	48.5		49.7 (47.8–51.4)	
T (%)		55.4		47.3 (37.8–51.4)
G ₁	7.1		7.6 (7.0–8.5)	
G ₂	7.9		7.2 (6.8–7.4)	
Tail length (μm)	28	26	28 (27–30)	29 (28–31)
Spicule length (μm)		40		43 (40–45)

Holotype (female): Collected from the rhizosphere of *Jatropha curcas* L. on the property of Mr. Manoel P. Ramos, on the Amazon River island of Xiborena. Slide no. 1952(1), Nematode Collection of the University of Brasília.

Allotype (male): Same data as holotype. Slide no. 1952(2), Nematode Collection of the University of Brasília.

Paratypes (7 females, 6 males, 13 juveniles): Distributed as follows:

Nematode Collection of the University of Brasília—Slides no. 1952(3), one female, two juveniles; 1952(6), one female, one male, two juveniles; 1952(7), one female, one male, one juvenile; and 1952(8), one female, one male, two juveniles.

University of California Davis Nematode Collection (UCDNC)—Slide no. 1952(4), one female, one male, two juveniles.

University of California Riverside

Nematode Collection—Slide no. 1952(9), one female, one male, two juveniles.

USDA Nematode Collection, Beltsville, Maryland—Slide no. 1952(5), one female, one male, two juveniles.

Habitat: In addition to the type host, populations of *Xiphidiorus amazonensis* n. sp. were also found in the rhizospheres of *Musa* sp., *Anona muricata*, *Cassia tora*, *Panicum laxum*, *Paspalum fasciculatum*, *Aeschynomene sensitiva*, *Saccharum officinarum*, *Manihot esculenta*, *Abelmoschus esculentus*, *Tamarindus indica*, *Mangifera indica*, *Vigna unguiculata*, *Zea mays*, *Commelina* sp., *Cyperus rotundus*, *Fimbristylis miliaceae*, *Citrus sinensis*, and *Eichhornia crassipes*, all on the island of Xiborena. The island separates the Solimões River (muddy water, high in organic matter) from the Negro (blackish water, low in organic matter). The areas where the nematodes were found are flooded for about 6 months each year from the ele-

vated water level of the Amazon River system, known ecologically as "varzeas."

Diagnosis: *Xiphidorus amazonensis* n. sp. can be distinguished from *X. yepesara* Monteiro, 1976 (5) by the longer body (5.35 mm vs. 3.5 mm), the larger a (148.1 vs. 96.0), b (18.2 vs. 12.6), and c (191.1 vs. 117.0) values, and by the rounded female tail terminus. *X. amazonensis* n. sp. is also similar to *X. tucumanensis* Chaves & Coomans, 1984 (1), but differs by its longer body (5.35 mm vs. 4.20 mm), by the larger a (148.1 vs. 118.5), b (18.2 vs. 12.5), and c (191.1 vs. 161.5) values, by its more conical tail, bilobed amphidial pouch, and by the spermatheca filled with sperm.

LITERATURE CITED

1. Chaves, E., and A. Coomans. 1984. Three new species of *Xiphidorus* from Argentina with comments on *Xiphinema sandellum* Heyns, 1966. *Revue de Nématologie* 7:3-12.
2. Hooper, D. J. 1970. Handling, fixing, staining and mounting nematodes. Pp. 39-54 in J. F. Southey, ed. *Laboratory methods for work with plant and soil nematodes*. Ministry of Agriculture, Fisheries and Food, England. Technical Bulletin 2.
3. Huang, C. S., C. Bittencourt, and E. F. S. Mota Silva. 1984. Preparing nematode permanent mounts with adhesive tapes. *Journal of Nematology* 16:341-342.
4. Luc, M., and M. E. Doucet. 1984. Description of *Xiphidorus achalae* n. sp. and proposal for a classification of longidorids (Nematoda: Dorylaimoidea). *Revue de Nématologie* 7:103-112.
5. Monteiro, A. R. 1976. *Xiphidorus yepesara* n. gen. n. sp. (Nemata: Longidoridae) from Brazil. *Nematologia Mediterranea* 4:1-5.
6. Monteiro, A. R., L. G. E. Lordello, and K. Nakasono. 1981. *Xiphidorus parthenus* n. sp. (Nemata: Longidoridae) from Brazil. *Revista de Agricultura* 56: 93-97.

1. Chaves, E., and A. Coomans. 1984. Three new species of *Xiphidorus* from Argentina with comments