

REDESCRIPTION OF *XIPHINEMA YAPOENSE* AND DESCRIPTION
OF MALE AND JUVENILES OF *X. DOUCETI* (NEMATODA:
LONGIDORIDAE)

BY

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Xiphinema yapoense Luc, 1958, originally described from a single female, is redescribed from a population of 26 females and third- and fourth-stage juveniles. Two aberrant females are also described: one lacks a posterior genital branch; in the other, the body is shorter than normal and the vulva abnormally posterior. The male of *X. douceti* Luc, 1973, unknown until now, and the four juvenile stages are described. Both species have been found only in primary forest in the Ivory Coast, firstly at Yapo and now at Taï.

Additional information is provided on *Xiphinema yapoense* Luc, 1958 and *X. douceti* Luc, 1973, originally described from the primary forest, Yapo, Ivory Coast. Specimens of both species were also studied from another primary forest near Taï, Ivory Coast. The data confirm the particular biotope of these species.

Xiphinema yapoense Luc, 1958 (Fig. 1)

Xiphinema yapoense Luc, 1958 was described from a single female from primary forest soil, Yapo, Ivory Coast. For that reason and because this species had not been found again, Cohn & Sher (1972) considered it as *species inquirenda* but Luc & Dalmasso (1975) reestablished *X. yapoense* as a valid species.

Table I gives measurements of the holotype female, two topotype females, 26 females and 26 third- and fourth-stage juveniles of the Taï population.

Females. — When heat-relaxed, body more or less C-shape or loose open J-shape. Body massive, tapered only for a short distance fore and behind. Cuticle thick, 3.5-4 μm at mid-body, apparently composed of three layers; cross striation visible on tail. Cervical pores in four rows, beginning close to the front end: 5-6 dorsal cervical pores, ventral pores regularly spaced over entire body, lateral cervical pores prolonged posteriorly to form a regular latero-subdorsal line along entire body; no latero-subventral pores. Labial area rounded, separated from the rest of the body by a thin but well marked groove. Opening of the amphids characteristically wider than normal giving the appearance of

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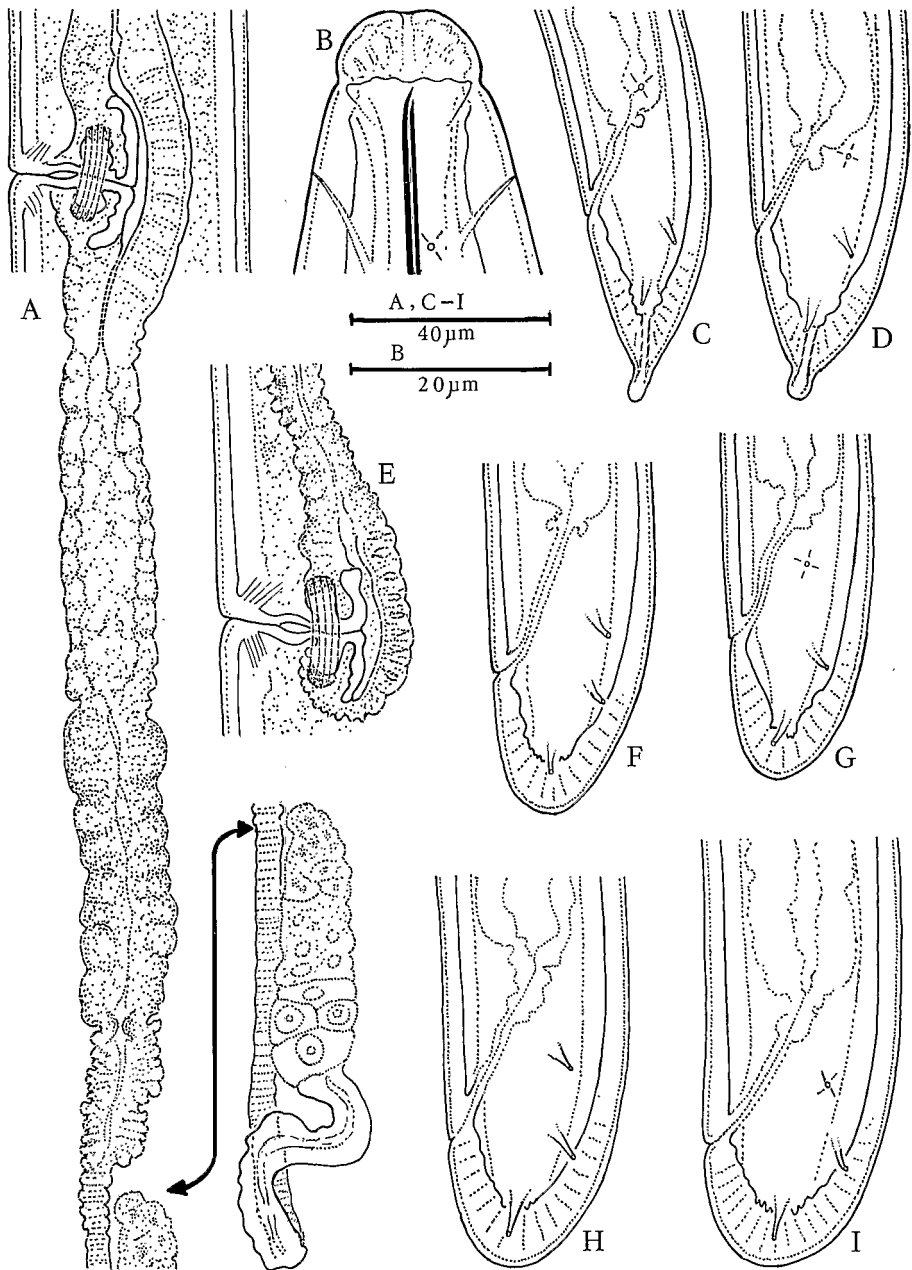


Fig. 1. *Xiphinema yapoense* Luc, 1958. Female: A, posterior genital branch. B, labial region. H, I, tails. Abnormal female: E, vulval area and ovejector. Juveniles 3rd stage: C, D, tails. Juveniles 4th stage: F, G, tails.

TABLE I

Xiphinema yapoense Luc, 1958. Measurements of females, J3 and J4

	Holotype (Luc, 1958)	Topotypes (original)	Population from Tai (original)		
			Females	J3	J4
n	1	2	26	14	12
L (mm)	3.028	2.82, 2.95	2.25-3.38 (2.72)	1.29-1.77 (1.52)	1.77-2.46 (1.99)
a	51.3	52.6, 54.3	38.1-54.6 (47.7)	34.2-46.7 (41.0)	45.1-56.7 (49.5)
b	6.7	8.7, 9.1	6.0-9.7 (7.7)	4.6-7.8 (5.7)	4.9-7.0 (5.6)
Tail length (μm)	27	24, 29	20-27 (23)	28-41 (33.5)	23-28 (26.5)
c	110.9	98.3, 115.0	98-147 (117)	38.0-63.2 (46.3)	64.1-98.4 (75.7)
c'	0.7	0.7, 0.8	0.6-0.8 (0.7)	1.0-1.6 (1.3)	0.7-1.0 (0.9)
V	43.9	39.3, 41.7	36.2-42.0 (39.0)	—	—
Od. styl. (μm)	138	142, 148	125-144 (133)	73-99 (89.5)	107-118 (112)
Od. ph. (μm)	71	69, 68	62-74 (67)	50-59 (54.5)	55-65 (60)
Tot. styl. (μm)	209	211, 216	188-215 (200)	130-155 (144)	166-180 (172)
Rep. od. st. (μm)	—	—	—	102-118 (111.5)	117-134 (126.5)

encircling the body, edge more or less wavy rather than straight; amphidial opening at level of the groove. Stylet, tubular guide, oesophagus and intestine normal. Hemizonid 6.5-9 μm wide, at 170-201 μm from front end; hemizonion 2.5 μm wide, at 220-260 μm from front end. Nerve ring normal; a second, posterior and less developed, nerve ring observed in some specimens. Genital tract with two equally developed branches of the same structure; vaginal slit about half a body diam. with well developed cuticularization; circular muscle thin, ovejector muscular, elongated. Uterus short, lumen wide, composed of small cells; uterine pouch poorly defined, about as wide as the rest of the uterus but with thicker wall. Uterus without Z-differentiation, internal spines or differentiated muscular area. Sphincter separating uterine pouch from oviduct pouch less developed than usual, often difficult to observe. Oviduct pouch small, wall thin and irregular; proximal part of oviduct thin, straight; junction between oviduct and ovary usually convoluted. Genital tract massive and relatively short compared with the length of the body. No spermatozoa seen. Tail almost perfectly hemispherical, without peg or bulge; tail cuticle thick, especially at the extremity (up to 12 μm); without internal mucro or blind canal; one pair of caudal pores rather far back (in the posterior third); another pair (rarely two), medio-dorsal, at level of anus.

Third-stage juveniles. — Body massive, ventral curvature weak, more pronounced in the posterior third. Labial area as in female, but amphidial slit straight. Tail conical, dorsally convex, with terminal peg more or less well defined; tail cuticle thick, especially at extremity where crossed by blind canal; two pairs of caudal pores.

Fourth-stage juveniles. — Body massive, ventral curvature more pronounced than in J 3, generally in loose J-shape. Labial area as in J 3. Tail rounded, more elongated than in females; no blind canal; two pairs of caudal pores as in females.

Diagnosis. — The peculiar shape of the labial area and of the amphidial slit are good diagnostic characters of the species. *X. yapoense* falls into the group having two similar female genital branches without Z-differentiation and nearly hemispherical tail without bulge or peg. At present, in addition to *X. yapoense*, this group contains *X. clavatum* Heyns, 1965, *X. macrostylum* Esser, 1966, *X. guirani* Luc & Williams, 1978 and *X. silvaticum* Luc & Williams, 1978. *X. yapoense* is also easily separated from all but *X. macrostylum*, by its more forward vulva ($V = 36.2-43.9$ vs $49-54$ in *X. clavatum*, $49-54.2$ in *X. guirani* and $51.9-56.5$ in *X. silvaticum*); *X. yapoense* is distinguished from *X. macrostylum* by its shorter stylet ($188-215 \mu\text{m}$ vs $257-294 \mu\text{m}$) and by the labial area being separated from the rest of the body (perfectly continuous in paratypes of *X. macrostylum*).

Observations. — Among the 28 females two were abnormal. The first has normal measurements ($L = 2.63$ mm; $a = 47.0$; $b = 7.1$; tail length = $21 \mu\text{m}$; $c = 124$; $c' = 0.7$; odontostyle = $129 \mu\text{m}$; odontophore = $69 \mu\text{m}$), but the posterior genital branch is absent (Fig. 1E). The anterior branch is normal in structure; vagina and ovejector resemble those of normal females of the species rather than those with a single (posterior) genital branch (e.g. *X. raditicola* Goodey, 1936). The vaginal slit is perpendicular to the body axis, the sphincter muscle symmetrical and the blind extremity of the ovejector irregular. Among thousands of *Xiphinema* females of many species, this is the first time I have observed such an abnormality. The only described species in which females have a regression of the posterior genital branch is *X. cubense* Razjivin *et al.*, 1973, but here the posterior branch, although straight instead of reflexed and notably smaller than the anterior one and probably not functional, is complete with uterus, oviduct and ovary. Arias (1978) observed a female of *X. diversicaudatum* of which the posterior genital branch was reduced but here too all components were present. The second female is smaller than the others ($L = 2.22$ mm) with a very posteriorly situated vulva ($V = 58.1$). All other measurements are normal ($a = 46.2$; $b = 6.3$; tail length = $20 \mu\text{m}$; $c = 111$; $c' = 0.8$; odontostyle = $133 \mu\text{m}$; odontophore = $65 \mu\text{m}$) and the morphological characteristics, namely labial area, amphidial slit, genital tract and tail, are similar to those of "normal" females. There is therefore no doubt that this female is *X. yapoense*.

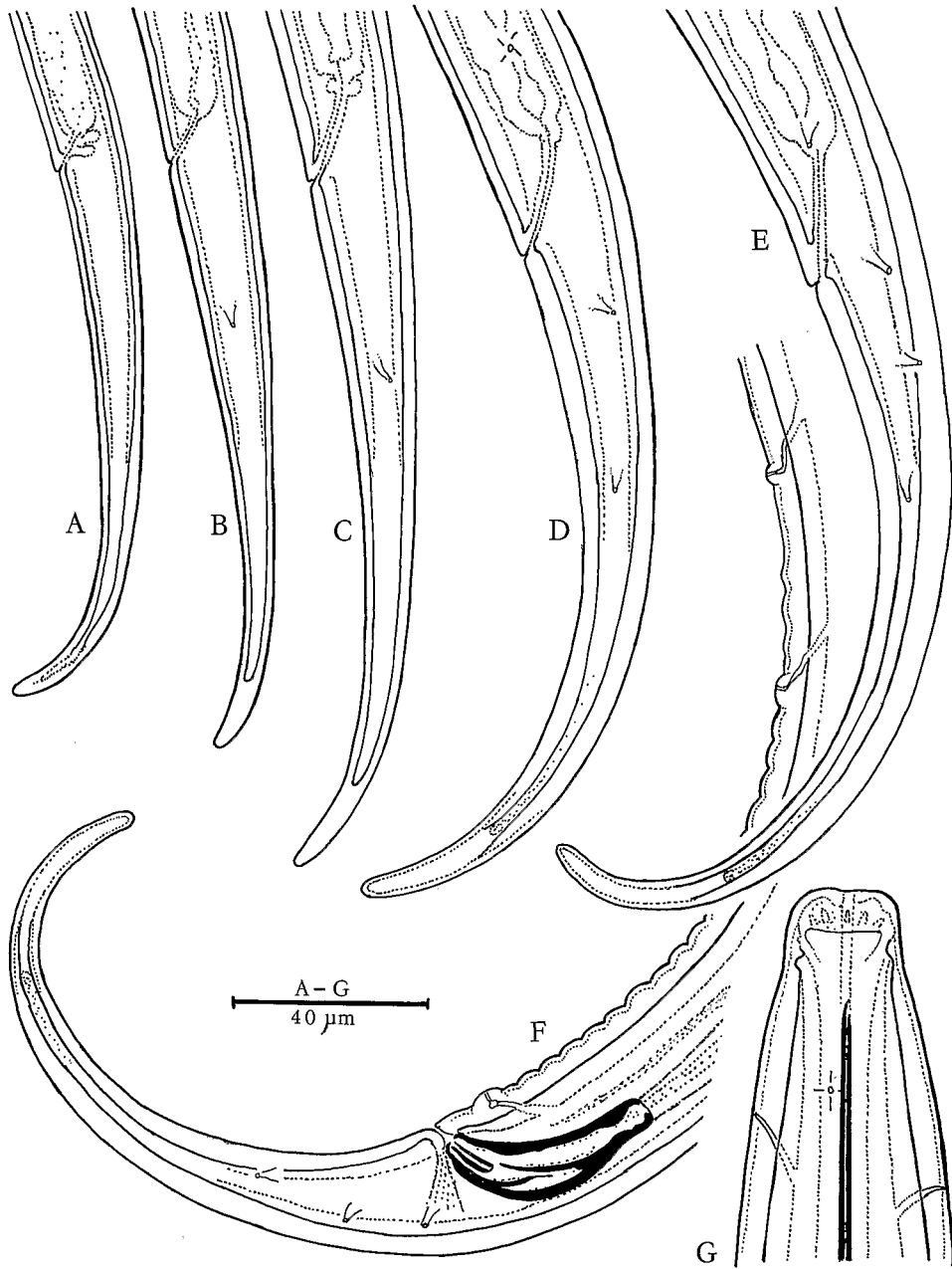


Fig. 2. *Xiphinema douzeti* Luc, 1973. Juveniles: A, tail, J1. B, tail, J2. C, tail, J3. D, tail, J4. Female: E, tail. Male: F, posterior part. G, anterior part.

Xiphinema douceti Luc, 1973 (Fig. 2)

Measurements of females and juveniles from Taï are in Table II.

Male: L = 2.52 mm; a = 74.1; b = 6.6; tail length = 146 μm ; c = 17.3; c' = 5.6; odontostyle = 199 μm ; odontophore = 62 μm ; length of spicules (med. line) = 48 μm ; max. width of spicules = 12 μm ; accessory piece = 9 μm ; h = 41 μm ; h% = 28.1.

Female: measurements and morphological characteristics agree well with those of the type population and nothing needs to be added to the original description. In spite of the presence of a male in the population, no spermatozoa were observed in females.

Male: Body ventrally curved when heat relaxed; curvature more pronounced in the posterior part. Anterior end abruptly rounded, separated from the rest of the body by a very weak constriction. Cervical pores rare (one ventral, one

TABLE II

Xiphinema douceti Luc, 1973. Population from Taï. Measurements of females and juveniles stages

	J1	J2	J3	J4	Females
n	2	3	3	6	21
L (mm)	0.94, 0.98	1.15-1.32	1.60-1.72	1.98-2.19 (2.08)	2.41-2.79 (2.62)
a	46.7, 47	44.2-47.7	55.5-60.4	55.6-68.3 (60.1)	59.3-74.1 (65)
b	4.7, 4.9	4.1-5.7	5.6-6.2	5.6-6.8 (6.3)	6.0-8.3 (7.2)
Tail length (μm)	115, 124	118-140	138-150	148-160 (156)	141-173 (155)
c	7.6, 8.5	8.8-10.5	11.4-11.8	12.8-13.7 (13.4)	16.0-19.9 (17.0)
c'	6.7, 8.9	6.9-8.7	6.7-7.7	6.9-7.4 (7.2)	6.6-7.9 (7.0)
V	—	—	—	—	44.8-48.0 (46.9)
Od. styl (μm)	56, 59	71-73	84-94	98-105 (103)	116-126 (119)
Od. ph. (μm)	37, 39	46-47	53-54	59-63 (62)	62-68 (65)
Total styl. (μm)	95, 96	117-120	138-147	160-172 (165)	178-193 (184)
Repl. Od. st. (μm)	71, 71	86-90	104-107	114-121 (119)	—
h*	15, 18	15-19	19-21	24-31 (28)	28-42 (36)
h% **	13, 14.5	12.9-14.5	13.6-15.2	16.2-20.3 (18.2)	17.0-28.6 (23.5)

* length, μm , of the hyaline (non protoplasmic) terminal part of tail.

** same, as percentage of tail length.

dorsal, two lateral), situated rather far from anterior end. Ventral and latero-subdorsal pores present on about the anterior half of the body; no latero-subventral pores. Lateral chord narrow, 7 μm at mid-body or 1/6 of body diameter. Hemizonid flat, 6 μm wide, at 168 μm from anterior end; hemizonion not seen. Tail regularly tapered with pronounced ventral curvature; terminus rounded; three pairs of caudal pores. Spicules massive, curved; accessory piece slightly curved, cephalated. Double ventral papillae 12 μm anterior to the cloaca; two ventral supplements at 120 μm and 162 μm from the cloaca.

Juveniles: J1, J2 and J3 body with weak ventral curvature, slightly more pronounced in the posterior part; curvature more pronounced in J4. Anterior end similar to that of adults. J1 and J2 tail straight, curved only at its extremity; tail curvature more pronounced in J3; J4 tail similar to that of female. Caudal pores not observed in J1; only one pair in J2 and J3; two pairs of caudal pores and one pair adanal in J4 as in female.

I thank Dr. R. Fortuner for providing specimens of *X. yapoense* and *X. douceti* from Taï.

RÉSUMÉ

Redescription de Xiphinema yapoense et description du mâle et des juvéniles de X. douceti (Nematoda: Longidoridae)

Xiphinema yapoense Luc, 1958, dont la description originale ne portait que sur une seule femelle, est redécrit ici sur une population comportant 26 femelles ainsi que des juvéniles des troisième et quatrième stades. Deux femelles aberrantes ont été observées, l'une dépourvue de branche génitale postérieure, l'autre anormalement courte et ayant la vulve située très postérieurement. Le mâle et les quatre stades juvéniles de *X. douceti* Luc, 1973 sont décrits. Ces deux espèces n'ont été trouvées qu'en forêt primaire, en Côte d'Ivoire, d'abord à Yapo, puis à Taï.

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