

Istituto di Nematologia Agraria, C.N.R. — 70126 Bari, Italy

LONGIDORUS ATHESINUS SP.N. (NEMATODA: DORYLAIMIDA) FROM NORTHERN ITALY

by

F. LAMBERTI, M.I. COIRO and A. AGOSTINELLI

Summary. *Longidorus athesinus* sp.n. is described from specimens collected from the rhizosphere of cherry trees in the Province of Verona, in northern Italy. It is a bisexual species with a body length of ca. 5 mm, odontostyle length ca. 90 μ m, asymmetrically bilobed amphidial pouches and a short rounded tail, resembling *L. elongatus* (de Man, 1876) Thorne et Swanger, 1936, *L. profundorum* Hooper, 1965, *L. iuglandis* Roca, Lamberti et Agostinelli, 1984 and *L. belloii* Andr  s et Arias, 1988.

During a nematode survey in the vineyards of the Province of Treviso in northern Italy, a few *Longidorus* specimens were identified, but because of the scarcity of material available the species status of the population could not be confirmed (Coiro et al., 1985). A further survey in the adjacent Province of Verona, revealed the occurrence in the rhizosphere of cherry trees, of an abundant bisexual population of *Longidorus* sp., which is considered to be conspecific with that from Treviso. The species is described here as *Longidorus athesinus* sp.n.

Nematodes were extracted from soil by Cobb's wet sieving technique, killed and fixed in 5% hot formalin, processed by the slow method and mounted in dehydrated glycerin on slides. Specimens were measured with the aid of a camera lucida.

LONGIDORUS ATHESINUS sp.n.

syn. *Longidorus* sp. apud Coiro et al., 1985
(Figs. 1 and 2; Table I)

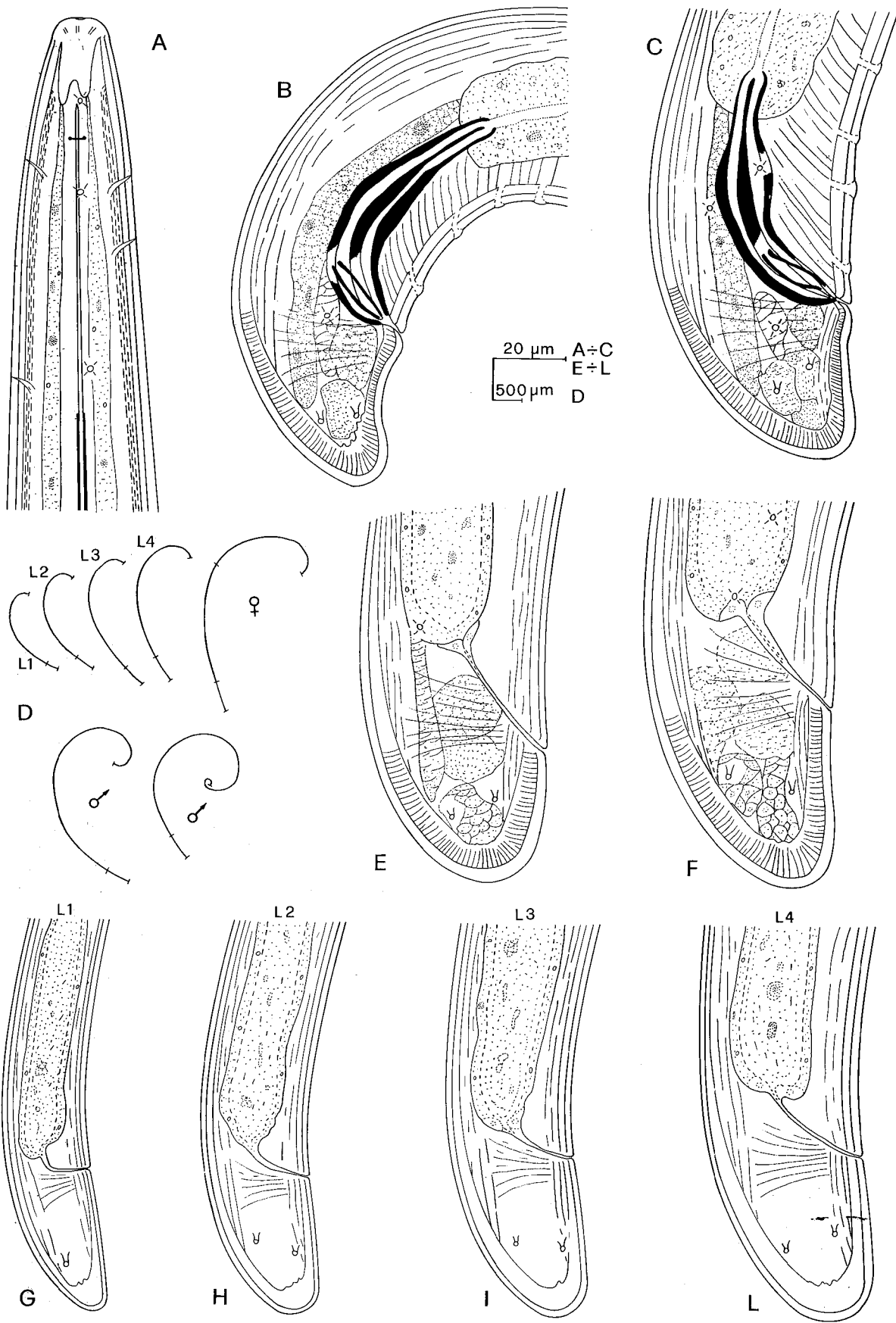
Holotype female: L = 4.8 mm; a = 76; b = 11; c = 113; c' = 0.9; V = 52; odontostyle = 86.5 μ m; odontophore = 62 μ m; oral aperture to guiding ring = 36.5 μ m; tail = 42 μ m; J (hyalin portion of tail) = 12 μ m; body diameter at lip region = 18 μ m; body diameter at guiding ring = 29.5 μ m; body diameter at base of oesophagus = 51 μ m; body diameter at vulva = 63 μ m; body diameter at anus = 48 μ m; body diameter at beginning of J = 32 μ m.

Allotype male: L = 4.8 mm; a = 81; b = 12.4; c = 118; c' = 0.9; odontostyle = 88 μ m; odontophore = 58 μ m; oral aperture to guiding ring = 36 μ m; tail = 41 μ m; J = 12 μ m; body diameter at lip region = 18 μ m; body diameter at guiding ring = 32 μ m; body diameter at base of oesophagus = 53 μ m; body diameter at mid body = 59 μ m; body diameter at anus = 46 μ m; body diameter at

beginning of J = 25 μ m; spicules = 76 μ m; lateral guiding pieces = 20 μ m.

Description: female *habitus* curved in a more or less open C to single spiral. Body of medium size, robust and cylindrical, tapering towards anterior. Cuticle finely striated longitudinally, about 2-2.5 μ m thick along the body. Several glandular structures are evident in the lateral hypodermal cords. Lip region laterally rounded, from very slightly set off to continuous with the rest of the body. Amphidial pouches large, asymmetrically bilobed, extending to about half way to the guiding ring; their apertures were not observed. Odontostyle and odontophore slender, guiding ring typical of the genus, oesophagus dorylamoid, with the basal bulb occupying about 1/4 of the total oesophagus length; the oesophageal bulb measures 120-125 μ m long and 25-30 μ m wide and contains three glandular nuclei. Oesophageal-intestinal valve large and bluntly rounded. Vulva slit-like and almost mid-body; vagina with thick walls occupying about 1/2 of the corresponding body diameter; gonads amphidelphic, reflexed, with approximately the same length and structure; strong muscularized uteri continuing as large spermathecae and divided from oviducts by prominent and well developed sphincters. Uteri and spermathecae are usually full of sperms. Prerectum very evident, 300-400 μ m long; rectum extending 2/3 of the body width at anus. Tail rounded, with three pairs of caudal pores.

Male morphologically similar to females with the posterior part of body more curved. Testis paired, very long and well developed, full of rounded or oblong sperms, measuring 35 x 41 or 41 x 59 μ m respectively. Spicules thick, ventrally curved with lateral guiding pieces ca. 20 μ m long; the adanal pair supplements is preceded by a row of 9-12 ventromedian supplements. Tail dorsally convex, ventrally concave with a bluntly rounded terminus, with three pairs of caudal pores.



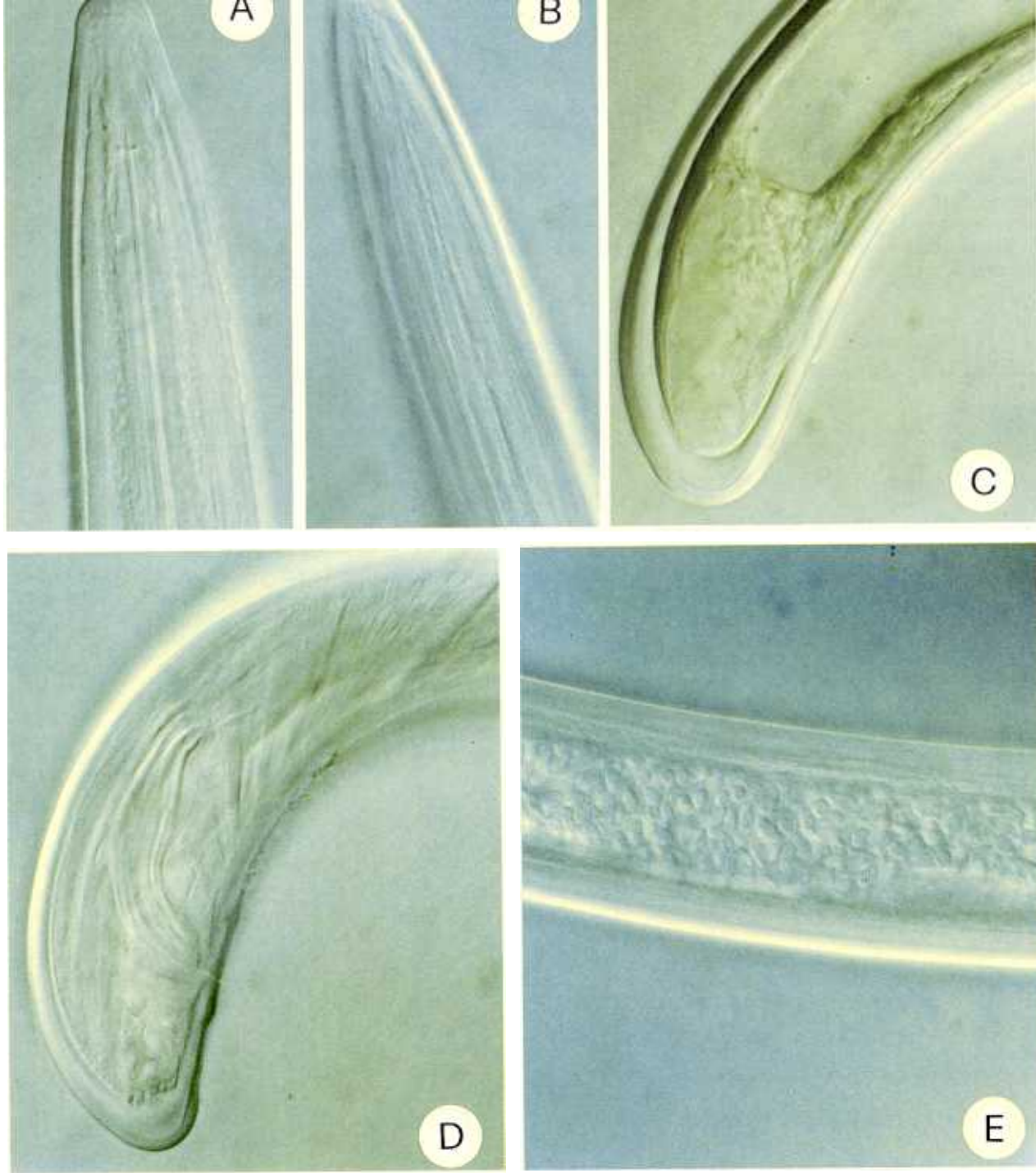


Fig. 2 - *L. athesinus* sp.n.: Female anterior region (A), with amphidial pouches (B); female (C) and male (D) posterior region; sperms in the testis (E).

Fig. 1 (Front page) - *Longidorus athesinus* sp.n.: A, Female lip region in lateral view; B and C, male posterior regions; D, posture of juvenile and adult stages; E and F, female posterior regions; G, H, I, and L, tails of I, II, III and IV juvenile stages respectively.

Juveniles similar to adult but smaller and more open C shaped.

Type habitat and locality: rhizosphere of cherry trees (*Prunus avium* L.) at Soave, Verona, Italy. Juveniles and two males were also found in the rhizosphere of *Vitis* sp. at Farra di Soligo, Treviso, Italy.

Differential diagnosis: *Longidorus athesinus* sp.n. is characterized by a total body length of ca. 5 mm, odontostyle length of ca. 90 µm, mid-body vulva, asymmetrically bilobed amphidial pouches, short rounded tail and presence of numerous males.

It closely resembles *L. elongatus* (de Man, 1876) Thorne et Swanger, 1936, but differs in having bilobed amphidial pouches (not bilobed in *L. elongatus*), thicker body and lower value of 'a' ratio (77 vs 92), shorter tail and higher 'c' value (122 vs 99) and more rounded tail extremity in the male.

L. athesinus differs from *L. profundorum* Hooper, 1965 in shorter body (5 vs 7 mm), asymmetrically bilobed amphidial pouches (symmetrically bilobed in *L. profundorum*), lower value of ratios 'a' and 'c' (77 vs 105 and 122 vs 154 respectively) and a rounded lip region (truncated in *L. pro-*

TABLE I - *Morphometrics of Longidorus athesinus* sp. n. (paratypes).

Stages	Means ± Standard Deviation (range)					
	L ₁	L ₂	L ₃	L ₄	♀ ♀	♂♂
n	4	5	8	7	20	20
L mm	1.7 ± 0.15 (1.6 - 1.9)	2.3 ± 0.18 (2.1 - 2.5)	2.8 ± 0.128 (2.6 - 2.9)	3.6 ± 0.25 (3.3 - 4.0)	4.9 ± 0.54 (3.7 - 5.8)	4.9 ± 0.44 (4.1 - 5.6)
a	59.4 ± 5.68 (51.3 - 64.6)	62.8 ± 2.3 (61.6 - 66.8)	64.7 ± 2.08 (61.6 - 67.0)	70.7 ± 5.05 (63.0 - 76.4)	74.8 ± 6.78 (56.2 - 88.1)	83.3 ± 6.95 (72.6 - 92.8)
b	6.7 ± 1.79 (6.3 - 9.2)	6.2 ± 0.71 (5.4 - 6.7)	7.8 ± 0.80 (7.1 - 9.0)	9.1 ± 1.08 (8.0 - 11.3)	11.4 ± 1.56 (9.7 - 12.4)	11.3 ± 1.02 (9.8 - 13.2)
c	46.1 ± 6.03 (37.3 - 50.3)	60.1 ± 6.24 (55.0 - 70.4)	68.7 ± 8.32 (62.4 - 86.6)	85.8 ± 7.44 (76.2 - 99.5)	119.4 ± 12.1 (99.3 - 144.5)	115.8 ± 10.51 (91.5 - 136.1)
c'	1.7 ± 0.08 (1.6 - 1.8)	1.3 ± 0.11 (1.2 - 1.3)	1.2 ± 0.15 (0.95 - 1.4)	1.0 ± 0.07 (0.9 - 1.1)	0.9 ± 0.11 (0.7 - 1.1)	0.9 ± 0.08 (0.8 - 1.0)
V	—	—	—	—	51 ± 1.77 (48 - 54)	—
Odontostyle µm	55.1 ± 3.62 (51.2 - 58.2)	64.8 ± 3.46 (58.8 - 67.1)	72.5 ± 7.3 (64.1 - 88.2)	78.6 ± 3.41 (72.9 - 82.3)	90.2 ± 3.0 (83.5 - 94.1)	88.6 ± 4.48 (80.6 - 96.5)
Odontophore µm	39.9 ± 4.07 (36.5 - 44.7)	45.1 ± 1.00 (43.5 - 45.9)	53.5 ± 2.04 (50.6 - 57.1)	54.1 ± 3.1 (50.6 - 58.2)	59.9 ± 4.57 (50.0 - 72.3)	59.3 ± 3.30 (52.9 - 67.1)
Replacement odontostyle µm	67.2 ± 6.85 (57.6 - 71.2)	77.8 ± 1.51 (77.1 - 80.0)	81.1 ± 6.65 (72.3 - 90.0)	90.9 ± 4.05 (87.1 - 96.5)	—	—
Oral aperture to guiding ring µm	21.5 ± 0.35 (21.2 - 21.8)	24.5 ± 0.80 (24.1 - 25.9)	26.5 ± 1.9 (24.7 - 30.0)	30.2 ± 1.21 (29.4 - 32.3)	34.3 ± 1.41 (32.3 - 37.6)	34.9 ± 2.11 (29.4 - 39.4)
Tail µm	37.8 ± 4.56 (31.8 - 42.9)	37.7 ± 3.3 (34.1 - 42.9)	40.8 ± 4.19 (33.5 - 46.5)	41.9 ± 3.27 (38.2 - 45.9)	41.9 ± 5.23 (32.9 - 51.8)	42.1 ± 3.32 (36.5 - 47.6)
J µm	7.5 ± 1.09 (5.9 - 8.2)	7.8 ± 1.02 (7.1 - 9.4)	8.1 ± 0.85 (7.1 - 8.8)	9.9 ± 1.12 (8.8 - 11.8)	12.2 ± 1.51 (9.4 - 14.7)	11.6 ± 1.72 (8.2 - 14.1)
Body diam. at lip region µm	8.8 ± 0.49 (8.2 - 9.4)	10.6 ± 0.42 (10.6 - 11.2)	11.7 ± 1.04 (10.0 - 12.9)	14.1 ± 0.92 (12.3 - 14.7)	16.7 ± 0.97 (14.0 - 18.2)	17.9 ± 1.40 (14.1 - 20.6)
Body diam. at guiding ring µm	16.6 ± 0.9 (15.3 - 17.1)	19.9 ± 0.50 (19.4 - 20.0)	21.5 ± 1.46 (18.8 - 23.5)	24.5 ± 1.51 (21.8 - 23.5)	28.9 ± 2.19 (26.5 - 35.3)	30.0 ± 2.21 (25.9 - 34.7)
Body diam. at base oesophagus µm	28.8 ± 0.98 (27.6 - 30.0)	34.7 ± 1.71 (33.5 - 37.6)	39.4 ± 2.34 (36.5 - 41.8)	45.5 ± 2.33 (41.2 - 48.2)	54.2 ± 2.74 (50.0 - 60.6)	51.7 ± 2.38 (48.2 - 55.9)
Body diam. at mid body or vulva µm	29.1 ± 1.94 (26.5 - 31.2)	36.0 ± 2.7 (34.1 - 40.6)	42.9 ± 2.18 (40.6 - 47.1)	50.8 ± 3.88 (46.5 - 57.1)	66.6 ± 4.24 (60.6 - 75.3)	58.5 ± 3.95 (50.0 - 64.7)
Body diam. at anus µm	22.3 ± 1.57 (20.0 - 23.5)	28.2 ± 0.92 (27.1 - 29.4)	33.7 ± 1.64 (31.2 - 35.9)	41.3 ± 2.35 (37.6 - 44.1)	45.4 ± 2.85 (40.6 - 50.6)	45.5 ± 3.26 (40.0 - 52.9)
Body diam. at beginning of J µm	12.8 ± 1.18 (11.8 - 14.1)	18.2 ± 0.73 (17.6 - 19.4)	21.1 ± 2.86 (17.1 - 24.7)	26.9 ± 3.3 (21.8 - 32.3)	30.2 ± 2.99 (23.5 - 34.1)	27.4 ± 3.3 (22.3 - 34.7)
Spicules µm	—	—	—	—	—	77.1 ± 5.38 (70.6 - 87.6)

fundorum). It also differs from *L. iuglandis* Roca, Lamberti et Agostinelli, 1984 in the shorter odontostyle (90 vs 120 μ m) and in the shape of lip region (anteriorly rounded in *L. iuglandis*), and from *L. belloi* Andr  s et Arias, 1988 in the shorter body (5 vs 6.8 mm), rounded lip region (truncated in *L. belloi*) and less rounded tail terminus.

Type material: holotype female, allotype male, 16 paratype females and 16 paratype males, in the collection of the Istituto di Nematologia Agraria del Consiglio Nazionale delle Ricerche, Bari, Italy; 2 female and 2 male paratypes, Nematology Department, Rothamsted Experimental Station, Harpenden, Herts, U.K.; 2 female and 2 male paratypes, Plant Nematology Laboratory Collection, United States Department of Agriculture, Beltsville, Maryland, U.S.A.

The authors gratefully acknowledge the technical assistance of Mr. V. Radicci.

Literature cited

- ANDR  S M. FE and ARIAS M., 1988 - *Longidorus belloi* n.sp. (Nematoda: Longidoridae) from Spain. *Revue N  matol.*, 11: 415-421.
- COIRO M.I., LAMBERTI F., EGGER E. and BORGO M., 1985 - Longidorid nematodes from vineyards of the province of Treviso, northeastern Italy. *Phytopathol. medit.*, 24: 180-182.
- HOOPER D.J., 1961 - A redescription of *Longidorus elongatus* (de Man, 1876) Thorne et Swanger, 1936 (Nematoda, Dorylaimidae) and descriptions of five new species of *Longidorus* from Great Britain. *Nematologica*, 6: 237-257.
- HOOPER D.J., 1965 - *Longidorus profundorum* n.sp. (Nematoda: Dorylaimidae). *Nematologica*, 11: 489-495.
- ROCA F., LAMBERTI F. and AGOSTINELLI A., 1984 - Three new species of *Longidorus* (Nematoda: Dorylaimida) from Italy. *Nematol. medit.*, 12: 187-200.