

Institute of Biology, Faculty of Science, University of Novi Sad, 21000 Novi Sad, Yugoslavia
Istituto di Nematologia Agraria, C.N.R. - 70126 Bari, Italy

LONGIDORUS PIUS SP. N. (NEMATODA: LONGIDORIDAE) FROM MACEDONIA

by

L. BARSÌ and F. LAMBERTI

Summary. *Longidorus pius* sp. n., a monosexual species found in the rhizosphere of *Carpinus orientalis* at Sveti Jovan Bigorski Monastery on the slope of Mount Bistra in Macedonia is described. The species is characterized by its medium size (L=5.0-6.8 mm) and thick body (a=58-68); anteriorly abruptly tapering and laterally rounded lip region, continuous with the rest of the body; pocket-shaped amphids which are not bilobed at the base; long odontostyle (130-147 μm); and short, rounded tail. *L. pius* sp. n. has four juvenile developmental stages; the first stage with digitate tail. *L. pius* sp. n. resembles *L. picenus* and *L. nevesi*.

A *Longidorus* species, unknown to the best of our knowledge, was extracted from soil samples collected in April 2000 from the rhizosphere of *Carpinus orientalis* at Sveti Jovan Bigorski Monastery on the slope of Mount Bistra (Macedonia). The population is described here as *L. pius* sp. n.

Material and methods

Nematodes were extracted by Cobb's wet sieving technique. Specimens were killed by hot FP 4-1 and processed and mounted on permanent slides in dehydrated glycerin. Measurements were made with an eye-piece scale, except body length, which was determined with the aid of a drawing tube and map measurer.

Description

***LONGIDORUS PIUS* sp. n.**

(Table I; Figs. 1-4)

Female *habitus* more or less ventrally curved with the curvature more pronounced posteriorly

in some specimens. Body of medium size, robust and cylindrical, tapering very gradually towards anterior. Cuticle 5-6 μm thick at mid-body, smooth in appearance, sometimes with very fine transverse striations which are always visible in the tail region. Lip region continuous with the rest of the body, tapering abruptly anteriorly and laterally rounded. Labial papillae prominent. Amphidial pouches large, pocket-shaped without distinct basal lobes. Odontostyle, odontophore and guiding ring typical of the genus. A mucro is visible at the base of the odontophore or just behind it. Oesophagus dorso-lateral, with the basal bulb occupying 1/4-1/5 of the total oesophagus length and measuring 108-141 μm long and 33-36 μm wide; it contains three glandular nuclei. Oesophago-intestinal valve cylindrical. Vulva a transverse slit, at mid-body; vagina extending to 40-60% of corresponding body diameter; thick walled *pars proximalis vaginae* 21-31 μm long. Gonads amphidelphic, of approximately the same length and structure; ovaries reflexed. Prerectum 222-510 μm long (n=10), rectum as long as 0.6-0.9 body diameter at anus. Tail bluntly conoid,

TABLE I - *Morphometrics of Longidorus pius sp. n. from Macedonia.*

	Holotype			Paratypes		
	♀	25 ♀♀	20 J ₁	21 J ₂	13 J ₃	9 J ₄
n						
L (mm)	5.32	5.89±0.47 (5.0-6.82)	1.40±0.16 (1.2-1.69)	2.17±0.27 (1.58-2.67)	3.19±0.28 (2.53-3.62)	4.35±0.32 (3.83-5.0)
a	59.5	63.9±2.34 (58.4-68.4)	45.4±2.14 (40-49.5)	46.3±2.44 (41.6-50.7)	50.8±2.0 (47.2-54.7)	56.9±3.64 (50.9-61.8)
b	10.1	11.2±0.99 (8.4-12.8)	4.4±0.42 (3.9-5.4)	5.8±0.72 (4.7-7.4)	7.3±0.6 (6.4-8.6)	8.5±0.61 (7.9-9.4)
c	118.9	135.3±10.10 (114.6-152.6)	30.1±2.36 (26.3-34.9)	57.7±7.18 (49-71.8)	80.9±6.4 (69.9-92.6)	97.4±11.05 (80.4-116.8)
c'	0.66	0.65±0.04 (0.57-0.74)	1.93±0.17 (1.67-2.3)	0.99±0.11 (0.79-1.18)	0.76±0.06 (0.68-0.86)	0.72±0.05 (0.64-0.79)
V	49.9	50.6±1.27 (48.0-54.5)	—	—	—	—
Odontostyle µm	134.6	136.5±4.45 (130-147.3)	71.9±1.68 (67.5-73.7)	82.7±1.87 (79.4-86.9)	104.2±3.54 (96.2-108.7)	123.2±3.72 (117.5-129.5)
Odontophore µm	80	80.6±3.84 (73.8-87.5)	47.5±1.98 (42.5-50)	57.6±4.45 (48.8-63.8)	67.1±3.77 (57.5-71.3)	74.9±2.21 (72.5-78.8)
Total stylet µm	214.6	217.1±6.02 (206.3-229.8)	119.3±2.83 (113.7-123.7)	140.3±4.43 (130-145.6)	171.3±4.97 (163.7-177.5)	198.1±5.73 (190-208.3)
Replacement odontostyle µm	—	—	83.9±2.28 (80-89)	101.6±5.29 (89.4-108.8)	117.5±1.66 (115-121.4)	133.1±3.30 (127.4-137.2)
Oral aperture to guiding ring µm	37.5	38.7±1.94 (35.0-41.9)	20.7±0.65 (19.4-21.9)	25.1±1.13 (23.1-27.5)	30.3±1.31 (27.5-33.1)	35.2±1.13 (33.1-36.3)
Tail µm	44.7	44.3±2.97 (39.3-50.3)	46.5±3.85 (40.3-52.5)	37.6±2.75 (32.1-41.8)	39.5±3.38 (34.3-45.3)	44±2.74 (40-48.9)
J (hyaline portion of tail) µm	16.9	17.5±0.87 (15.9-19.7)	17±1.17 (15-19.7)	10.7±1.21 (8.4-12.5)	11.9±1.16 (10-13.8)	14.4±1.48 (11.3-16.3)
Body diam. at lip region µm	22.5	21.7±0.72 (20.8-23.4)	9.8±0.18 (9.4-10)	12.6±0.42 (11.7-13.8)	15.9±0.92 (13.8-17.5)	18.7±0.53 (17.8-19.4)
Body diam. at guiding ring µm	42.5	43.4±2.14 (39.7-47.2)	17.3±0.45 (16.6-18.4)	22.4±1.16 (20.4-24.7)	30.4±1.30 (28.1-32.2)	36±4.20 (25.6-40)
Body diam. at base of oesophagus µm	76.3	78.0±3.76 (71.6-85.4)	30.3±2.58 (27.2-33.8)	42.7±4.75 (33.8-51.3)	55.5±3.99 (46.3-62.5)	67.5±2.69 (64.2-72.5)
Body diam. at mid-body or vulva µm	89.4	93.6±6.80 (80-105)	30.9±3.31 (27.2-37.5)	47.1±7.45 (33.8-60)	63±6.27 (46.3-72.9)	76.4±4.96 (71.3-85.3)
Body diam. at anus µm	67.5	68.7±3.76 (61.3-75)	24.3±2.89 (21.3-29.4)	38.4±4.14 (30-46.6)	51.9±4.28 (43.8-60.4)	61.4±3.54 (55-65.3)
Body diam. at beginning of J µm	47.5	47.1±2.54 (41.3-51.3)	12.2±0.83 (10.9-13.8)	24±3.28 (18.8-31.3)	34±3.13 (28.8-38.8)	40.5±2.61 (35-43.8)

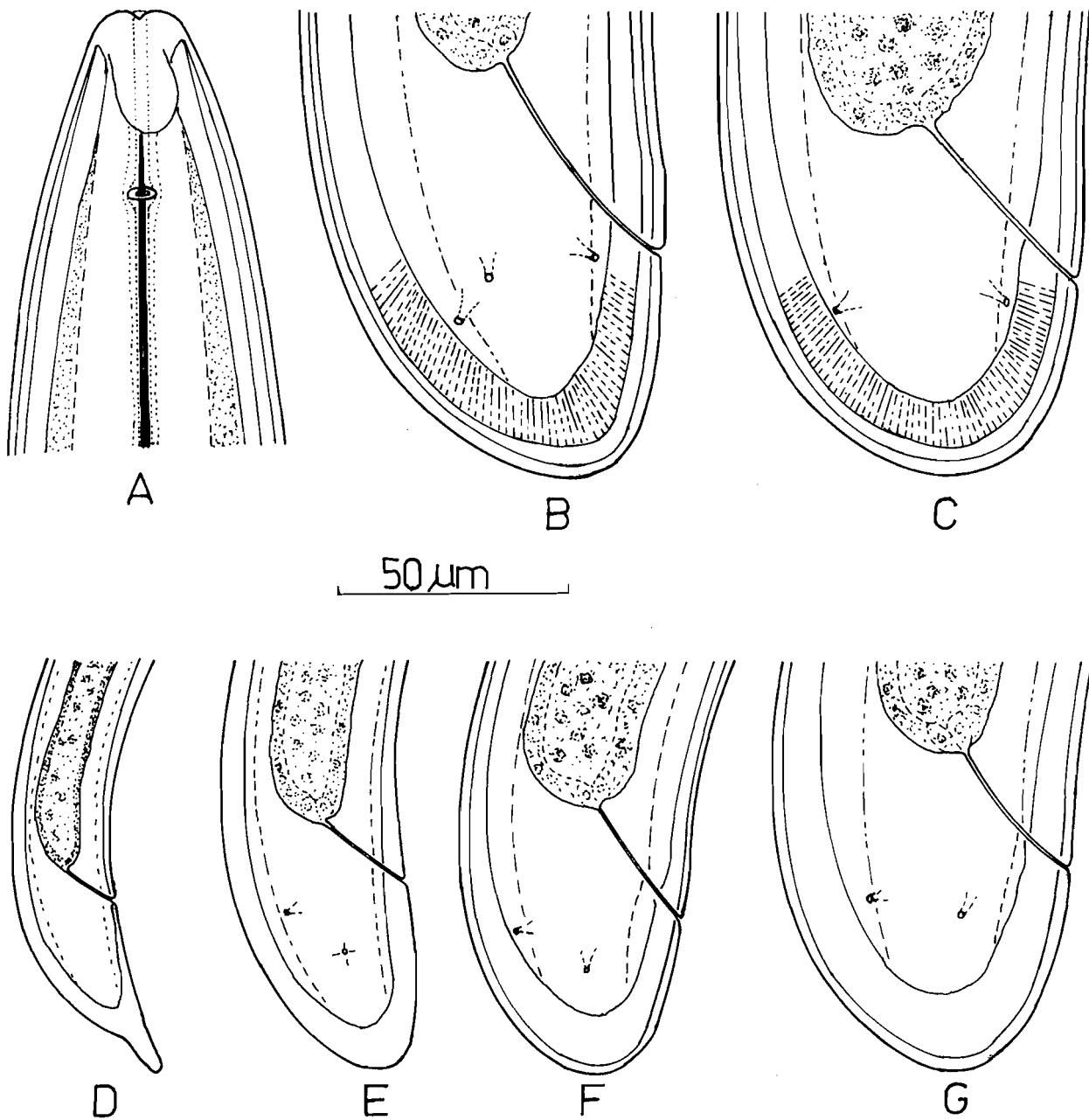


Fig. 1 - *Longidorus pius* sp. n.: A, female anterior region; B-C, female tail; D-G, tail of J₁, J₂, J₃ and J₄ stage, respectively.

rounded to almost hemispherical, bearing two or three caudal pores on each side.

Male not found.

Juveniles separate into four groups (Fig. 4). The first juveniles stage with digitate tail.

Type habitat and locality. Rhizosphere of *Carpinus orientalis* Mill. at Sveti Jovan Bigorski Monastery (UTM: DM60) on the slope of Mount Bistra, Macedonia.

Type material. Holotype, 10 female and 30

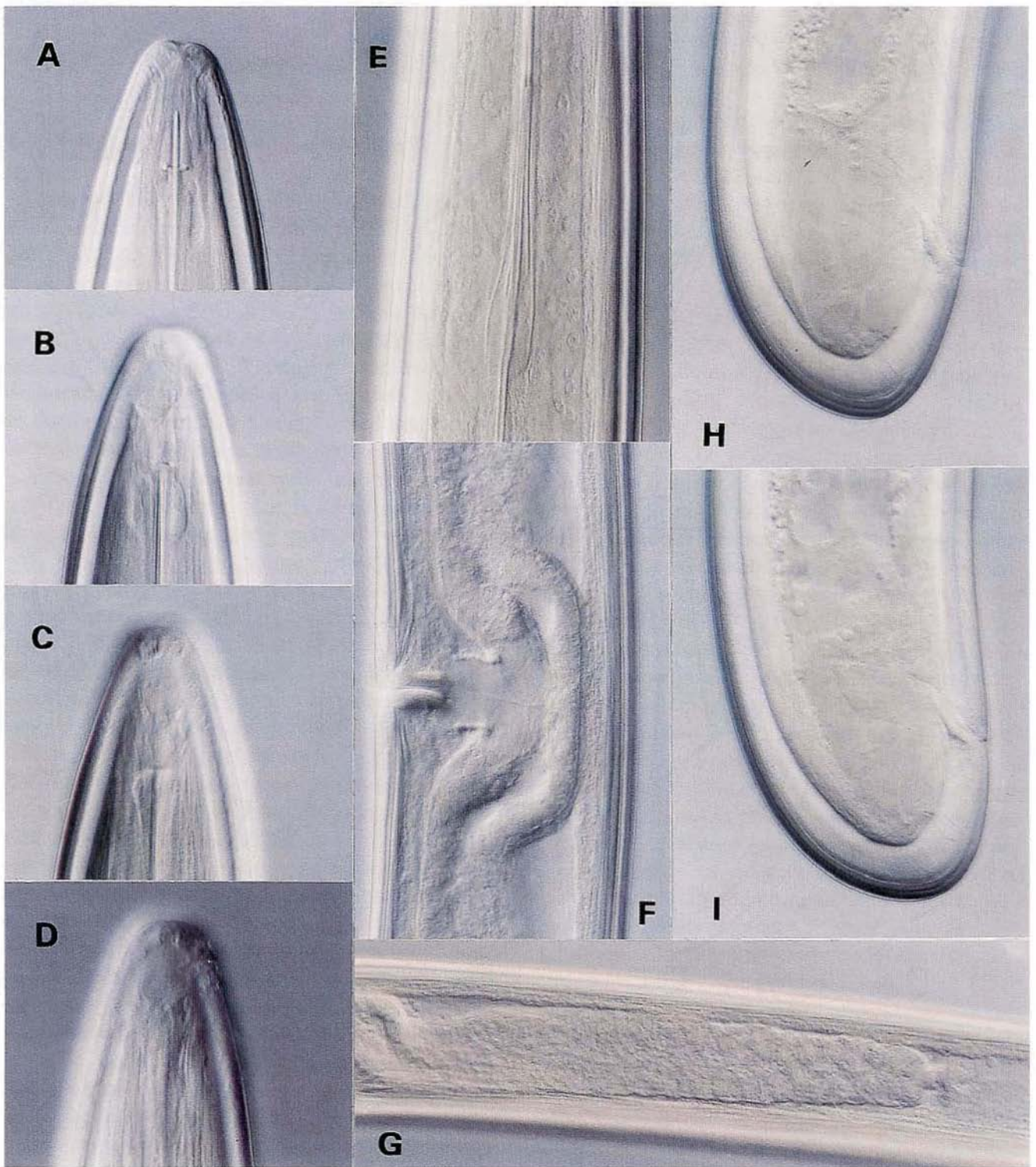


Fig. 2 - Photomicrographs of *L. pius* sp. n.: A, female anterior region; B-D, female amphidial pouch; E, junction of the odontostyle with the odontophore; F, vulva region; G, anterior uterus; H-I, female tail.

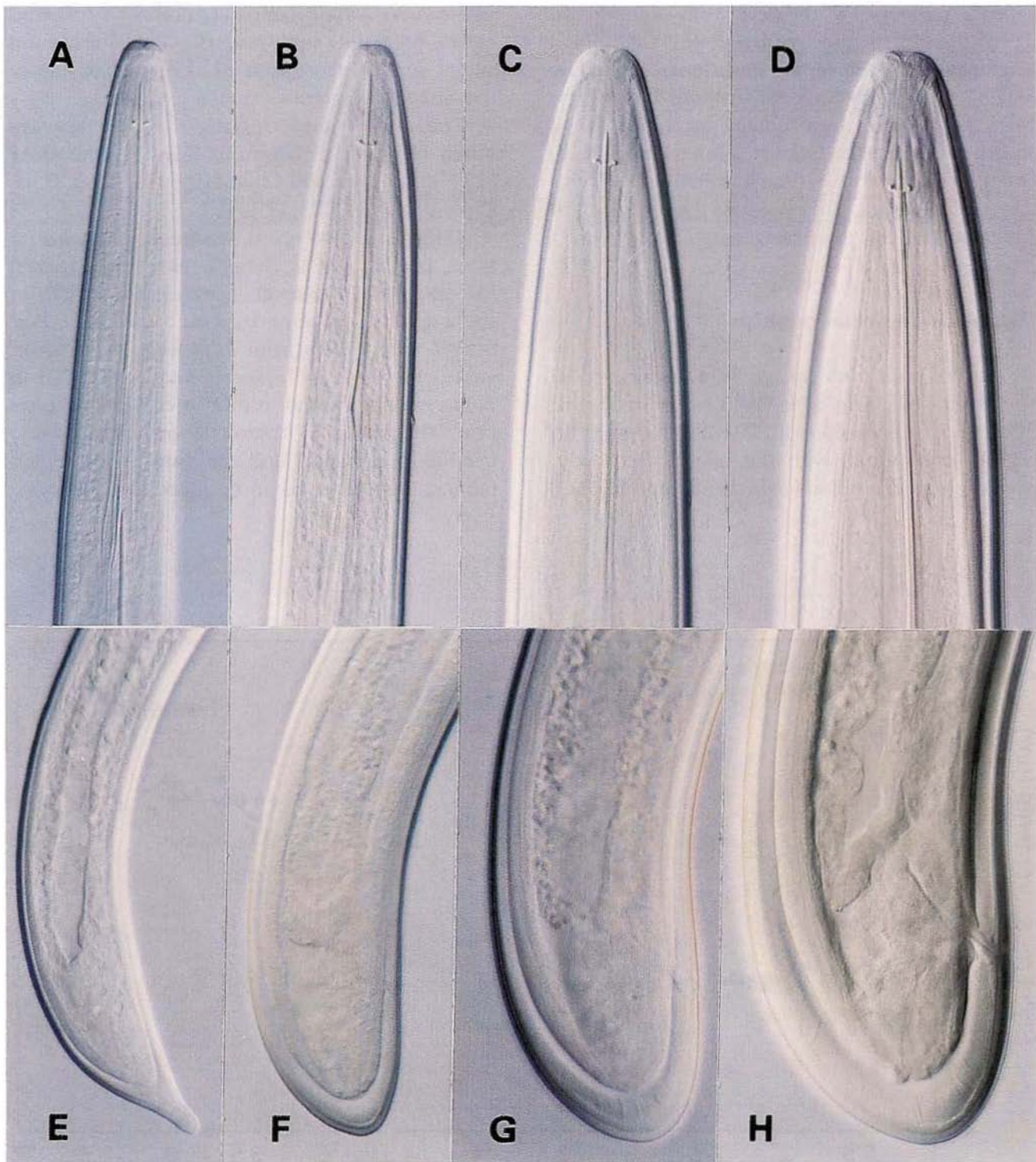


Fig. 3 - Photomicrographs of juvenile stages of *L. pius* sp. n. A-D, anterior region of J₁, J₂, J₃ and J₄ stage, respectively; E-H, tail of J₁, J₂, J₃ and J₄ stage, respectively.

juvenile paratypes in the collection of the Istituto di Nematologia Agraria del Consiglio Nazionale delle Ricerche, Bari, Italy; 11 female and 33 juvenile paratypes, Institute of Biology, Novi Sad, Serbia; two female paratypes, CABI Bioscience Centre, Egham, United Kingdom; two female paratypes, Plant Nematology Laboratory Collection, United States Department of Agriculture, Beltsville, Maryland, U.S.A.

Diagnosis and relationships

Longidorus pius sp. n. is a monosexual species of medium size (L=5.0-6.8 mm) and thick body (a=58-68), with laterally rounded lip region, continuous with the rest of the body, pocket-shaped amphids which are not bilobed

at the base, long odontostyle (130-147 μ m), and short, rounded tail; juvenile developmental stages separate into four groups; digitate tail in the first stage juvenile.

The code for identifying the new species when using the polytomous key of Chen *et al.* (1997) and Loof and Chen (1999) is: A 56, B 45, C 34, D 1, E 1, F 23, G 1, H 1, I 1.

Longidorus pius sp. n. is similar to *L. piceus* Roca, Lamberti *et* Agostinelli, 1985 and *L. nevesi* Macara, 1986. However, it differs from both in the amphids not being bilobed at the base. Further, *L. pius* differs from *L. piceus* in its lower value of a (80-90 in *L. piceus*) and c (155-201 in *L. piceus*) ratios and from *L. nevesi* in its shorter body (8 mm in *L. nevesi*), lower a ratio value (72-102 in *L. nevesi*) and less rounded lip region (almost hemispherical and pointed in *L. nevesi*).

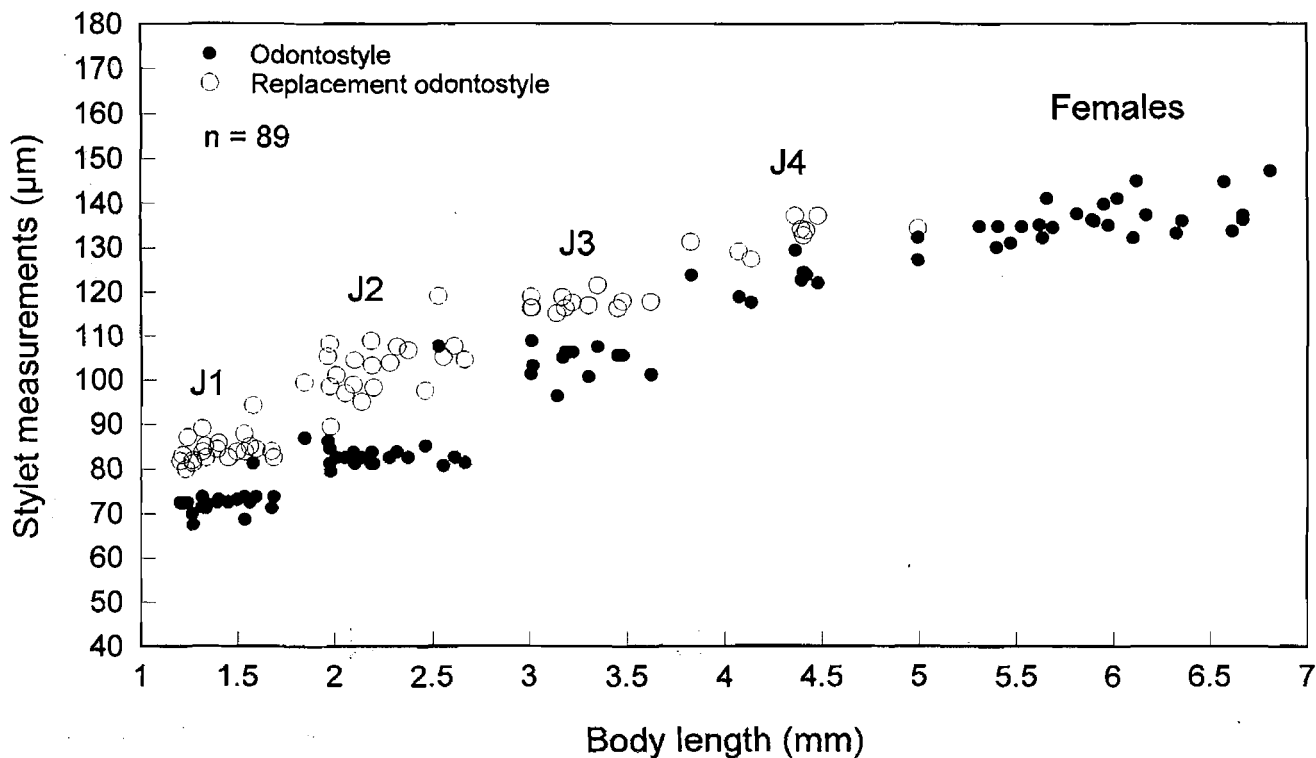


Fig. 4 - Scatter diagram separating juveniles and females of *L. pius* sp. n.

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