

Longidorus belloi n. sp. (Nematoda : Longidoridae) from Spain

M^a Fe ANDRÉS and María ARIAS

Instituto de Edafología y Biología Vegetal, Serrano, 115 bis, 28006-Madrid, Spain.

SUMMARY

Longidorus populations very close to *L. profundorum* Hooper, 1965 were found in several localities in Peninsular Spain. A morphometric study of these populations and a statistical analysis were carried out to compare them with *L. profundorum* populations. The results show that the Spanish populations are a different species which is described under the name of *L. belloi* n. sp. *L. belloi* n. sp. is close to *L. profundorum*, but differs in having asymmetrically bilobed amphidial pouches, in the number and position of body pores, shape and length of tail, a more anteriorly situated guide ring, a smaller c' , a larger c and shorter odontophore and odontostyle lengths, *L. belloi* n. sp. also resembles *L. goodeyi* Hooper, 1961, *L. macrosoma* Hooper, 1961 and *L. iuglandis* Roca et al., 1984. It differs from *L. goodeyi* in odontostyle length, shape of lip and tail regions and occurrence of males; from *L. macrosoma* in body and odontostyle lengths, oral aperture to guide ring distance (oa-gr), and amphidial pouch shape, finally, from *L. iuglandis* it differs in odontostyle length, oa-gr and lip region shape.

RÉSUMÉ

Longidorus belloi n. sp. (Nematoda : Longidoridae) provenant d'Espagne

Des populations de *Longidorus* très proches de *L. profundorum* Hooper, 1965 ont été récoltées dans plusieurs localités de l'Espagne péninsulaire. Une étude morphométrique de ces populations, suivie d'une analyse statistique, ont permis leur comparaison à des populations de *L. profundorum*. Les résultats montrent que les populations espagnoles appartiennent à une espèce différente, décrite ici sous le nom de *L. belloi* n. sp. Cette nouvelle espèce, proche de *L. profundorum*, en diffère par les poches amphidiennes asymétriquement bilobées, le nombre et la disposition des pores du corps, la forme et la longueur de la queue, le guide annulaire situé plus en avant, le coefficient c' plus faible, le coefficient c plus élevé, l'odontophore et l'odontostyle plus longs. *L. belloi* n. sp. ressemble également à *L. goodeyi* Hooper, 1961, *L. macrosoma* Hooper, 1961, *L. iuglandis* Rocca et al., 1984. Il diffère de *L. goodeyi* par la longueur de l'odontostyle, la forme des régions labiale et caudale et la présence de mâles; de *L. macrosoma* par les longueurs du corps et de l'odontostyle, la distance entre l'ouverture orale et le guide annulaire (oa-gr) et la forme des poches amphidiennes; enfin de *L. iuglandis* par la longueur de l'odontostyle, « oa-gr », et la forme de la région labiale.

In the nematological study of an experimental cereal field in "La Higuera", Santa Olalla, Toledo, Spain, a *Longidorus* population was found in the clay horizon at about 50 cm depth. The species seemed to be *L. profundorum* Hooper, 1965 as was reported earlier (Andrés & Arias 1982, 1985; Blevé-Zacheo, Andrés & Arias, 1984; Andrés & Bello, 1985; Arias, Andrés & Navas, 1985), where some aspects of its ecology and biology were studied.

During subsequent surveys throughout Peninsular Spain additional populations of the same species were found, enabling morphometric study of these populations and, using statistical analysis, comparison with *L. profundorum* populations from England (data kindly supplied by Dr. D. J. Hooper).

Materials and methods

Specimens were separated from soil by the Flegg (1967) method, killed, fixed and mounted in dehydrated glycerine after De Grisse (1969).

Six Spanish populations were studied (Populations 2,

3, 4, 5, 6 and 7) (Tab. 1 and 2), three of them (Pop. 2, 3 and 4) were statistically compared with the morphometric data of *Longidorus profundorum* type population (Pop. 0) and another English population (Pop. 1).

POPULATIONS STUDIED

0. - Type population of *L. profundorum* : East Malling Research Station, Kent, England; soil around pear tree roots (Courtesy D. J. Hooper).
1. - Slapton, Bucks, England; soil under rough grass and bushes (Courtesy D. J. Hooper).
2. - Santa Olalla, Toledo, Spain; rotation experimental field with wheat, barley and vetch.
3. - Fuentelahiguera, Guadalajara, Spain; associated with furze.
4. - Gredos Mountain, Región Central, Spain; permanent pasture.
5. - La Fuencisla, Segovia, Spain; soil around *Ulmus* sp. roots.
6. - Candelario, Salamanca, Spain, soil, woodland of *Quercus pyrenaica* L.

Table 1
Means, ranges and S. D. (when n > 10) of morphometric
characters of adults of *Longidorus profundorum* (two populations) and
L. belloi n. sp. (six populations).

Population	<i>Longidorus profundorum</i>				<i>Longidorus belloi</i> n. sp.										
	0		1		2		3		4		5		6		7
	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♀	♂	♀	
n	24	20	13	12	25	27	15	6	23	14	9	7	5	8	
L (mm)	7.0 ± 0.2 (6.0-8.3)	6.9 ± 0.1 (5.9-7.6)	7.1 ± 0.2 (6.0-8.1)	6.7 ± 0.1 (5.7-7.1)	7.2 ± 0.2 (5.4-8.8)	7.2 ± 0.1 (5.5-8.4)	6.7 ± 0.2 (5.3-8.0)	6.9 (5.7-7.4)	6.7 ± 0.5 (5.2-8.6)	7.4 ± 0.2 (6-8.5)	6.4 (5.5-7.3)	7.0 (6.3-7.3)	7.3 (6.6-8)	6.2 (5-7.6)	
a	105 ± 1.9 (81-119)	120 ± 2.2 (102-138)	101 ± 2.5 (83-114)	114 ± 2.6 (98-131)	108 ± 2.3 (84-130)	117 ± 3.3 (85-168)	98 ± 3.4 (78-118)	98.3 (86-112)	96.8 ± 2.8 (74-132)	103.5 ± 2.2 (91-114)	88.7 (81-99)	94.0 (80-107)	96.2 (94-99)	87.5 (73-101)	
b	13.9 ± 0.5 (11.1-19.1)	13.9 ± 0.5 (10.2-19.4)	13.5 ± 0.5 (11.6-17.8)	13.5 ± 0.2 (11.7-14.6)	15.4 ± 0.3 (12.5-19)	15.3 ± 0.3 (14-20)	18.7 ± 1 (13-27.1)	18.4 (13-23)	15.8 ± 0.4 (12.6-20)	15.7 ± 0.3 (12.4-17.4)	13.6 (12.6-15.2)	14.7 (13.4-15.7)	14.7 (13.4-17)	13.5 (9.3-15.6)	
c	154 ± 2.6 (132-187)	157 ± 3 (138-181)	156 ± 7.1 (124-222)	154 ± 5.8 (125-189)	190 ± 6.7 (128-243)	174 ± 5.2 (138-244)	172 ± 6 (119-226)	162 (144-183)	171 ± 7 (112-214)	177 ± 4.6 (146-205)	145 (107-186)	179 (160-206)	179 (140-181)	167 (130-233)	
c'	0.9 ± 0.02 (0.7-1)	0.9 ± 0.01 (0.7-1)	0.9 ± 0.02 (0.7-1)	0.9 ± 0.03 (0.7-1)	0.7 ± 0.02 (0.5-1.1)	0.9 ± 0.02 (0.7-1.1)	0.7 ± 0.03 (0.6-1)	0.9 (0.8-1)	0.7 ± 0.02 (0.65-0.9)	0.8 ± 0.02 (0.7-1)	0.9 (0.7-1)	0.7 (0.6-0.8)	0.9 (0.8-1)	0.7 (0.5-0.9)	
V	52.6 ± 0.4 (50-58)		49 ± 0.6 (45-52)		52.4 ± 0.5 (48.7-57.7)		52.7 ± 0.6 (48.4-58)		52.9 ± 0.5 (50.2-55.9)		54.7 (52.3-57.7)	53.6 (50-55.5)		51.7 (49-54)	
Body width at guide ring (µm)					24.4 ± 0.3 (21.7-28.7)	24.5 ± 0.5 (19-27)	24.0 ± 0.4 (21.7-27)	26.7 (25.2-27.8)	25.5 ± 0.3 (23.5-28.5)	26.0 ± 0.5 (24.3-28.6)	25.9 (24.3-28.7)	26.3 (25.2-27.8)	26.6 (24.3-28.7)	23.8 (20.8-27.8)	
Body width at pharynx base (µm)					63.5 ± 1.4 (50-75)	60.3 ± 2.1 (48-73)	56.7 ± 1.1 (53-62.6)	59.3 (52.6-63.2)	61.3 ± 1.3 (53.2-70.2)	59.9 ± 0.8 (55.3-63.8)	60.1 (54.7-63.2)	65.1 (56.8-71.6)	63.2 (58.9-67.3)	61.7 (50.5-73.7)	
Body width (µm)	67.5 ± 1.3 (57.3-77.3)	57.2 ± 1.1 (67.7-48.9)	70.2 ± 1.2 (79.6-63.7)	59.1 ± 0.6 (57.3-63.8)	67.1 ± 1.7 (55.3-82)	62.8 ± 1.1 (53.2-79.8)	70.1 ± 1.9 (53.2-79.8)	70.7 (66-68.7)	71.0 ± 1.6 (59.6-85.1)	71.4 ± 1.3 (63.8-78.7)	68.8 (61.7-89.4)	73.8 (63.8-80.8)	75.7 (70.9-79.6)	70.7 (60-85.1)	
Anal body width (µm)	51.2 ± 0.7 (45.2-57)	49.1 ± 0.8 (43.5-56.6)	52.7 ± 0.7 (46.5-58.2)	52.3 ± 0.2 (50.5-54.4)	51.4 ± 1.1 (40.4-64)	43.8 ± 0.6 (38.3-48.9)	52.8 ± 1.2 (44.7-59.6)	46 (42.5-51.1)	52.4 ± 1.3 (40.4-63.8)	48.4 ± 1 (42.5-55.3)	50.8 (46.8-61.7)	53.8 (51.1-57.4)	49.9 (47.3-53.7)	51.8 (48.3-57.8)	
Tail length (µm)	45.9 ± 0.8 (40.4-51)	43.8 ± 0.6 (50-40.1)	45.8 ± 1.2 (54.6-36.4)	43.9 ± 1.3 (36.4-51)	38.9 ± 1.3 (29.7-53.2)	41.7 ± 0.9 (32-48.9)	40.8 ± 2 (39.8-59.6)	43.2 (34-53.2)	39.5 ± 1.4 (29.8-53.2)	41.9 ± 1.4 (42-53.2)	44.5 (34-51.1)	38.9 (34-44.7)	46.9 (40.8-51.6)	37.8 (26.7-45.7)	
Odontostyle (µm)	96.9 ± 0.6 (91-103.7)	96.6 ± 0.5 (91.5-100.1)	94.7 ± 0.9 (88.4-101.1)	98.6 ± 0.8 (93-103.1)	93.9 ± 1 (84.6-107)	93.7 ± 1.2 (85.5-103.4)	92.6 ± 1 (86.2-97.8)	96.9 (87.9-105)	93.4 ± 1.3 (74.8-101.7)	93.9 ± 1 (86.6-98.2)	97.2 (94.7-100.8)	95.0 (87.8-102.6)	98.2 (94-101.7)	91.9 (86.3-101.7)	
Odontophore (µm)	59.6 ± 1.1 (48.6-68.6)	61.7 ± 1 (54.8-72.8)	64.0 ± 2.5 (48.2-72.8)	61.8 ± 1.4 (54.6-69.2)	54.5 ± 0.5 (47-60.8)	54.0 ± 0.5 (50-57.4)	55.2 ± 1.9 (42-68.4)	54.3 (48.7-57.4)	46.5 ± 1 (39-56.5)	50.2 ± 1.5 (42.5-61.7)	46.7 (43.8-54)	41.8 (34.7-47.8)	46.7 (37.4-54.7)	53.1 (49.1-57.7)	
Oral aperture to guide ring (µm)	37.4 ± 0.3 (34.5-40.9)	37.3 ± 0.3 (36.1-40)	36.7 ± 0.5 (34.4-39.4)	36.3 ± 0.6 (32.3-39.4)	29.9 ± 0.6 (23.9-35.8)	31.1 ± 0.5 (25.6-34.2)	29.2 ± 1 (22.4-34.4)	33.3 (30.1-36.2)	30.7 ± 0.4 (27-34.7)	32.4 ± 0.8 (27.8-37.4)	32.2 (29.5-34)	31.2 (29.5-34.7)	32.1 (29.5-34.7)	31.7 (30-34.1)	

7. - Pruna, Sevilla, Spain; soil around *Quercus rotundifolia* L. roots.

A Student's *t*-test was carried out in order to determine if the observed differences among the mean values of morphometric characters in the considered popu-

lations (two by two) were statistically significant. The morphometric variability of the populations was then analyzed by the computer program BMDP7M "Stepwise Discriminant analysis" (Dixon, 1983).

Table 2
Means, ranges and S. D. (when n > 10) of morphometric characters of juvenile stages of *Longidorus belloii* n. sp. (five populations)

Population	2				4			5	6		7	
Stage	L ₁	L ₂	L ₃	L ₄	L ₂	L ₃	L ₄	L ₄	L ₃	L ₄	L ₃	L ₄
n	10	24	32	20	5	8	23	7	5	4	1	3
L	1.7 ± 0.6 (1.5-2.1)	2.7 ± 0.1 (1.9-3.7)	4.1 ± 1.1 (3.3-5.4)	5.3 ± 0.1 (4.6-6)	3.8 (3.5-4.4)	4.2 (3.7-5.3)	5.1 ± 0.1 (3.9-6.1)	5.2 (4.5-7.2)	4.9 (3.8-5.4)	5.8 (4.8-6.7)	3.7	4.8 (4.4-5.2)
a	69.2 ± 1.9 (59-76)	70.5 ± 3 (60-82)	82.5 ± 1.5 (65-96)	89.5 ± 2.2 (74-104)	76.6 (66-92)	76.1 (56-91)	81 ± 2.1 (61-99)	87 (79-99)	79.6 (72-90)	103 (89-104)	66.7	91.3 (87-95)
b	6.5 ± 0.2 (5.4-7.6)	8.4 ± 0.2 (8-11)	10.7 ± 0.2 (9-13.5)	12.7 ± 0.3 (11.6-15.6)	10.7 (9.9-10.5)	11.7 (9.3-13.4)	12.6 ± 0.3 (9.6-15.6)	12 (11-13.7)	12.2 (10.2-14)	13.1 (11.4-14.2)	9.3	13.7 (12.2-15)
c	48 ± 2.8 (37-68)	69 ± 3.2 (45-97)	110 ± 4 (78-137)	137 ± 3.6 (121-187)	103 (92-147)	99 (83-126)	131 ± 5 (85-169)	127 (102-159)	122 (109-145)	142 (132-148)	104	196 (87-96)
Odontostyle (µm)	57 ± 0.7 (53.4-61.2)	63 ± 1.8 (57.3-70.2)	75 ± 0.7 (68-83.2)	85 ± 0.9 (76-90.4)	69 (63.2-77)	74 (69.8-82.1)	83 ± 0.7 (81.7-88.7)	86 (77.7-88.8)	78.2 (70-83.5)	86.6 (84-90)	65.9	83 (82.4-88.8)
Replacement odontostyle (µm)	63.3 ± 1.1 (59.4-69.8)	74.2 ± 0.8 (67.2-82.8)	85 ± 0.7 (73.2-92.2)	94.6 ± 0.9 (87.8-102.6)	79.3 (77.7-81.2)	84.3 (81.2-89.6)	94 ± 0.7 (88-101.7)	100 (91.3-102.1)	85.5 (82.6-87.8)	97.3 (95.6-99.1)	81.9	95.3 (94-95.7)

Results

Figure 1 summarizes the results obtained in applying the *t*-test to morphometric characters of females in the five studied populations. The three Spanish populations

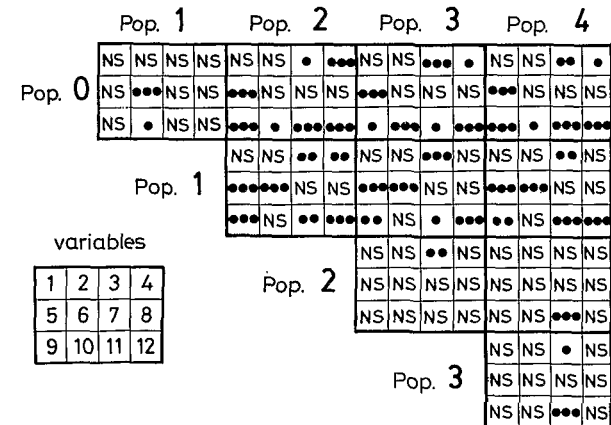


Fig. 1. Significant ($P = 5\%$ •, $P = 1\%$ •• and $P = 0.1\%$ •••) and non significant (NS) differences between morphometric means of measurement of *L. profundorum* populations and Spanish populations (= *L. belloii* n. sp.). Variables: 1. — body length; 2. — "a"; 3. — "b"; 4. — "c"; 5. — "c'"; 6. — "V"; 7. — body width; 8. — anal body width; 9. — tail length; 10. — odontostyle length; 11. — odontophore length; 12. — "oa-gr".

show some significant differences, among themselves, in odontophore length and *b* index value. The two *L. profundorum* populations show significant differences, between themselves, in stylet length and *V* index.

However, Spanish and *L. profundorum* populations differ significantly in at least five variables: *b* and *c'* indices, tail and odontophore lengths and guide ring distance from the anterior end (oa-gr). Females of Spanish populations have a shorter tail which is shown in *t*-test significant values for *c'* and tail length; also oa-gr distance is significantly longer in *L. profundorum* populations than in the Spanish ones. Moreover, *L. profundorum* type population (Pop. 0) has a longer stylet than the rest and Pop. 1 females have a more anterior vulva than all other populations.

The Discriminant analysis (Blackith & Reyment, 1971) has particular value in groups in which heavy reliance is placed on morphometrics features in differentiating species, as is the case in the genus *Longidorus*. It discriminates between two or more closely related groups by means of linear functions based on measurements (characters) of these groups. Individual cases are then assigned to a group based on the discriminating ability of the new functions.

This analysis was used for testing the two preclassified groups (by *t*-test); the first group includes *L. profundorum* populations and the second the Spanish ones. For this purpose five characters were chosen (*c*, *c'* index, tail and odontostyle lengths and oa-gr distance) that showed significant values in *t*-test.

The analysis shows a very significant discrimination between the two groups ($F = 120.42$; f.d. = 2 and 97; $P < 0.001$). Moreover, it was obtained a high percentage of correct identification of individuals into the two groups with values of 100 % and 95,2 % for *L. profundorum* populations and Spanish ones respectively, as well as a 97 % for the total specimens (Tab. 3).

Table 4 gives *F* values for each five characters. This shows that oa-gr distance and tail length contributed most to discrimination into two groups.

Table 3

Classification matrix for the studied specimens

Group	Numb. of specimens classified into group	Percent correct	
	L. profundorum pop.	Spanish pop. (<i>L. belloi</i> n. sp.)	
<i>L. profundorum</i> pop.	37	0	100
Spanish pop (<i>L. belloi</i> n. sp.)	3	60	95.2
Total	40	60	97

Table 4

The *F* values (f.d. = 1 and 99) for the five variables used in discriminant analysis of five populations of *Longidorus*.

<i>c</i>	14.905
<i>c'</i>	3.311
odontostyle	7.026
oa-gr	198.784
tail length	26.860

Figure 2, represents the specimens distribution of the five populations, that are clearly divided into the two previously established groups.

Consequently with this statistical study, the Spanish populations represent a group significantly different from that of *L. profundorum* populations; the most important characters for their differentiation are : oa-gr distance, tail length, *c'*, *c* and odontostyle length.

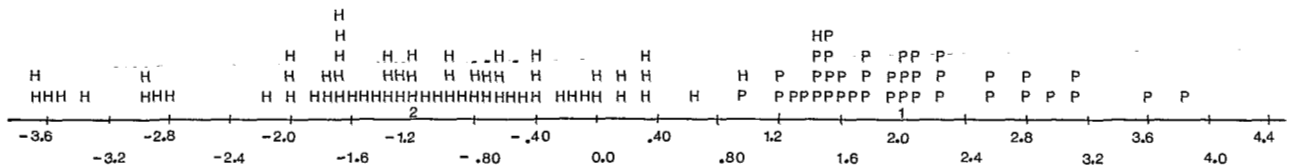


Fig. 2. Frequency distribution of values of discriminant function in the two groups, *L. profundorum* populations (P) and the Spanish populations (= *L. belloi* n. sp.) (H).

Moreover, morphological differences such as amphidial pouches and tail shapes and number and position of body pores, have been observed between both groups.

These differences are at the level of those between certain other *Longidorus* species. Therefore describing these populations as a separate species seems justified. It is described below under the name of *L. belloi* n. sp. after Dr. Antonio Bello, who supplied the first population of this species and drew our attention to it.

***Longidorus belloi* n. sp.**
(Fig. 3)

MEASUREMENTS

Females and males : see Table 1.

Juveniles : see Table 2.

Holotype (female) : L = 6.0 mm; a = 94; b = 14.5; c = 176.5; *c'* = 0.7; V = 53.8; body width at guide ring = 27 μm; body width at pharynx base = 53.2 μm; body width = 63.8 μm; anal body width = 46.8 μm; tail length = 34.0 μm; odontostyle = 94 μm; odontophore = 52 μm; oa-gr = 30.4 μm.

Allotype (male) : L = 7.4 mm; a = 116; b = 16.2; c = 174.1; *c'* = 0.9; T = 41.1; body width at guide ring = 22.5 μm; body width at pharynx base = 55.3 μm; body width = 63.8 μm; anal body width = 44.7 μm; tail length = 42.5 μm; odontostyle = 89.4 μm; odontophore = 60.2 μm; oa-gr = 32.2 μm; spicule = 71 μm.

DESCRIPTION

Female : Body long and stout, almost cylindrical, tapering in both extremities, specially in the anterior end. When killed by heat, the body varies from almost straight, ventrally coiled in the posterior end, to curved ventrally in "C" more strongly in caudal end. Body width at vulva level is 4/3 of body width at anus. Cuticle thin, 3 μm in mid body, 4.7 μm at neck, 5.6 μm in tail base and 12.9 μm in the terminus, where only the inner layer is swollen, fine radial striations are observed only in the terminus. There are three to seven lateral pores in the anterior part of body and two on the tail; two to three lateral pores usually located anterior to spear

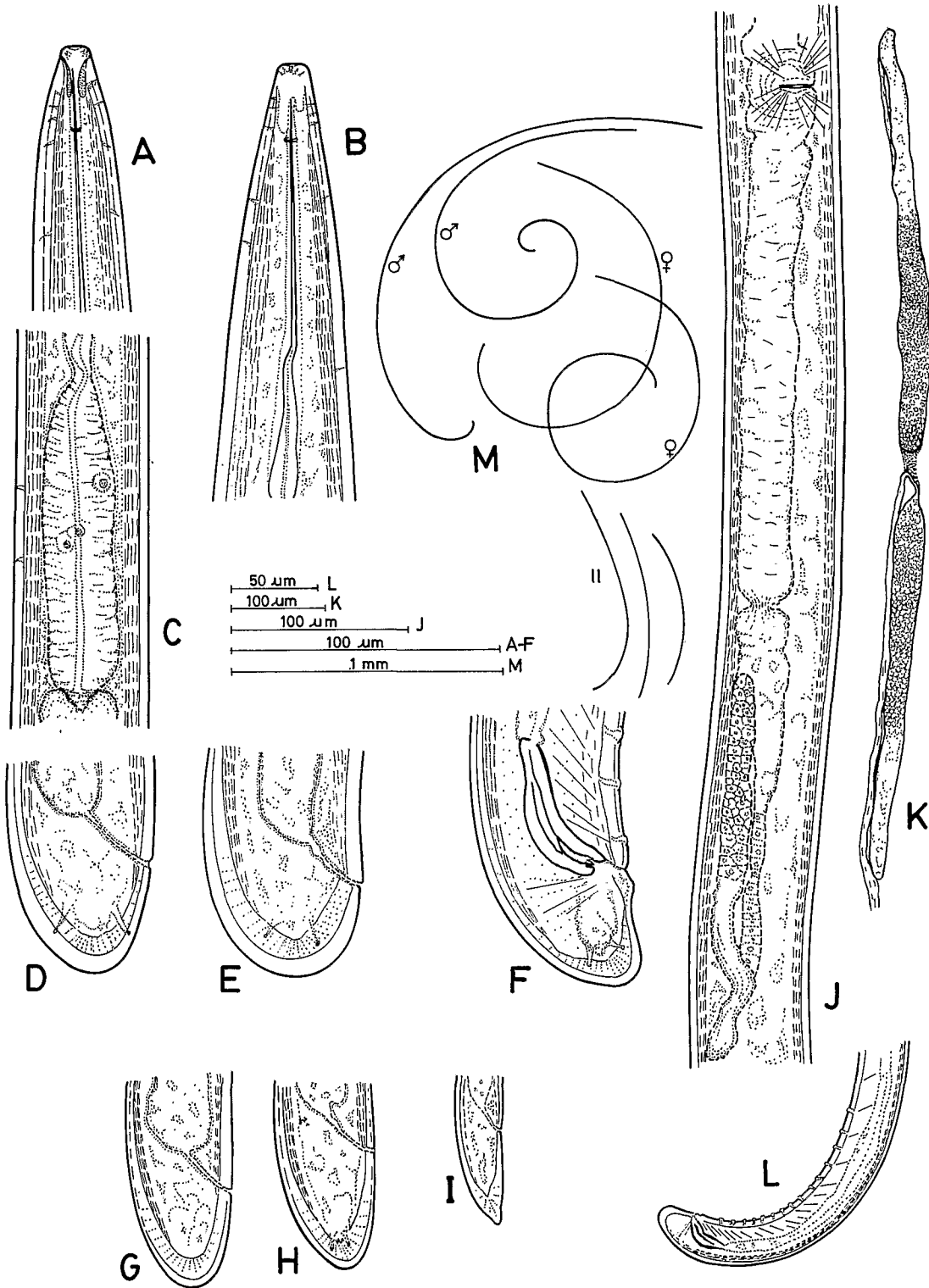


Fig. 3. *Longidorus belloi* n. sp. A : Female, anterior part of body (lateral); B : Female, anterior part of body (ventral); C : Oesophageal bulb; D, E : Female tails; F : Male tail; G, H, I : Tails of 3d, 2d and 1st juvenile stages, respectively; J : Sexual system of female; K : Sexual system of male; L : Posterior part of male; M : Relaxed body habit of females, males and juveniles.

guiding ring level. Three to five ventral pores and three to five dorsal pores (within the length of the odontostyle). Lip region anteriorly truncate, sometimes seems to be concave, 9.5 µm wide, continuous with or slightly differentiated from body contour. Amphids pouch-like, large, asymmetrically bilobed, with the ventral lobe longer than the dorsal (in lateral view); amphid aperture a small pore. Stylet typical of the genus, in two parts, odontostyle long and thin, often slightly curved; odontophore, less refractive, about half the length of the odontostyle. Junction between odontostyle and odontophore plain, not forked. Stylet guiding ring situated at 30.4 µm from anterior end. Oesophagus typical of the genus with anterior part narrow, cylindrical and more or less coiled; oesophageal bulb measuring 148 × 28 µm, about a 1/3 of oesophageal length; dorsal oesophageal gland nucleus located at 13 µm from gland orifice; nuclei of subventral glands slightly anterior to mid-length of the bulb. Cardia large, heart shaped. Vulva a transverse slit, slightly posterior to mid-body. Vagina reaching about 1/2 of body width. Genital branches amphidelphic and reflexed, similar in structure and length. Uterus and oviduct long, cylindrical, without sperm. Oocytes in one row at the ovary-oviduct junction. Tail short hemispherical or bluntly rounded (though two specimens appeared with a cylindrical bluntly rounded tail).

Male : Body curved strongly in caudal region. Anterior part similar to that of female. Tail bluntly rounded, slightly concave on ventral side, cuticle thick, subcuticle with fine striations. Two pairs of caudal pores. Spicules curved, 30.4 µm along their median line. Lateral guiding pieces 14.8 µm long with bifid distal ends. Ventromedian supplements 16 (13-17) in number arranged in a single row apart from the first adanal pair.

Juveniles : Morphologically similar to adults but smaller and with conoid tail, first stage tail elongate conoid with rounded digitate terminus.

TYPE MATERIAL

Holotype, 16 paratypes females, allotype and 10 paratypes males in the collection of the Instituto de Edafología y Biología Vegetal. Madrid, Spain. Two paratypes in the Laboratoire des Vers, Muséum national d'Histoire naturelle, Paris, France; two paratypes in Nematology Department, Rothamsted Experimental Station, Harpenden, Herts, England; two paratypes in Lab. voor Nematologie, Landbouwhogeschool, Wageningen, The Netherlands.

TYPE HABITAT AND LOCALITY

Soil under permanent pasture at Gredos Mountain. Region Central. UTM : 30 T UK 0858, Spain.

DIAGNOSIS AND RELATIONSHIPS

L. belloi n. sp. is characterized by the shape of the

amphids (unequally bilobed); truncated lip region; guiding ring situated at 30.7 µm (27-34.7 µm) from anterior end; odontostyle length 93 µm (79-102 µm); presence of pores in the anterior region and short rounded tail; males are common.

Longidorus belloi n. sp. is close to *L. profundorum* Hooper, 1965. *L. belloi* n. sp. differs in having asymmetrically bilobed amphidial pouches (symmetrically bilobed in *L. profundorum*), two or three lateral pores anterior to guiding ring, dorsal and ventral pores in esophageal region (very few or none in *L. profundorum*) and more rounded tail. Furthermore, the statistical study shows that it differs significantly from *L. profundorum* in a more anteriorly situated guide ring (31 µm vs 37.4 µm), a shorter tail length (39.5 µm vs 45.9 µm), a smaller *c'* (0.7 vs 0.9), a larger *c* (171 vs 154), a shorter odontophore (46.4 µm vs 59.6 µm) and a slightly shorter odontostyle (93.4 µm vs 97 µm). The tail of the first stage juvenile is shorter and less digitate than in *L. profundorum*.

L. belloi n. sp. also resembles *L. goodeyi* Hooper, 1961; *L. macrosoma*, Hooper, 1961; and *L. iuglandis* Roca et al., 1984. It differs from *L. goodeyi* in having a shorter odontostyle (93.4 µm vs 101 µm), a narrower truncate lip region, a more rounded and shorter tail and occurrence of males (absent in *L. goodeyi*). It differs from *L. macrosoma* in shorter body (6.7 mm vs 10.5 mm) and odontostyle (93.4 µm vs 130 µm) lengths, shorter oral aperture to guide ring distance (31 µm vs 41 µm) and in amphidial pouch shape. Finally, it differs from *L. iuglandis* in having a shorter odontostyle (93.4 µm vs 120 µm) and oral aperture to guide ring distance (31 µm vs 36 µm) and in lip region shape.

ACKNOWLEDGMENTS

The authors thank Mr. Hooper for providing them data and material and for his suggestions; Dr. Bello's suggestions; Dr. Muñiz and Dr. Gil for his help in the statistical study and J. M. López and M^a Carmen Robles for their technical assistance.

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Accepté pour publication le 30 octobre 1987.