

# Nematodes of the order Dorylaimida from Andalucía Oriental, Spain. The family Tylencholaimellidae Jairajpuri, 1964. Part 1

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**Summary** – This paper deals with five species of nematodes belonging to the genus *Tylencholaimellus* Cobb in M. V. Cobb, 1915 which have been collected in natural areas from Southeastern Spain: *T. auringiensis* Peralta & Peña Santiago, 1992, *T. minor* sp. n., *T. montanus* Thorne, 1939, *T. polonicus* Szczygiel, 1962 and *T. striatus* Thorne, 1939. Except for *T. auringiensis* all the species are described and illustrated. *T. minor* is characterized by having small size (L = 0.46-0.59 mm), lip region hemispherical and offset by constriction, lips amalgamated, odontostyle = 11.5-12.5 µm, odontophore = 4.5-5.5 µm (total stylet length = 16.5-18 µm), pharyngeal bulb = 22-25 µm, V = 31.6-36.9, vagina preceded by a funnel-like cavity, prevulval sac = 47-70 µm or 2.3-3.1 body diameters long, tail rounded-conoid (15.5-17.5 µm, c = 27.3-33.9, c' = 1.0-1.4 in females and 20-21 µm, c = 24.3-28.4, c' = 1.40-1.45 in males), spicules = 20-21 µm and only one ventromedian supplement.

**Résumé** – *Nématodes de l'ordre des Dorylaimida provenant d'Andalousie orientale, Espagne. La famille des Tylencholaimellidae Jairajpuri, 1965. Partie 1* – Le présent article a trait à cinq espèces de nématodes appartenant au genre *Tylencholaimellus* Cobb in M. V. Cobb, 1915 collectés dans des sites naturels du sud-est de l'Espagne: *T. auringiensis* Peralta & Peña Santiago, 1992, *T. minor* n. sp., *T. montanus* Thorne, 1939, *T. polonicus* Szczygiel, 1962 et *T. striatus* Thorne, 1939. A l'exception de *T. auringiensis*, toutes les espèces sont décrites et illustrées. *T. minor* n. sp. présente les caractéristiques suivantes: petite taille (L = 0,46-0,59 µm); région labiale hémisphérique séparée par une constriction; lèvres fusionnées; odontostyle = 11,5-12,5 µm; odontophore = 4,5-5,5 µm; longueur totale du stylet = 16,5-18 µm; bulbe pharyngien = 22-25 µm; V = 31,6-36,9; vagin précédé par une cavité en forme d'entonnoir; sac préovulaire = 47-70 µm ou 2,3-3,1 diamètres du corps; queue arrondie-conoïde (15,5-17,5 µm, c = 27,3-33,9; c' = 1,0-1,4 chez les femelles et 20-21 µm, c = 24,3-28,4, c' = 1,40-1,45 chez les mâles); spicules = 20-21 µm; un seul supplément ventro-médian.

**Key-words**: Eastern Andalucía, Spain, *Tylencholaimellus*, taxonomy, description, nematodes.

This is the first paper dealing with the results of a taxonomic study on the family Tylencholaimellidae Jairajpuri, 1964 carried out during 1990-1993 in Andalucía Oriental (Southeastern Spain) and included in a more general survey on dorylaims of this Spanish region. Here we present five species belonging to the genus *Tylencholaimellus* Cobb in M. V. Cobb, 1915, the most diverse and widely distributed of the family in this geographic area.

In the last decade several authors have collected and studied different nematode populations belonging to *Tylencholaimellus* always from the province of Jaén: Castillo *et al.* (1985) recorded *T. striatus* Thorne, 1939 in a mountain; Peña Santiago and Coomans (1990) described *T. hispanicus*, recently transferred to the genus *Margollus* by Peña Santiago *et al.* (1993); Peralta and Peña Santiago (1992) described *T. auringiensis* from Sierra de Jabalcuz; and Peña Santiago *et al.* (1993) found *T. loofi* in Sierra de la Pandera, Valdepeñas de Jaén. However, no monographic study exists on the taxonomy and morphology of the Spanish fauna belonging to Tylencholaimellidae.

Among the abundant material examined, a total of

77 populations of nine different species of *Tylencholaimellus* have been identified. Of them, five species, four previously known and one new, are described below.

Soil samples were collected from more than 500 different localities of the provinces of Almería, Granada, Jaén and Málaga. Nematodes were extracted by Flegg's technique, killed by heat, fixed in 3-4 % formaldehyde and processed to anhydrous glycerol according to Seinhorst (1962) or Siddiqi (1964).

## *Tylencholaimellus auringiensis* Peralta & Peña Santiago, 1992

In addition to the original population, the species was found in the following sites: *i*) Sierra del Trevenque, province of Granada, associated with brushwood; *ii*) Sierra de Cazorla, province of Jaén, around roots of *Fraxinus angustifolia*; *iii*) Puerto de Zafarraya, province of Granada, associated to herbaceous plants (meadow); and *iv*) « Poyo Manquillo », Sierra de Cazorla, province of Jaén, in a meadow. Measurements of these populations are included in Table 1. No important difference has been noted with respect to the original description.

**Table 1.** Measurements and diagnostic features of *Tylencholaimellus auringsiensis* Peralta & Peña Santiago, 1992 (all measurements in  $\mu\text{m}$  except L in mm).

Habitat Locality Province	<i>Fraxinus</i> S. Cazorla Jaén	Meadow Zafarraya Granada	Meadow Poyo Manquillo Jaén	Brushwood Trevenque Granada		
n =	6 ♀♀	9 ♀♀	2 ♂♂	5 ♀♀	1 ♂	
L (mm)	1.12 ± 0.06 (1.00-1.17)	0.90 ± 0.07 (0.80-1.00)	0.96, 0.81	0.94, 1.20	0.98 ± 0.06 (0.90-1.05)	0.84
a	29.1 ± 0.95 (27.9-30.7)	26.0 ± 1.25 (24.3-28.0)	25.9, 23.0	25.4, 26.5	26.6 ± 1.41 (24.2-28.3)	22.7
b	6.76 ± 0.21 (6.5-7.0)	5.9 ± 0.5 (5.3-6.5)	6.2, 5.5	6.1, 7.8	?	?
c	39.9 ± 1.78 (37.8-43.4)	40.7 ± 3.87 (32.2-44.5)	39.9, 36.7	33.6, 45.9	39.3 ± 1.93 (36.3-41.8)	32.3
V	25.3 ± 1.17 (24.0-27.3)	27.4 ± 1.43 (24.4-29.3)	–	27.6, 26.5	25.6 ± 1.10 (24.2-27.2)	–
G1	4.2 ± 0.4 (3.3-4.7)	4.3 ± 0.5 (3.5-4.9)	52.7, 57.2	4.7, 3.7	3.40 ± 0.18 (3.2-3.7)	48.9
G2	30.5 ± 1.98 (26.9-33.0)	26.0 ± 2.5 (22.5-31.8)	11.5, 26.3	27.2, 30.1	24.6 ± 2.06 (22.1-28.0)	13.7
Ant. gen. br./body diam.	1.22 ± 0.13 (0.94-1.34)	1.11 ± 0.17 (0.90-1.38)	–	1.19, 0.98	0.89 ± 0.05 (0.83-0.97)	–
c'	0.97 ± 0.03 (0.93-1.02)	0.86 ± 0.05 (0.73-0.94)	0.98, 0.96	1.04, 0.84	0.87 ± 0.07 (0.76-0.96)	1.08
Lip region : diam. height	(10.5-11.0)	(10-11)	10.5, 11.0	10, 10.5	(10.5-11.0)	11
Amphid width	5	(4.5-5.0)	5	4.5, 5.0	(4.5-5.0)	5
Odontostyle	7	6.4 ± 0.17 (6.0-6.5)	6.5	7.0, 7.5	6.60 ± 0.37 (6.0-7.0)	6.5
Odontophore	15.2 ± 0.23 (15.0-15.5)	15.0 ± 0.29 (14.5-15.5)	15.0, 14.5	15.0, 15.5	15.1 ± 0.20 (15.0-15.5)	14.5
Stylet length	9.0 ± 0.4 (8.5-9.5)	8.5 ± 0.4 (8-9)	8.5	8.0, 8.5	9.30 ± 0.24 (9.0-9.5)	8.5
Guiding ring-ant. end	(23.5-25.0)	(22-24)	23.0, 23.5	23, 24	(24-25)	23
Nerve ring-ant. end	9.5	(9.5-10)	9.5, 10	9	(9-10)	9.5
Neck length	90	82 ± 2.6 (78-85)	90, 82	84, 78	94	?
Pharyngeal bulb length	164 ± 6.2 (154-172)	152 ± 3.1 (147-156)	153, 148	154, 150	?	?
Cardia : width length	30.6 ± 0.49 (30-31)	26.0 ± 0.78 (25-27)	27, 26	29, 31	?	?
Body diam. at neck base	8.5 ± 0.4 (7-9)	7.5 ± 0.0 (7.5-9.0)	8.5, 9.5	9.5, 9.0	(8-9)	8
Body diam. at midbody	5	5	5.0, 5.5	5.0, 4.5	(5-6)	5
Body diam. at anus	34.5 ± 1.60 (31-36)	31.5 ± 2.0 (28-34)	31, 32	30, 32	31.2 ± 1.60 (29-33)	29
Cuticle head	38.5 ± 2.14 (35-42)	34.8 ± 2.90 (31-39)	37, 35	37, 45	37.0 ± 1.05 (35-38)	37
Cuticle midbody	29.1 ± 1.92 (26-32)	25.9 ± 2.65 (22-30)	24.5, 24.0	27, 31	28.7 ± 1.08 (27-30)	24
Cuticle tail	2.0	(1.5-2.0)	2.0, 2.0	1.5, 2.0	2	2
Lateral chord : midbody	(3.5-4.0)	(3-5)	3.5, 4.0	2.0, 3.5	(3-4)	3.5
Ant. ovary/testis	(4.5-5.5)	(5.0-7.5)	5.5, 5.5	4.5, 5.5	(4.5-5.5)	4.5
Ant. genital branch	(6-8)	(6-7)	7, 6	8	8.0	8.5
Post. ovary/testis	–	–	206, 128	–	–	156
Post. genital branch*	47 ± 4.4 (37.5-50.0)	38 ± 3.9 (34-47)	504, 462	44, 44	33.0 ± 2.45 (30-37)	411
Vagina : width length	177 ± 50.4 (116-274)	125 ± 31.4 (81-178)	188, 122	84, 26	167 ± 28 (144-215)	140
Vulva-ant. end	343 ± 36.4 (269-387)	236 ± 34.3 (194-306)	110, 212	256, 35	242 ± 17 (215-261)	115
Prerectum	(12-14)	(10-12)	–	11.0, 11.5	(11-13)	–
Rectum/cloaca	(16-17)	(13-15)	–	15, 17	(14-15)	–
Tail	283 ± 11.2 (273-306)	247 ± 17.5 (226-285)	–	260, 317	252 ± 15 (226-266)	–
Spicules arc	82 ± 24 (31-100)	63 ± 20 (38-97)	89, ?	90, 84	87.0 ± 22.5 (64-109)	79
Ventromedian supplements	19.2 ± 0.75 (18-20)	19.5 ± 0.70 (19-21)	34, ?	19, 18	20.3 ± 1.24 (19-22)	?
Sperm length	28.0 ± 1.69 (25-30)	22.5 ± 1.94 (19.5-25.0)	24, 22	28, 26	25.1 ± 1.80 (22.0-27.5)	26
Copulatory muscles	–	–	39.5, 34.5	–	–	35
	–	–	1, 1	–	–	1
	–	–	6.5, 6.5	–	–	7.0
	–	–	6, 6	–	–	5

\* In males, this measurement is the distance from the posterior end of the testis to the cloacal aperture.

***Tylencholaimellus minor* sp. n.**

(Fig. 1)

## MEASUREMENTS

See Table 2.

## DESCRIPTION

*Female*: Moderately slender nematodes of small size. Body cylindrical, slightly tapering towards both extremities. Habitus ventrad curved to C-shaped. Outer layer of the cuticle relatively thick and with clear transverse striations; inner layer slightly thicker than the outer one. Lateral chords occupying one-third of the midbody diameter. Lateral pores obscure. Lip region rounded, almost hemispherical, and offset from the adjacent body region by constriction; it is twice as wide as high and one-half of the body diameter at neck base. Lips amalgamated with inner parts scarcely elevated. Labial and cephalic papillae clear; sometimes slightly interfering with the head contour. Amphids cup-shaped, opening at level of the cephalic constriction and occupying 60% of the lip region diameter. Stoma a truncate cone 6.5-7  $\mu\text{m}$  long. Odontostyle 1.3-1.4 lip region diameters long; dorsal accessory stiffening piece present. Odontophore two-fifths the length of the odontostyle and provided with prominent basal knobs. Guiding ring simple. The pharynx consists of a slender and weakly muscular anterior part and a cylindrical basal bulb; the both parts of the pharynx are separated by a more or less marked constriction. Pharyngeal bulb one-fifth of the total neck length; pharyngeal gland nuclei hardly visible. Cardia hemispherical and surrounded by the intestinal tissue. Nerve ring located halfway the neck length. Genital system monodelphic-opisthodelphic. Ovary reflexed and provided with numerous oocytes arranged first in several rows and then in a single one. Oviduct joins the ovary subterminally and consists of a slender distal part and a poorly developed *pars dilatata*. Uterus unspecialized. Oviduct-uterus junction marked by a weak sphincter. Anterior genital branch reduced to a simple sac containing sperm and 2.3-3.1 times the corresponding body diameter long. Vulva apparently transverse, probably very open (not observed in ventral view), and followed by a funnel-like cavity (vestibule?) with sclerotized wall. Vagina extending inwards to half of the corresponding body diameter; its wall encircled by tenuous musculature. Prerectum 3-6 anal body diameters long. Guard cells not seen at the intestine-prerectum junction. Rectum slightly shorter than anal body diameter. Tail rounded-conoid, dorsally convex and ventrally somewhat straighter; its length slightly greater than the corresponding body diameter. Caudal pores two pairs in the middle of the tail: one subdorsal, the other subventral.

*Male*: Similar appearance to female but more ventrad curved, especially in the posterior body region. Diorchic with testes opposed. Apart from the adanal pair only one

ventromedian supplement is present, located out of the range of the spicules. Tail as in female but slightly longer and ventrally more straight. Spicules relatively stout, arched and 1.4 anal body diameters long. Lateral guiding pieces obscure. Sperm spindle-shaped.

## TYPE HABITAT AND LOCALITY

Alkaline soil around roots of *Festuca scariosa*, *Thymus mastichina*, *Buxus sempervirens*, *Lavandula latifolia*, *Salvia lavandulifolia* and *Echinopartum boissieri* (brushwood) in Sierra de la Pandera, Valdepeñas de Jaén, Province of Jaén, Spain.

## TYPE MATERIAL

Three females (holotype and two paratypes) and two males (allotype and paratype) deposited in the nematode collection, Departamento de Biología Animal, Vegetal y Ecología, Universidad de Jaén, Spain. One female paratype and one male paratype in the Muséum National d'Histoire Naturelle, Paris, France.

## DIAGNOSIS AND RELATIONSHIPS

The new species can be distinguished by having small size ( $L = 0.46-0.59$  mm), lip region hemispherical and offset by constriction, odontostyle 11.5-12.5  $\mu\text{m}$ ,  $V = 31.6-36.9$ , vagina with an anterior funnel-like cavity, prevulval sac 2.3-3.1 body diameters long, tail rounded-conoid, spicules 20-21  $\mu\text{m}$  and only one ventromedian supplement.

This species is clearly differentiated from others of the genus by the morphology of the lip region (rounded, almost hemispherical) and the presence of a chamber-like cavity following the vulva. Moreover, from *T. eskei* Siddiqi & Khan, 1964, a relatively close species, it can be separated by having longer prevulval sac (*vs* one body width long) and known males (*vs* unknown males).

***Tylencholaimellus montanus* Thorne, 1939**

(Fig. 2)

## MEASUREMENTS

See Table 3.

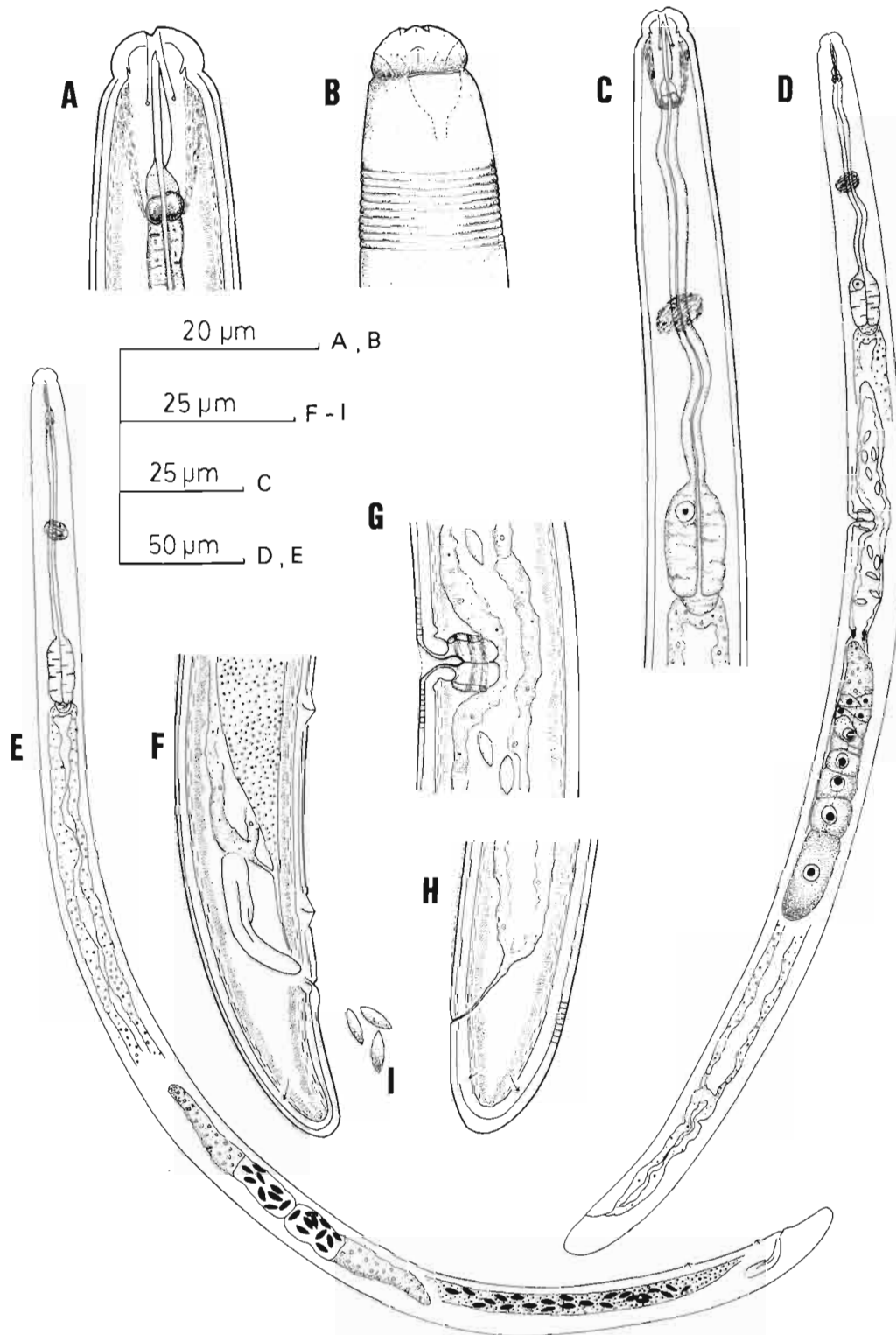
## DESCRIPTION

*Female*: Moderately slender nematodes of small size. Body cylindrical, slightly tapering towards both extremities. Habitus regularly ventrad curved. Outer layer of the cuticle very thin and with fine transverse striations. Inner layer thicker than the outer one. Lateral chords occupying one-sixth to one-fourth of the midbody diameter. Lateral pores obscure. Lip region slightly offset by a shallow constriction, 2-2.5 times as wide as high and one-third to one-half of the body diameter at neck base. Lips amalgamated, with rounded contour; its inner portions transformed into a perioral disc. Labial and cephalic papillae distinctly innervated but not interfering with the head contour. Amphid cup-shaped, open-

**Table 2.** Measurements and diagnostic features of *Tylencholaimellus minor* sp. n. (all measurements in  $\mu\text{m}$  except L in mm).

Habitat Locality Province	Brushwood Sierra de la Pandera Jaén			
n =	Holotype ♀	Paratype 3 ♀ ♀	Allotype ♂	Paratypes 2 ♂ ♂
L. (mm)	0.51	0.51 ± 0.02 (0.46-0.55)	0.59	0.50, 0.56
a	24.8	24.3 ± 2.41 (21.1-27.6)	35.1	27.7, 32.0
b	4.4	4.4 ± 0.3 (4.0-4.8)	4.5	4.2, ?
c	33.9	31.2 ± 2.33 (27.3-33.9)	28.4	24.3, 28.0
V	36.8	35.0 ± 2.11 (31.6-36.9)	–	–
G1	11.6	11.0 ± 1.02 (9.1-12.6)	46.9	55.8, ?
G2	30.7	28.5 ± 5.30 (18.2-35.7)	23.8	26.9, ?
Ant. gen. branch/body diam.	2.88	2.67 ± 0.31 (2.3-3.1)	–	–
c'	1.0	1.16 ± 0.13 (1.0-1.4)	1.45	1.40, 1.43
Lip region diam.	9.5	(8.5-9.5)	10	9
height	4.5	(4.0-4.5)	5	4.5
Amphid width	5.0	(5.0-5.5)	?	?, 5.5
Odontostyle	12.0	12.0 ± 0.46 (11.5-12.5)	12	12.0, 11.5
Odontophore	5.5	5.1 ± 0.35 (4.5-5.5)	5.0	5.0, 5.5
Stylet length	17.5	(16.5-18.0)	17	17
Guiding ring-ant. end	7	(6.5-7.0)	7	7
Nerve ring-ant. end	58	61.5 ± 3.20 (58-66)	62	62, ?
Neck length	116	120 ± 5.7 (115-130)	132	119, ?
Pharyngeal bulb length	22	22.9 ± 0.74 (22-24)	25	22, ?
Cardia width	6.5	(6.0-6.5)	7	6.5, 7.0
length	4	(4-5)	5	4.0, 4.5
Body diam. at neck base	19	20.0 ± 1.49 (17.5-22.5)	16	17.5, 17.0
Body diam. at mitbody	20.5	21.4 ± 2.16 (19.0-25.5)	17	18.0, 17.5
Body diam. at anus	15	14.2 ± 0.94 (12.5-15.0)	14.5	14.5, 14.0
Cuticle head	1.5	(1.5-2.0)	1.5	1.5
Cuticle midbody	2.5	(2.5-3.0)	2.0	2.0
Cuticle tail	4.0	(4.0-4.5)	4.5	4.0
Lateral chord :	6.0	(6.0-8.5)	6	6, 7
Ant. ovary/testis	–	–	72	84, ?
Ant. genital branch	60	57 ± 6.7 (47-70)	280	278, ?
Post. ovary/testis	109	94 ± 24 (50-125)	66	60, ?
Post. genital branch*	156	146 ± 27 (94-184)	142	134
Vagina width	8	(8-12)	–	–
length	7.5	(8-10)	–	–
Vulva-ant. end	187	180 ± 16 (147-197)	–	–
Prerectum	52	(40-100)	97	?, 132
Rectum/cloaca	11	(10-19)	–	–
Tail	15.5	16.6 ± 0.78 (15.5-17.5)	21	20.5, 20.0
Spicules arc	–	–	21	21, 20
Ventromedian supplements	–	–	1	1
Sperm length	–	–	5	5
Copulatory muscles	–	–	?	–

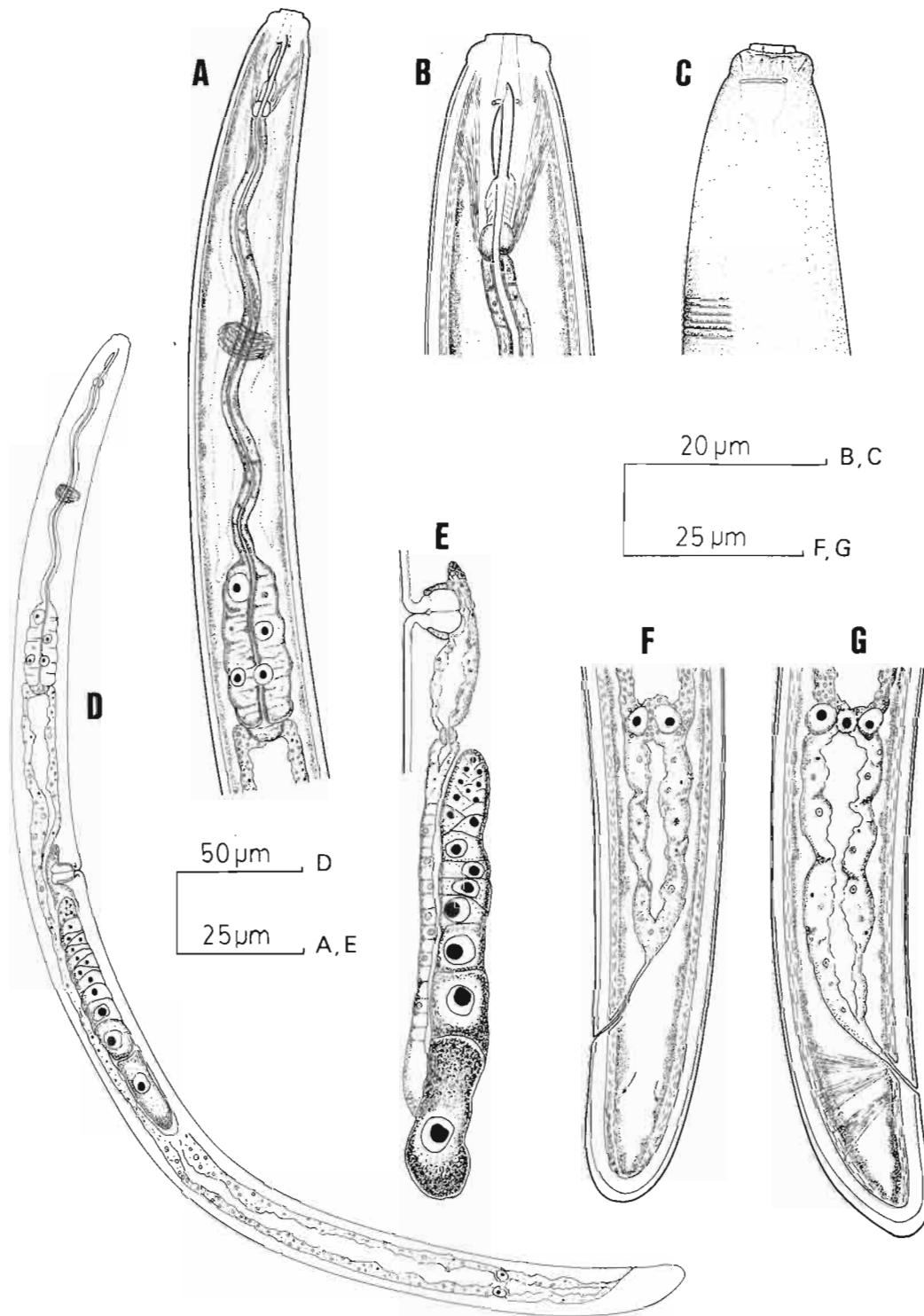
\* See footnote in Table 1.



**Fig. 1.** *Tylencholaimellus minor* sp. n. A : Anterior end in lateral view; B : Same in surface view; C : Neck region; D : Entire female; E : Entire male; F : Male caudal region; G : Vagina; H : Female caudal region; I : Sperm.

**Table 3.** Measurements and diagnostic features of *Tylencholaimellus montanus* Thorne, 1939 (all measurements in  $\mu\text{m}$  except L in mm).

Habitat Locality Province n =	<i>Thymus</i> S. Panderá Jaén 20 ♀♀	Brushwood S. Panderá Jaén 11 ♀♀	Meadow S. Nevada Granada 9 ♀♀
L (mm)	0.55 ± 0.06 (0.44-0.67)	0.58 ± 0.04 (0.49-0.67)	0.68 ± 0.04 (0.62-0.76)
a	24.8 ± 1.81 (21.4-28.0)	22.2 ± 2.22 (19.0-25.6)	25.4 ± 1.20 (23.5-27.5)
b	4.27 ± 0.36 (3.7-5.0)	4.0 ± 0.3 (3.6-4.4)	4.66 ± 0.23 (4.4-5.1)
c	28.2 ± 2.76 (24.4-37.9)	27.8 ± 1.42 (22.9-31.5)	27.1 ± 1.67 (23.1-29.4)
V	38.4 ± 1.99 (34.5-43.1)	36.9 ± 1.48 (34.8-39.2)	35.5 ± 0.95 (33.4-37.0)
G1	—	—	—
G2	18.4 ± 2.56 (15.9-22.5)	20.0 ± 2.80 (15.3-24.5)	18.1 ± 1.91 (14.4-20.7)
c'	1.30 ± 0.12 (1.1-1.5)	1.30 ± 0.07 (1.2-1.4)	1.42 ± 0.09 (1.28-1.54)
Lip region diam. height	(7-8) 3	(7.5-8.0) (3.0-3.5)	(7.5-8.0) (3.5-4.0)
Amphid width	4.88 ± 0.21 (4.5-5.0)	5.0	4.5
Odontostyle	9.8 ± 0.33 (9.5-10.5)	10	10
Odontophore	6.95 ± 0.22 (6.5-7.5)	7.8 ± 0.3 (7-8)	7.5 ± 0.3 (7-8)
Stylet length	(16.5-17.5)	(17-18)	(17-18)
Guiding ring-ant. end	(5.0-6.5)	(6-7)	(6.5-7.0)
Nerve ring-ant. end	65.7 ± 3.40 (60-76)	74.2 ± 1.47 (72-76)	74.5 ± 1.34 (72-76)
Neck length	133 ± 9.8 (119-155)	151 ± 5 (145-161)	146 ± 3.1 (143-153)
Pharyngeal bulb length	28.9 ± 2.75 (25.0-32.5)	34 ± 1.6 (31-36)	34.4 ± 1.07 (33-36)
Cardia width length	(6.0-7.5) (3-4)	(6.5-7.5) (3.5-4.5)	(6-7) (3.0-4.5)
Body diam. at neck base	20.1 ± 1.79 (15-22)	24.7 ± 1.90 (22-28)	24.8 ± 1.0 (23-26)
Body diam. at mitbody	22.1 ± 1.56 (18-24)	26.4 ± 2.1 (23-30)	26.9 ± 1.43 (25-29)
Body diam. at anus	15.4 ± 1.01 (14-17)	16 ± 0.75 (15.0-17.5)	17.7 ± 0.58 (16.5-18.5)
Cuticle head	1.5	1.5	1.5
Cuticle midbody	(1.5-2.0)	(1.5-2.0)	2.0
Cuticle tail	(3.0-4.5)	(3.5-4.5)	(3.5-4.5)
Lateral chord	(5-7)	(5-8)	(5-6)
Ant. ovary/testis	—	—	—
Ant. genital branch	(6-9)	—	—
Post. ovary/testis	76.7 ± 22.1 (50-141)	107 ± 27 (70-150)	85 ± 16 (66-118)
Post. genital branch	101 ± 18 (60-141)	119 ± 17 (90-140)	121 ± 12 (100-137)
Vagina width length	(7-10) (7.5-10.5)	(8-10) 10	(8-10) (11-12)
Vulva-ant. end	210 ± 21 (164-246)	—	242 ± 12 (226-269)
Prerectum	39.7 ± 5.77 (31-54)	45 ± 7.2 (33-56)	45.3 ± 5.0 (41-56)
Rectum/cloaca	13.1 ± 1.36 (10-16)	15.9 ± 1.10 (14-18)	17.4 ± 1.67 (14-20)
Tail	20.1 ± 2.04 (16.5-23.0)	21.0 ± 1.40 (19-23)	25.2 ± 1.56 (22-28)



**Fig. 2.** *Tylencholaimellus montanus* Thorne, 1939. **A** : Neck region; **B** : Anterior end in lateral view; **C** : Same in surface view; **D** : Entire female; **E** : Genital system; **F**, **G** : Caudal region.

ing at level of the cephalic constriction and occupying one-half to two-thirds of the lip region diameter. Stoma a truncate cone. Guiding ring simple but refractive. Odontostyle typical of the genus, 1.3-1.4 times the lip region diameter long and provided with a dorsal accessory stiffening piece. Odontophore two-thirds of the odontostyle length, with prominent basal knobs. Anterior part of the pharynx slender and weakly muscular, separated from the basal bulb by a depression. Pharyngeal basal bulb cylindroid, occupying one-fifth to one-fourth of the total neck length. Pharyngeal gland nuclei often visible, one dorsal and two ventrosublateral pairs. Cardia hemispherical, partially surrounded by the intestine. Nerve ring located halfway the neck length. Genital system monodelphic-opisthodelphic. Ovary reflexed, long and provided with numerous oocytes arranged first in several rows, then in a single one. Oviduct joining subterminally the ovary and consisting of a slender distal part with cuboid cells and a poorly developed *pars dilatata*. Uterus short, without specializations. Oviduct-uterus junction marked by a clear sphincter. Anterior genital branch practically vestigial, almost always appearing as a small cell mass with inconspicuous lumen. Vagina cylindrical to pear-shaped, extending inwards two-fifths to one-half of the corresponding body diameter; its wall adjacent to the vulva not offset from the inner body cuticle. Vulva a transverse slit. Sperm absent. Prerectum short, 2-3 anal body diameters long. Intestine-prerectum junction guarded by three cells. Rectum slightly shorter than the corresponding body diameter. Tail rounded-conoid to cylindroid, mostly doubly convex but sometimes ventrally almost straight. The outer cuticle of the posterior end of the tail appears more or less thickened. Caudal pores two pairs located at the middle of the tail : one lateral, the other subdorsal.

#### DISTRIBUTION

The species was found in ten different localities of the provinces of Almería, Granada, Jaén and Málaga, associated to *Thymus mastichina*, *Salvia lavandulifolia*, *Lavandula latifolia*, *Echinopartum boissieri*, *Erinacea anthyllis*, *Crataegus monogyna*, *Ulex parviflorus*, *Cistus monspeliensis*, *Rosa canina*, *Fraxinus angustifolia*, *Juniperus sabina* and *Quercus rotundifolia*.

#### REMARKS

Our material agrees very well in morphology and measurements with previous descriptions (Andrássy, 1967; Gosco *et al.*, 1975). *T. montanus* resembles closely *T. striatus* Thorne, 1939, but it differs from this in having scarcely offset lip region (*vs* strongly offset) and different shape of the tail (*vs* cylindroid and with a thick hyaline outer layer in the terminal portion).

The species is new to the European fauna.

### *Tylencholaimellus polonicus* Szczygiel, 1962 (Fig. 3)

#### MEASUREMENTS

See Table 4.

#### DESCRIPTION

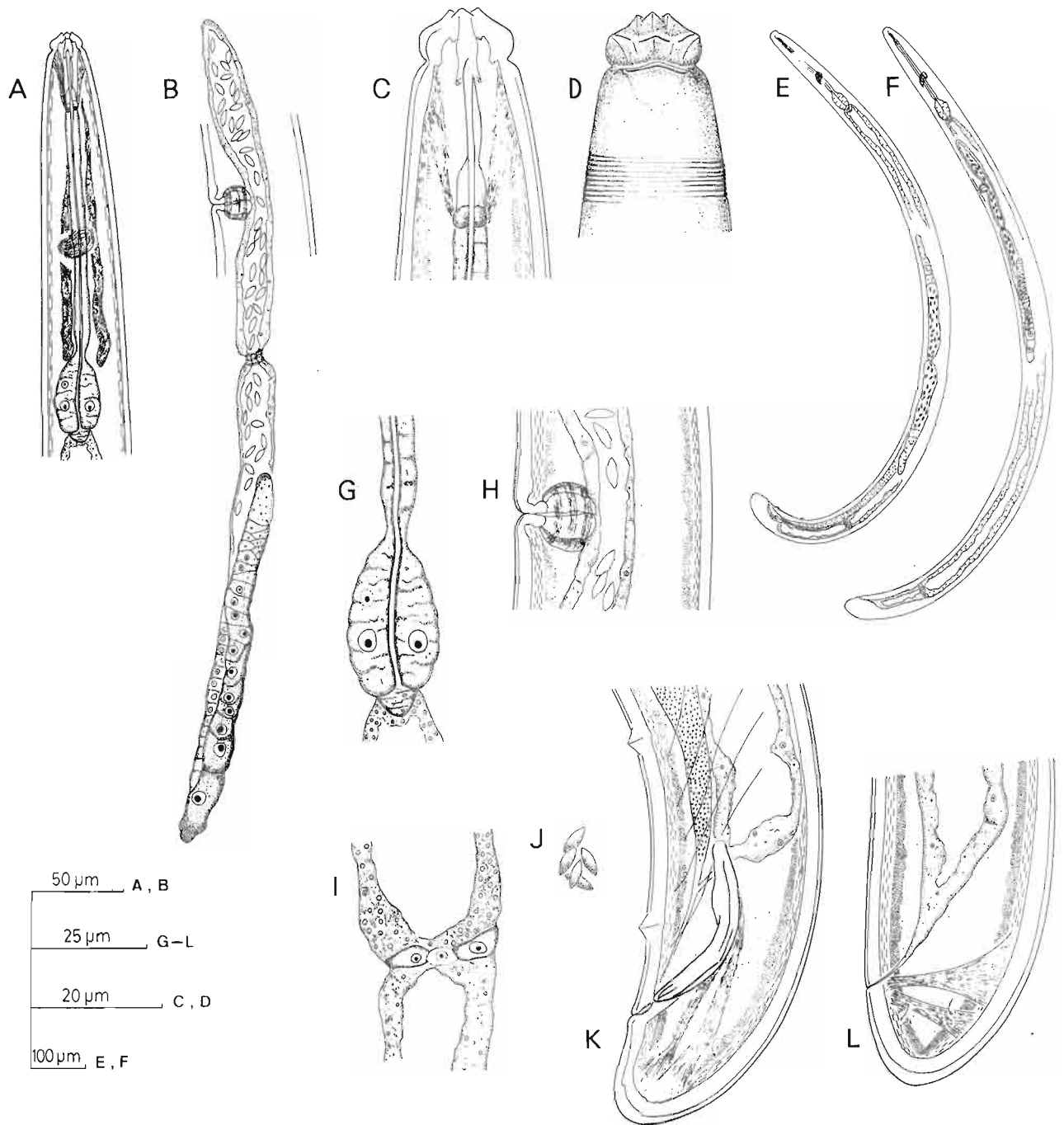
*Female* : Moderately slender nematodes of small to medium size. Body cylindrical, slightly tapering towards the anterior end. Habitus ventrad arched, frequently more so in the posterior half. Outer cuticle with fine transversal striations; inner cuticle clearly thicker than the outer one. Lateral chords provided with glandular bodies and occupying about 15-29 % of the midbody diameter. Lateral pores often visible. Lip region offset from the adjacent body by a deep constriction; twice as wide as high and one-third to one-half of the body diameter at neck base. Lips practically amalgamated with prominent inner part. Labial and cephalic papillae very distinct and interfering slightly with the head contour. Amphid cup-shaped with sinuous aperture, located at level of the cephalic constriction and occupying about two-thirds of the lip region diameter. Stoma a truncate cone slightly wider in its central portion. Odontostyle 1.2-1.3 head diameters long and provided with dorsal accessory stiffening piece; its aperture one-sixth of the total length. Odontophore with basal knobs; one-half to three-fifths of the odontostyle length. Guiding ring simple, refractive. The pharynx consists of a slender and weakly muscular anterior part and a short pear-shaped basal bulb, which occupies about one-fifth of the total neck length. Both parts of the pharynx are separated by a more or less marked depression. Pharyngeal gland nuclei often visible. Cardia small, rounded-conoid and surrounded by the intestine. Nerve ring located at 53-60 % of the neck length. Genital system monodelphic-opisthodelphic. Ovary reflexed, often not reaching the oviduct-uterus junction and provided with numerous oocytes arranged first in several rows and then in a single row. Oviduct joining the ovary subterminally and consisting of a slender distal portion with cuboidal cells and a well developed *pars dilatata* with clear lumen. Oviduct-uterus junction marked by the sphincter. Uterus short and unspecialized. Anterior genital branch reduced to a simple sac 1.0-3.2 midbody diameters long. Vagina cylindrical, occupying two-fifths to one-half of the corresponding body diameter; its wall adjacent to the vulva not offset from the body cuticle and the inner part surrounded by strong circular musculature. Vulva apparently a transverse slit. Sperm present throughout the genital tract. Prerectum 2.3-6.2 anal body diameters long. Intestine-prerectum junction guarded by three cells. Rectum length equal to anal body diameter. Tail shorter than anal body diameter, rounded-conoid or hemispheroid and convex in both sides. Caudal pores two pairs located at the middle of the tail : one subdorsal, the other subventral.



Table 4. Measurements and diagnostic features of *Tylencholaimellus polonicus* Szczygiel, 1962 (all measurements in  $\mu\text{m}$  except L in mm).

Habitat Locality Province	Meadow Sierra de Cazorla Jaén		Brushwood Sierra de la Cabra Granada		<i>Quercus rotundifolia</i> Sierra Morena Jaén		Meadow Sierra de la Cruz Jaén	
	20 ♀♀	12 ♂♂	9 ♀♀	11 ♂♂	8 ♀♀	11 ♂♂	14 ♀♀	20 ♂♂
n =								
L (mm)	1.14 ± 0.89 (0.91-1.31)	1.06 ± 0.77 (0.95-1.20)	0.99 ± 0.69 (0.85-1.10)	1.00 ± 0.68 (0.90-1.13)	1.04 ± 0.06 (0.91-1.10)	0.95 ± 0.05 (0.81-1.02)	1.08 ± 0.08 (0.93-1.23)	1.05 ± 0.06 (0.95-1.20)
a	26.1 ± 2.43 (24.0-29.1)	26.0 ± 1.83 (23.2-28.9)	26.1 ± 2.13 (21.8-29.3)	29.5 ± 1.89 (26.0-32.9)	25.3 ± 1.62 (22.8-28.2)	27.0 ± 1.00 (26.1-28.6)	27.5 ± 1.32 (24.9-29.9)	28.3 ± 1.53 (25.3-30.8)
b	6.54 ± 0.50 (5.40-7.30)	6.26 ± 0.37 (5.80-6.90)	6.00 ± 0.20 (5.80-6.40)	5.60 ± 0.27 (5.30-6.00)	6.00 ± 0.43 (5.3-6.4)	5.70 ± 0.23 (5.4-5.9)	6.30 ± 0.28 (5.9-6.9)	6.0 ± 0.4 (5.2-6.7)
c	48.1 ± 3.73 (41.6-57.0)	49.7 ± 4.27 (43.3-58.6)	46.5 ± 5.17 (39.2-55.0)	45.1 ± 2.62 (40.0-49.8)	49.0 ± 4.96 (40.9-57.7)	49.6 ± 3.17 (45.9-55.1)	44.0 ± 3.99 (37.9-52.4)	44.0 ± 2.78 (40-50)
V	28.0 ± 2.17 (23.4-31.6)	-	29.5 ± 1.84 (25.2-32.2)	-	26.9 ± 1.49 (25.3-29.9)	-	30.9 ± 1.26 (29.0-34.3)	-
G1	6.86 ± 1.31 (5.00-9.60)	57.0 ± 4.08 (51.1-65.4)	5.80, 0.80 (4.80-7.40)	54.3 ± 5.30 (47.2-65.8)	7.70 ± 2.23 (5.90-12.9)	58.4 ± 5.13 (51.4-65.9)	6.60 ± 1.47 (3.6-9.1)	56.8 ± 7.80 (43.6-69.1)
G2	30.3 ± 4.61 (23.5-40.7)	19.1 ± 4.42 (12.7-25.2)	26.2 ± 4.80 (14.6-31.1)	20.1 ± 3.73 (13.0-25.5)	35.3 ± 9.48 (27.5-53.0)	15.1 ± 3.44 (7.40-18.1)	30.5 ± 2.79 (26.0-35.8)	16.8 ± 4.60 (8.9-29.1)
Ant. gen. br./body diam.	1.80 ± 0.30 (1.40-2.56)	-	1.48 ± 0.27 (1.20-2.10)	-	2.0 ± 0.58 (1.6-3.2)	-	1.78 ± 0.45 (1.05-2.60)	-
c'	0.68 ± 0.06 (0.60-0.75)	0.71 ± 0.07 (0.61-0.78)	0.75 ± 0.08 (0.60-0.90)	0.94 ± 0.06 (0.86-1.07)	0.69 ± 0.07 (0.58-0.77)	0.78 ± 0.05 (0.70-0.85)	0.82 ± 0.05 (0.74-0.89)	0.92 ± 0.05 (0.85-1.00)
Lip region diam. height	(14.0-15.5) (6.0-7.0)	(14.0-15.5) (6.5-7.0)	(13.0-14.0) (6.5-7.0)	(12.5-14.0) 6.5	(13-14) (6.0-6.5)	(12.5-13.5) (5.5-6.5)	(13-15) (5.5-6.5)	(13.5-14.5) (6.0-6.5)
Amphid width	7.80 ± 0.29 (7.5-8.5)	8.00 ± 0.49 (7.5-8.5)	7.30 ± 0.30 (7.0-7.5)	7.30 ± 0.25 (7.0-7.5)	8.0 ± 0.25 (7.5-8.5)	7.70 ± 0.25 (7.5-8.0)	7.90 ± 0.31 (7.5-8.5)	7.70 ± 0.31 (7.0-8.0)
Odontostyle	17.7 ± 0.64 (16.5-19.0)	17.1 ± 0.54 (16.0-18.0)	17.4 ± 0.56 (17.0-18.5)	17.1 ± 0.19 (17.0-17.5)	16.9 ± 0.48 (16.0-17.5)	16.5 ± 0.37 (16-17)	17.1 ± 0.5 (16.5-18.0)	17.0 ± 0.38 (16.5-18.0)
Odontophore	9.40 ± 0.49 (8.50-10.5)	9.20 ± 0.50 (8.50-10.0)	10.0 ± 0.26 (9.50-10.5)	9.80 ± 0.39 (9.00-10.5)	10.9 ± 0.33 (10.5-11.5)	11.0 ± 0.52 (10-12)	10.8 ± 0.32 (10-11)	10.6 ± 0.35 (10-11)
Stylet length	(26-28)	(25.5-27.5)	(26.5-29.0)	(27-28)	(27.5-28.0)	(26.5-28.5)	(27-29)	(27-28)
Guiding ring-ant. end	(10.0-12.0)	(10.0-12.5)	(9.50-10.0)	(9.00-10.5)	(10-11)	(10-11)	(10.0-10.5)	(10.0-10.5)
Nerve ring-ant. end	97.6 ± 2.20 (94-103)	94.1 ± 3.80 (88-100)	89.5 ± 5.12 (81-94)	88.6 ± 2.61 (85-94)	90 ± 3.5 (87-94)	88 ± 2 (86-90)	93 ± 3.2 (87-97)	95 ± 2.3 (91-100)
Neck length	173 ± 5.5 (153-181)	169 ± 6.0 (160-178)	166 ± 9.2 (147-174)	174 ± 5.4 (168-181)	180 ± 16.8 (169-208)	170 ± 3.0 (167-173)	174 ± 5.6 (163-184)	171 ± 6.58 (160-181)
Pharyngeal bulb length	33.2 ± 0.96 (31.0-35.0)	32.6 ± 1.43 (30.0-35.0)	33.0 ± 0.88 (32-34.5)	33.2 ± 1.70 (31.5-37.5)	35.7 ± 1.69 (33.0-37.5)	34 ± 0.5 (33.0-34.5)	35.3 ± 1.04 (33-37)	35.2 ± 0.64 (34-37)
Cardia width length	(8.0-10.5) (5.0-6.0)	(9.0-10.5) (5.0-6.0)	(9-10) (5.0-5.5)	(9.0-9.5) (4.5-5.5)	(10-11) (4.5-6.0)	(9.5-11.0) (4-6)	(8-10) (5.0-6.5)	(9.0-10.5) (5-6)
Body diam. at neck base	37.7 ± 2.13 (33.0-42.0)	35.0 ± 2.0 (32.0-38.5)	32.1 ± 3.20 (29.0-39.5)	30.2 ± 1.96 (27.0-33.5)	35.5 ± 1.60 (34-38)	30.3 ± 1.05 (28-32)	34.0 ± 2.16 (31.5-37.5)	32.7 ± 1.65 (30-35)
Body diam. at mitbody	42.4 ± 2.90 (36.0-48.0)	40.5 ± 2.20 (36.0-43.5)	36.6 ± 3.20 (31.0-41.0)	34.0 ± 2.70 (29.5-40.0)	41.0 ± 2.14 (39-44)	35.5 ± 1.41 (32.5-37.5)	39.2 ± 2.65 (35-45)	37.3 ± 2.42 (33-41)
Body diam. at anus	33.5 ± 2.48 (29.0-38.0)	30.0 ± 1.84 (27.5-33.0)	26.3 ± 2.39 (22.5-31.0)	23.6 ± 1.78 (21.0-27.5)	32.2 ± 1.36 (31-34)	25.9 ± 1.37 (24-28)	30.3 ± 1.95 (38-34)	25.8 ± 1.16 (23-28)
Cuticle head	(2.5-3.5)	(2.5-3.5)	(2.5-3.0)	2.5	(2.5-3.0)	(2.0-2.5)	(2.0-2.5)	(2.0-3.0)
Cuticle midbody	(3.0-4.5)	(3.0-4.5)	(3.0-4.5)	(3.0-4.0)	(3.0-3.5)	(3.0-3.5)	3.0	3.0
Cuticle tail	(5.0-9.5)	(5.5-7.0)	(5.0-7.0)	(4.5-6.0)	(4.5-6.5)	(4.5-6.0)	(4.5-6.5)	(4.5-6.0)
Lateral chord	(6-12)	(6.5-12)	(6-10)	(5-10)	(10-12)	(9-11)	(9-12)	(9.5-10.5)
Ant. ovary/testis	-	204 ± 44.7 (132-281)	-	175 ± 36.3 (131-243)	-	220 ± 31.4 (156-272)	-	230 ± 48.6 (162-272)
Ant. genital branch	76.1 ± 14.4 (56-106)	599 ± 63.4 (487-681)	58.0 ± 10.7 (41.0-75.0)	545 ± 66.1 (453-639)	80.0 ± 25.2 (64-140)	575 ± 49.7 (483-637)	71.0 ± 18.7 (38-103)	613 ± 78.3 (503-783)
Post. ovary/testis	188 ± 71.7 (116-412)	196 ± 37.9 (137-253)	150 ± 35.0 (94-209)	166 ± 33.0 (106-212)	226 ± 64 (162-290)	207 ± 18.9 (187-243)	179 ± 32.1 (100-216)	207 ± 29.2 (150-256)
Post. genital branch*	335 ± 59.3 (250-494)	199 ± 42.0 (132-262)	262 ± 57.7 (125-340)	200 ± 32.0 (144-268)	369 ± 109 (240-528)	145 ± 36.8 (69-175)	328 ± 35.9 (264-406)	177 ± 49.3 (90-330)
Vagina width length	(13.0-15.5) (14-17)	-	(9-11) (13-14)	-	(10.5-12.5) (14-15)	-	(10-13) (12-15)	-
Vulva-ant. end	312 ± 36.7 (234-373)	-	293 ± 30.9 (247-327)	-	280 ± 19.8 (240-313)	-	329 ± 28.7 (287-393)	-
Prerectum	104 ± 28.9 (62-194)	106 ± 17.5 (75-144)	114 ± 17.0 (82-129)	100 ± 24.6 (68-134)	128 ± 49.8 (60-194)	123 ± 24.2 (90-169)	96.0 ± 18.4 (75-125)	117 ± 12.7 (103-143)
Rectum/cloaca	23.0 ± 1.29 (20.0-25.0)	36.5 ± 2.38 (31.0-39.0)	23.5 ± 1.50 (22.0-25.0)	38.0 ± 3.50 (34.5-40.0)	25.0 ± 2.45 (22-28)	35 ± 3.1 (29.5-39.0)	23.8 ± 2.65 (20-28)	41.5 ± 2.82 (37-46)
Tail	23.0 ± 2.16 (20.0-28.0)	21.2 ± 1.75 (19.0-25.0)	21.4 ± 2.25 (19.0-25.0)	22.3 ± 1.76 (19.0-26.0)	21.8 ± 2.0 (18-24)	20.0 ± 0.79 (18.5-21.0)	24.5 ± 1.35 (22-28)	24.0 ± 1.32 (22.0-26.5)
Spicules arc	-	41.2 ± 0.71 (40-42)	-	36 ± 2 (33-40)	-	37.0 ± 1.25 (34-38)	-	37.5 ± 1.64 (34-40)
Ventromedian supplements	-	1	-	1	-	-	-	1
Sperm length	-	(7.5-8.5)	-	(7-8)	-	(6.5-7.5)	-	(7.0-8.0)
Copulatory muscles	-	(6-11)	-	(5-7)	-	(7-8)	-	(5-8)

\* See footnote in Table 1.

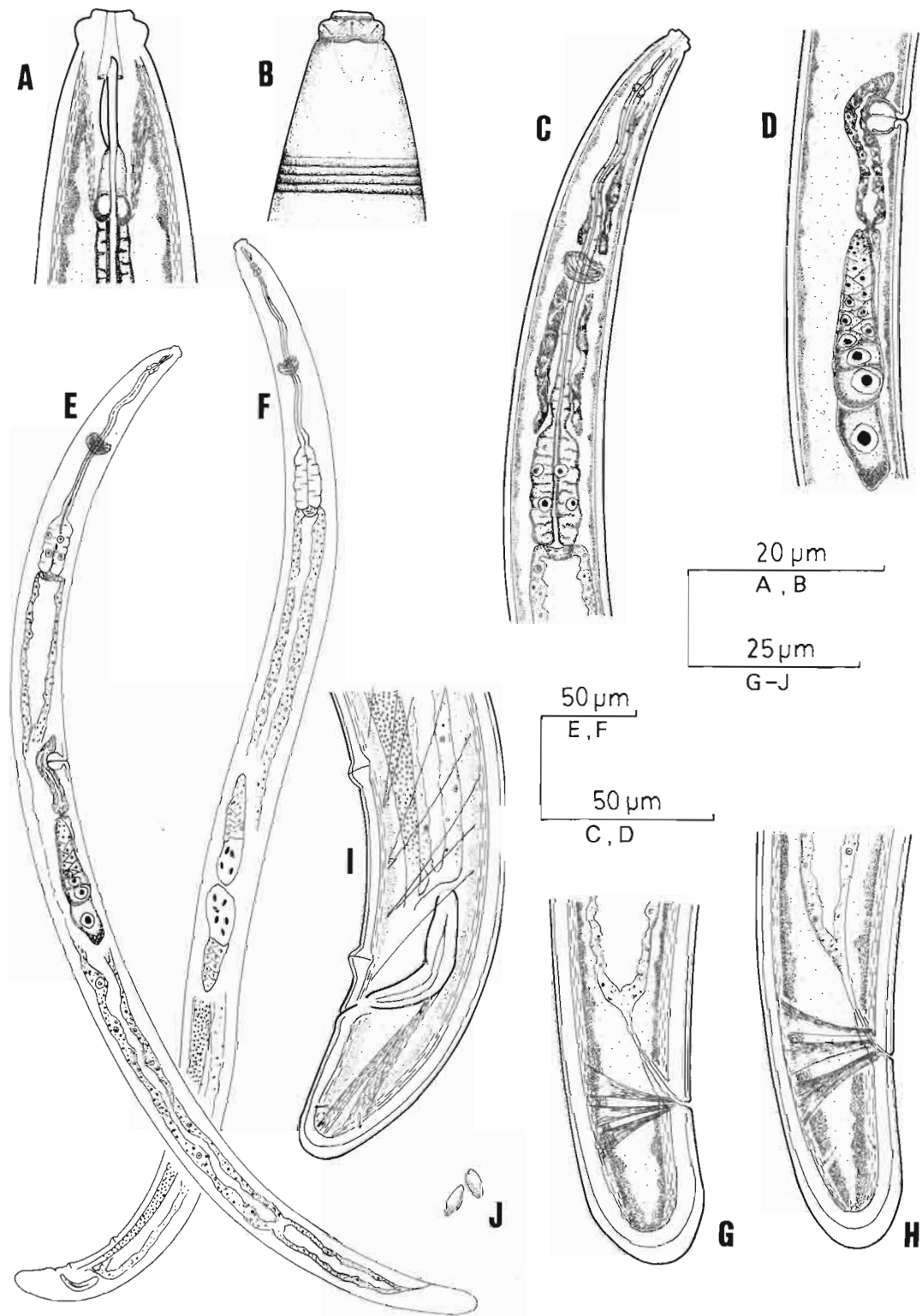


**Fig. 3.** *Tylencholaimellus polonicus* Szczygiel, 1962. A: Neck region; B: Female genital system; C: Anterior end in lateral view; D: Same in surface view; E: Entire male; F: Entire female; G: Pharyngeal bulb and cardia; H: Vagina; I: Intestine-prerectum junction; J: Sperm; K: Male caudal region; L: Female caudal region.

Table 5. Measurements and diagnostic features of *Tylencholaimellus striatus* Thorne, 1939 (All measurements in  $\mu\text{m}$  except L in mm).

Habitat Locality Province	Several S. Pandera Jaén		<i>Festuca</i> Jabalruz Jaén	<i>Fraxinus</i> S. Segura Jaén	Meadow Alfarnatejo Málaga
	n = 9♀♀	♂	14♂♂	4♀♀	10♀♀
L (mm)	0.55 ± 0.03 (0.50-0.60)	0.60	0.62 ± 0.07 (0.51-0.72)	0.63 ± 0.06 (0.62-0.64)	0.63 ± 0.04 (0.57-0.70)
a	22.9 ± 1.46 (20.5-24.7)	23.0	21.3 ± 1.27 (18.6-22.8)	22.1 ± 0.06 (22.0-22.3)	25.5 ± 1.15 (23.8-27.1)
b	3.86 ± 0.16 (3.7-4.1)	4.14	4.57 ± 0.5 (3.7-5.3)	4.55 ± 0.29 (4.2-4.9)	4.6 ± 0.3 (4-5)
c	23.8 ± 1.31 (21.5-25.3)	28.4	26.2 ± 1.99 (23.3-29.4)	26.2 ± 0.67 (25.5-27.1)	27.1 ± 2.69 (22.8-32.6)
V	38.6 ± 2.0 (34.3-40.8)	-	37.1 ± 1.72 (33.7-40.2)	34.9 ± 1.22 (33.8-36.6)	38.6 ± 1.83 (36.6-42.8)
G1	(1.0-2.5)	49.2	(1.0-3.1)	-	-
G2	18.2 ± 3.67 (13.6-26.2)	31.3	15.3 ± 4.6 (11.4-28.2)	19.2 ± 1.62 (17.5-21.4)	16.3 ± 2.86 (11.4-20.7)
Ant. gen. branch/body diam.	(0.2-0.3)	-	(0.2-0.3)	-	-
c'	1.46 ± 0.13 (1.2-1.7)	1.23	1.40 ± 0.16 (1.2-1.7)	1.46 ± 0.1 (1.38-1.56)	1.52 ± 0.14 (1.24-1.80)
Lip region diam.	7-8	7.0	(6.5-7.5)	(7.5-8.0)	(7.0-7.5)
height	(3.0-3.5)	3.5	(3.0-3.5)	(3.0-3.5)	3.0
Amphid width	5	4.0	4.2 ± 0.3 (4.0-4.5)	?	4.1 ± 0.18 (4.0-4.5)
Odontostyle	9.6 ± 0.3 (9.0-10)	10	9.5 ± 0.2 (9.0-10)	9.5	8.0
Odontophore	7.4 ± 0.4 (7-8)	7.0	7.4 ± 0.7 (6.0-8.5)	7.5	7.3 ± 0.24 (7.0-7.5)
Stylet length	(17-18)	17	(16-18.5)	17	(15.0-15.5)
Guiding ring-ant. end	(5-6)	6	(5-7)	?	5
Nerve ring-ant. end	68 ± 3.2 (62-73)	69	70 ± 5.8 (63-80)	65 ± 4 (61-69)	71.3 ± 1.82 (68-75)
Neck length	145 ± 4.1 (140-151)	144	137 ± 9.3 (122-150)	134 ± 10.5 (123-148)	141 ± 4.8 (137-153)
Pharyngeal bulb length	30.6 ± 1.76 (28-32.5)	31	31.9 ± 1.86 (29-35)	33.5 ± 1.87 (31-35.5)	32.2 ± 1.03 (31-34)
Cardia width	(7-8)	7.5	(6-8)	(7.0-7.5)	(6.5-7.5)
length	(4-5)	3.5	(3-6)	(4.5-5.5)	(4.5-5.0)
Body diam. at neck base	22.6 ± 2.05 (20-26)	25	27.3 ± 2.99 (22-32)	26.1 ± 2.49 (23.5-29.5)	22.6 ± 1.62 (20-25)
Body diam. at mitbody	24.9 ± 1.78 (22.5-28)	26	30.8 ± 3.77 (24-36)	28.5 ± 3.24 (25-34)	25 ± 2 (21-28)
Body diam. at anus	15.9 ± 1.23 (14-18)	17	16.9 ± 1.72 (13-18.5)	16.0 ± 0.93 (14.5-17.0)	15.4 ± 0.89 (14-17)
Cuticle head	(1.5-2.0)	1.5	(1.5-2.0)	1.5	1.5
Cuticle midbody	(2.0-2.5)	2.0	2.5	2.0	2.0
Cuticle tail	4.5	4.0	(4.0-5.5)	(3.0-3.5)	(3.5-4.5)
Lateral chord	(5.5-6.5)	7.5	(6-8)	(6-7)	6.5
Ant. ovary/testis	-	57.5	-	-	-
Ant. genital branch	(6-9)	294	(6-11)	-	-
Post. ovary/testis	63 ± 14 (47-81)	50	65.2 ± 16.6 (47-103)	116 ± 26.5 (90-143)	83 ± 18 (53-109)
Post. genital branch*	101 ± 19 (80-137)	187	96.2 ± 31.2 (69-187)	122 ± 10.6 (112-137)	103 ± 19 (74-134)
Vagina width	(8.5-11.5)	-	(8-11)	(8-10)	(8-10)
length	(8.5-11)	-	(8-10)	(9.5-10)	(10-12)
Vulva-ant. end	213 ± 16.8 (187-241)	-	233 ± 32 (190-286)	222 ± 5.44 (216-229)	244 ± 13.5 (223-265)
Prerectum	56 ± 17.5 (34-81)	45.5	56.3 ± 13.2 (37.5-78.0)	60.5 ± 8.80 (53-73)	48.8 ± 10.7 (38-75)
Rectum/cloaca	16.8 ± 2.16 (14-17)	?	18.9 ± 1.27 (17-22)	14 ± 1 (13-15)	15 ± 1.1 (14-17)
Tail	23.3 ± 1.35 (21-25)	21	23.6 ± 2.28 (21-28)	24.2 ± 0.62 (23.5-25.0)	23.5 ± 1.37 (21-25)
Spicules arc	-	24.5	-	-	-
Ventromedian supplements	-	1	-	-	-
Sperm length	-	5	-	-	-
Copulatory muscles	-	7	-	-	-

\* See footnote in Table 1.



**Fig. 4.** *Tylencholaimellus striatus* Thorne, 1939. **A** : Anterior end in lateral view; **B** : Same in surface view; **C** : Neck region; **D** : Female genital system; **E** : Entire female; **F** : Entire male; **G**, **H** : Female caudal region; **I** : Male caudal region; **J** : Sperm.

*Male*: General appearance similar to female. Habitus more ventrad curved in the posterior half of the body. Diorchic with testes opposed. Apart from the adanal pair only one ventromedian supplement is present, outside the range of the spicules. Rectum short, joining the ejaculatory duct within the range of the spicules. Tail-shape similar to female but ventrally more straight. Caudal pores as in female. Spicules slim, curved and 1.2-1.6 anal body diameters long. Lateral guiding pieces very short. Sperm spindle-shaped.

#### DISTRIBUTION

The species was found in six different localities of the provinces of Granada and Jaén, associated to *Quercus coccifera*, *Teucrium polium*, *Chamaerops humilis*, *Juniperus oxycedrus*, *Quercus rotundifolia*, *Pinus nigra*, *Eucalyptus globulus* and *Olea europaea* var. *silvestris*.

#### REMARKS

By courtesy of Dr. Szczygiel (Poland) we have examined several paratypes (females and males) of this species. Spanish material is very similar to the original population and no significant difference has been noted.

### *Tylencholaimellus striatus* Thorne, 1939

(Fig. 4)

#### MEASUREMENTS

See Table 5.

#### DESCRIPTION

*Female*: Nematodes of small size and moderately slender. Body cylindrical, slightly tapering towards both extremities but more so towards the anterior end. Habitus slightly ventrad arched. Outer cuticle thin and with strong transverse striations. Inner cuticle thicker than the outer one. Lateral chords occupying 18-26% of the midbody diameter. Lateral pores obscure. Lip region offset from adjacent body by a distinct constriction; its inner part transformed into a perioral disc. Lips largely amalgamated. Cephalic and labial papillae not protruding. Amphid cup-shaped with sinuous aperture, located at level of the head constriction and occupying one-half to three-quarters of the lip region diameter. Stoma a truncate cone. Guiding ring simple. Odontostyle typical of the genus, 1.2-1.3 cephalic diameters long. Odontophore two-thirds to four-fifths of the odontostyle length, provided with prominent basal knobs. Pharynx consisting of a slender anterior portion, weakly muscular, and a cylindrical basal bulb; both parts of the pharynx separated by a constriction. Pharyngeal basal bulb occupying about one-fourth of the total neck length; gland nuclei often visible. Cardia rounded to hemispherical, surrounded by the intestine. Nerve ring located halfway along the neck length. Genital system monodelphic-opisthodelphic. Ovary reflexed, with numerous oocytes arranged first in several rows and then in a single one. The oviduct joins the ovary subterminally and

consists of a slender distal part and a poorly developed *pars dilatata*. Uterus short, without specializations. Oviduct-uterus junction marked by a weak sphincter. Anterior genital branch a rudimentary cell mass without visible lumen. Vagina cylindrical, its wall encircled by muscles. Vulva transverse. Sperm absent. Prerectum relatively short, 2-4 anal body diameters long. Intestine-prerectum junction guarded by three cells. Rectum slightly longer than anal body diameter. Tail cylindrical and relatively long; the outer layer of the cuticle thickened in its posterior portion forming a distinct hyaline layer. Caudal pores: two pairs located at the middle of the tail.

*Male*: General appearance similar to female. Diorchic with testes opposed. Apart from the adanal pair, only one ventromedian supplement located outside of the range of the spicules. Tail rounded-conoid, ventrally straight, dorsally convex. Outer layer of the cuticle slightly thickened in the posterior end of the tail. Spicules 1.44 anal body diameters long, arched. Sperm spindle-shaped. Lateral guiding pieces obscure. Caudal pores as in female.

#### DISTRIBUTION

The species was found in thirteen different localities of the province of Almería, Granada, Jaén and Málaga, associated to *Avena sterilis*, *Festuca scariosa*, *Thymus mastichina*, *Cistus albidus*, *Amygdalus communis*, *Fraxinus angustifolia*, *Stipa tenacissima*, *Echinospatum boissieri*, *Thymus vulgaris*, *Populus alba*, *Tamarix gallica* and *Juniperus* sp.

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