

Nematodes of the order Dorylaimida from Romania. Contribution to the knowledge of the genus *Tylencholaimellus* Cobb in M. V. Cobb, 1915

Marcel Ciobanu*, Iuliana Popovici* and Reyes Peña-Santiago**

*Institute of Biological Research, Department of Taxonomy and Ecology, 48 Republicii Street, 3400 Cluj-Napoca, Romania,
**Departamento de Biología Animal, Vegetal y Ecología, Universidad de Jaén, Campus "Las Lagunillas" s/n, Edificio B3, 23071-
Jaén, Spain.

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Summary. Specimens belonging to four species of *Tylencholaimellus* (*T. grandis* Thorne, 1974, *T. eskei* Siddiqi & Khan, 1964, *T. paracinctus* Peralta & Peña-Santiago, 1996 and *T. polonicus* Szczygiel, 1962) collected from various localities in Romania were studied by light microscope. New data referring to the distribution in additional habitats of *T. eskei* are provided. *Tylencholaimellus grandis*, *T. paracinctus* and *T. polonicus* are new records for the Romanian nematode fauna. The identity of *T. grandis* is revalidated and the species is reported for the first time in Europe. Descriptions, measurements, illustrations and distribution data are provided.

Key words: description, nematodes, Romania, taxonomy, *Tylencholaimellus*.

The genus *Tylencholaimellus* Cobb in M. V. Cobb, 1915 is common in European soils. In this way, Peña-Santiago & Peralta (1999a) have recently indicated that about 20% of the soil samples collected in Andalucía Oriental (southeastern Iberian Peninsula) yielded one or more species of the genus.

In Romania, only three species have previously been reported: *T. affinis* Brakenhoff, 1914 from fields and grasslands, near the locality Cluj-Napoca (Popovici, 1973, 1974), and grasslands in various locations in the Bihor, Trascău and Metaliferi Mountains (Popovici, 1998); *T. eskei* Siddiqi & Khan, 1964 from a salt affected field located near the town of Turda, located in the Cluj county (Ciobanu *et al.*, unpublished); and *T. striatus* Thorne, 1939 from grasslands located near the locality Cluj-Napoca (Popovici, 1974, 1977), and also from grasslands at altitudes of 400 and 980 m in the Trascău and Mehedinți Mountains (Popovici, 1998). However, neither morphological or taxonomic data of Romanian populations of these species are available.

MATERIALS AND METHODS

Nematodes were collected by two of the authors (M.C. & I.P.) during several nematological

surveys carried out between 1994-1998 in several localities, mainly of natural areas (deciduous and coniferous forests, grasslands, vegetated cliffs and sand dunes) from the Romanian Carpathians, Transylvanian Plain and Danube Delta (Table 1). Nematode extraction was carried out by the centrifugal method of de Grisse (1969). Nematodes were killed and preserved in a 4% formaldehyde solution heated at 65°C, mounted in anhydrous glycerin (Seinhorst, 1959) and stored in the nematode collection at the Institute of Biological Research, Cluj-Napoca. Drawings were made using an Olympus BH-2 light microscope with interference contrast. Data on the presence and distribution of the species were included in the Romanian nematode fauna database. The paper is also a contribution towards an inventory of the species belonging to the genus *Tylencholaimellus* in Romania.

DESCRIPTIONS

Tylencholaimellus grandis Thorne, 1974 (Fig. 1)

Material examined. Four females collected from Caraiman peak (Bucegi Mountains), Table 1, site no. 1.

Measurements. See Table 2.

Table 1. Locations, vegetation and soil types of a nematological survey in Romania.

Site no.	Locality	Altitude (m)	Geographical position	Plant association*	Soil type**
1	Caraiman peak (Bucegi Mountains)	2200	45°13'N-25°24'E	<i>Festucetum supinae</i>	alpine meadow soil
2	Sacalin Island (Danube Delta)	1.5	44°50'N-29°37'E	dune vegetation	sand dune
3	Letea (Danube Delta)	12.4	45°19'N-29°33'E	<i>Fraxino pallissae-Quercetum roboris</i>	sand dune
4	Pietrosul Rodnei (Rodnei Mountains)	1560	47°25'N-24°54'E	<i>Hieracio rotundati- Piceetum</i>	acid brown
5	Suatu botanical reserve (Transylvanian Plain)	370-450	46°46'N-23°58'E	<i>Salvio nutantis-Festucetum rupicolae</i>	not available

*according to Coldea(1991).

**according to the Romanian System of Soil Classification (Conea *et al.*, 1980).

Female. Moderately slender nematode of medium size, 1.05-1.20 mm long. Habitus more or less curved ventrad upon fixation, adopting an open "C" shape. Body cuticle 2.0 µm thick at anterior region, 3.0-4.0 µm at midbody and 6.0-7.0 µm at tail; outer cuticle layer thin and with fine transverse striations; inner layer about three-four times thicker than the outer one. Lateral chord occupying about one-fourth of the corresponding body diameter at midbody, with abundant glandular bodies. Lip region almost continuous, very slightly offset by a weak depression, 2.8 times as wide as high. Lips almost completely amalgamated. Amphid fovea cup-like, its opening occupying 7.5-8.0 µm or 60-64% of the corresponding body diameter. Odontostyle 1.2-1.4 times longer than lip region width. Stylet length equal to 2.2-2.4 times lip region width. Pharynx consisting of a narrow and weakly muscular anterior part and the basal bulb, which is somewhat pyriform and occupies 19-21% of the total neck length, about 1.7 times as long as wide or 0.6-0.8 times the body diameter at neck base. Nerve ring located at 54-62% of the total neck length. Cardia rounded-conoid, about 4.0 µm long, and about 1.8 times as wide as long. Ovary well developed, reflexed; oocytes abundant, first in two rows and then in one single row. Oviduct joining subterminally the ovary and consisting of a tubular part and a poorly developed *pars dilatata* containing abundant spindle-shaped spermatozoa, 4.5-5.0 µm long. A weakly developed sphincter separates oviduct from uterus. Uterus not differentiated, 136-147 µm long, 2.4-2.8 times body diameter. Anterior sac 69-73 µm long, 1.2-1.3 times the corresponding body diameter. Vagina cylindrical, extending inwards to less than half (38-45%) of the corresponding body diameter. *Pars proximalis vaginae* 16.0-17.5 x 9.0-10.0 µm; its walls surrounded by well-developed musculature. *Pars*

distalis vaginae measuring about 6.5-7.0 µm. Vulva apparently a transverse slit. Prerectum relatively short, 1.8-2.3 times as long as anal body diameter. Rectum from slightly shorter than, to equal to anal body diameter. Tail rounded-conoid to hemispheroid, distinctly shorter than anal body diameter. Two pairs of caudal pores located at the middle of tail (one subdorsal, the other subventral).

Male. Not found.

Remarks. *Tylencholaimellus affinis* was originally described by Brakenhoff (1914), from moist soil in Bremen, Germany. Several populations from Europe and USA have been identified as belonging to this species, but some doubts persist about their conspecificity (*cf.* Peña-Santiago & Peralta, 1999b). In his description, Brakenhoff (1914) illustrated the species having lip region offset by constriction (see Brakenhoff's Fig. 13) and tail hemispheroid (see Brakenhoff's Fig. 17). Thorne (1939) described and illustrated American specimens of the species, which were characterized by having lip region offset by a slight depression (in fact, almost continuous with the adjacent body; see Thorne's Fig. 198) and tail somewhat variable in form, hemispherical to bluntly conoid. Some years later, Thorne (1974) described a new species, *T. grandis*, being morphologically very close to *T. affinis*, but with distinct differences affecting the total stylet length and vulva position. Goseco *et al.* (1975) examined several "type specimens" of *T. grandis* in their revision of the genus, corrected some erroneous measurements provided by Thorne (1974), and considered *T. grandis* to be a junior synonym of *T. affinis*. In addition, Goseco *et al.* (1975) described and illustrated other American specimens characterized by their lip region offset by deep constriction, a feature rather comparable to that of Brakenhoff's original material than that described

by Thorne. This difference was recently mentioned by Peña-Santiago & Peralta (1999b), who considered it as of taxonomic relevance and maintained doubts on the conspecificity of all material hitherto identified as *T. affinis*. The four Romanian specimens studied here are characterized by their lip region almost continuous, very slightly offset by a weak depression and tail hemispheroid, corresponding well with the descriptions and illustrations given by Thorne (1939, 1974), and differing in this respect from material studied and illustrated by Brakenhoff (1914) and Goseco *et al.* (1975).

Taking into consideration that *Tylencholaimellus* species show little intraspecific variability in the morphology of the lip region, it is further support for the revalidation of *T. grandis* and the separation of the two species: *T. affinis* and *T. grandis*. *Tylencholaimellus affinis* is characterized by lip region offset by a constriction and includes the material described by Brakenhoff (1914) and Goseco *et al.* (1975). *Tylencholaimellus grandis* is separated from *T. affinis* by its lip region almost continuous with the adjacent body or offset by a weak depression and includes the material described by Thorne (1939, as *T. affinis*; 1974, as *T. grandis*), and Romanian specimens studied here. Consequently, the synonymy of *T. grandis* with *T. affinis* by Goseco *et al.* (1975) must be rejected.

This is the first record of *T. grandis* in Europe and in Romania. Both *T. affinis* and *T. grandis* might be Palearctic and evolutionary related species.

Tylencholaimellus eskei Siddiqi & Khan, 1964 (Fig. 2)

Material examined. Four females collected from Pietrosul Rodnei (Rodnei Mountains), Table 1, site no. 4.

Measurements. See Table 2.

Female. Stout nematodes of small size, 0.49-0.56 mm long. Body arcuate ventrad upon fixation. Body cuticle 1.0-1.5 μm thick at anterior region, 3.0 μm at midbody and 3.0-5.0 μm at tail; outer cuticle layer thin and with fine transverse striations; inner layer about 2.5-3.0 times thicker than the outer one. Lateral chord occupying about one-fourth of the corresponding body diameter at midbody. Lip region offset by very weak constriction, distinctly narrower than the adjacent body, 1.6-2.3 times as wide as high. Lips amalgamated in their most part. Labial and cephalic papillae not pro-

truding. Amphid fovea cup-like, opening at level of the cephalic constriction and occupying 4.0 μm or 50-57% of the corresponding body diameter. Odontostyle 1.1-1.4 times longer than lip region width. Stylet length equal to 2.1-2.6 times lip region width. Pharynx difficult to observe in detail in the specimens examined. Ovary reflexed, moderately developed, sometimes reaching but not surpassing the sphincter level; oocytes arranged first in two rows and then in one single row. Oviduct joining subterminally the ovary and consisting of a tubular part and a moderately developed *pars dilatata*. A sphincter separates oviduct from uterus. Uterus not differentiated, very short, 18 μm long or 0.6-0.8 times body diameter. Anterior uterine sac 19-27 μm long, 0.6-1.1 times the corresponding body diameter. Vagina cylindrical, extending inwards to more than half (52-56%) of the corresponding body diameter. *Pars proximalis vaginae* 9.0-10.0 x 6.0-6.5 μm ; its walls are surrounded by moderately developed musculature. *Pars distalis vaginae* measuring about 5 μm . Vulva a transverse slit. Prerectum short, 1.6-2.2 times as long as anal body diameter. Rectum shorter than anal body diameter. Tail conoid, from slightly shorter to slightly longer than anal body diameter. Caudal pores obscure.

Male. Not found.

Remarks. The few specimens examined agree well with the original description of the species by Siddiqi & Khan (1964) and with data provided later by Goseco *et al.* (1975), but some differences have been observed and deserve discussion. Romanian material show the lip region offset by a very weak constriction, difficult to distinguish in two of the four females studied (vs offset by a more distinct constriction). The body is slightly smaller (vs 0.53-0.61 mm) and stouter (vs $a=25-29$), the lip region is narrower (vs 9 μm ; see Peña-Santiago & Peralta, 1999b). Taking into consideration that mostly these differences are morphometrical, and that only the type population of the species is known, with few (six females) specimens studied, such differences are provisionally interpreted as intraspecific variability.

Tylencholaimellus eskei has been previously reported from a salt affected field located near the town of Turda, located in the Cluj county (Ciobanu *et al.*, unpublished). The material studied here was collected from mountainous spruce forest on acid soil. This distribution might indicate that the species does not show any ecological preference to acid or alkaline soils.

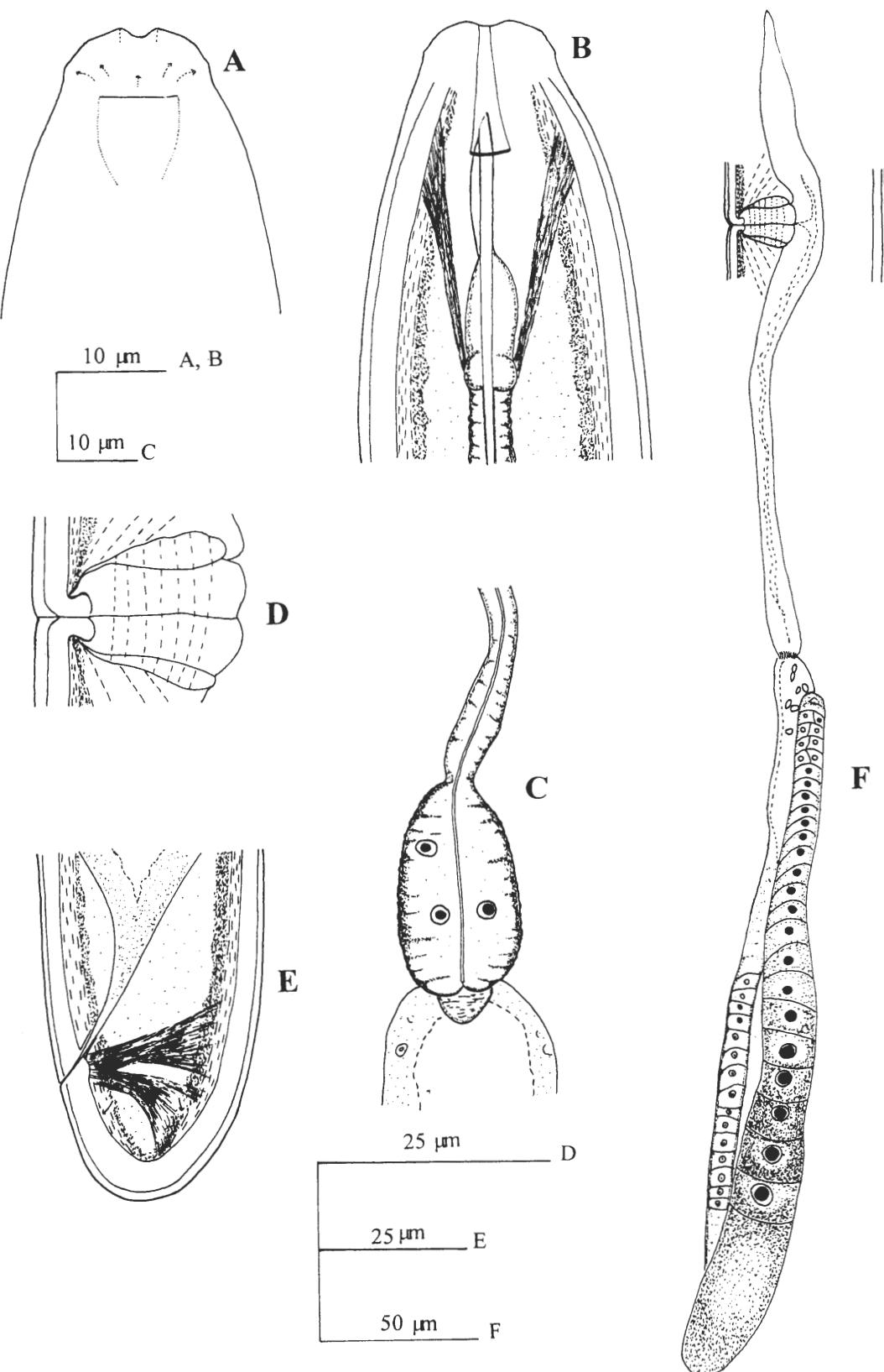


Fig. 1. *Tylencholaimellus grandis* Thorne, 1974 (female). A: Anterior end in lateral surface view. B: Same in median view. C: Pharyngeal bulb and cardia. D: Vagina. E: Caudal region. F: Genital system.

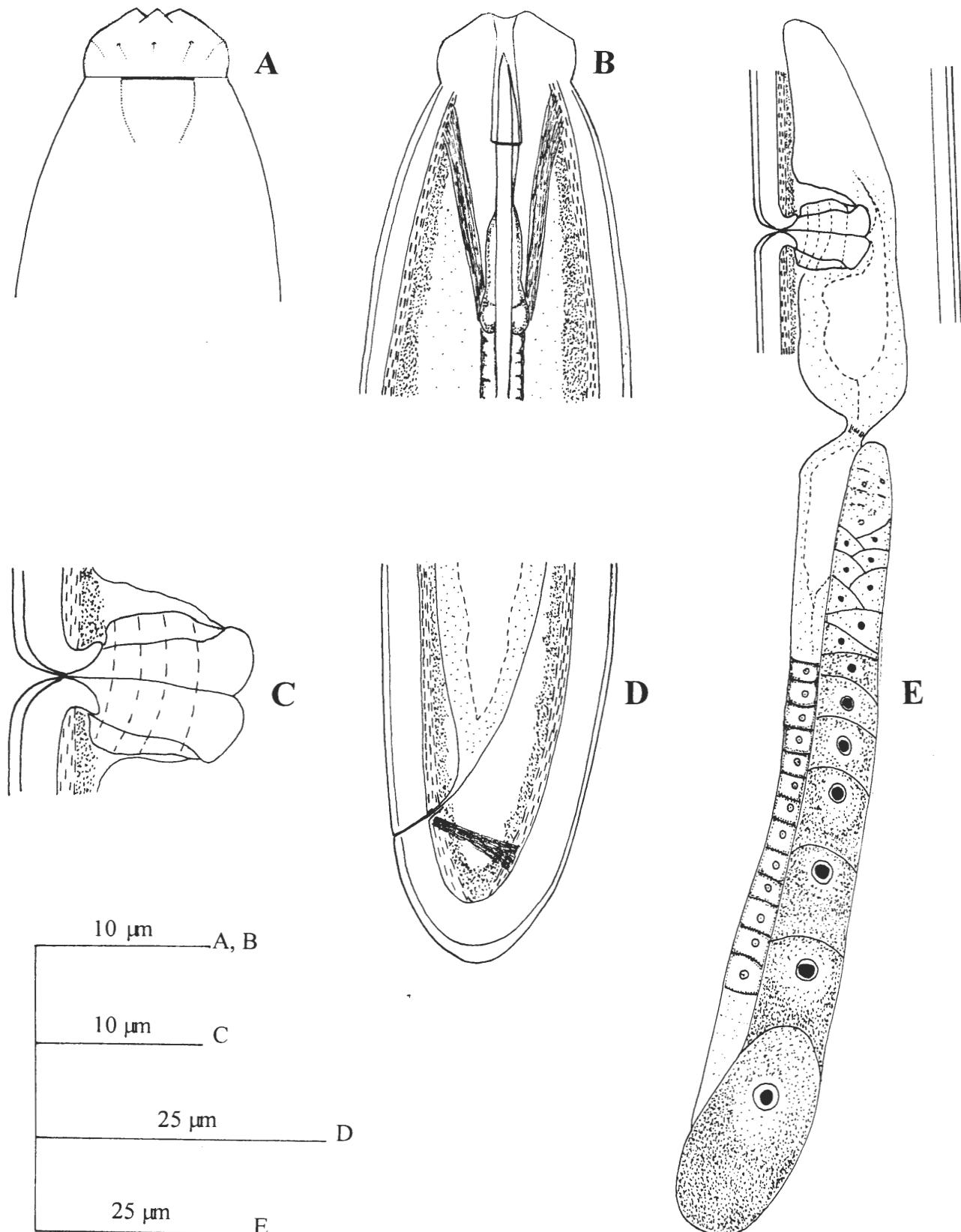


Fig 2. *Tylencholaimellus eskei* Siddiqi & Khan, 1964 (female). A: Anterior end in lateral surface view. B: Same in median view. C: Vagina. D: Caudal region. E: Genital system.

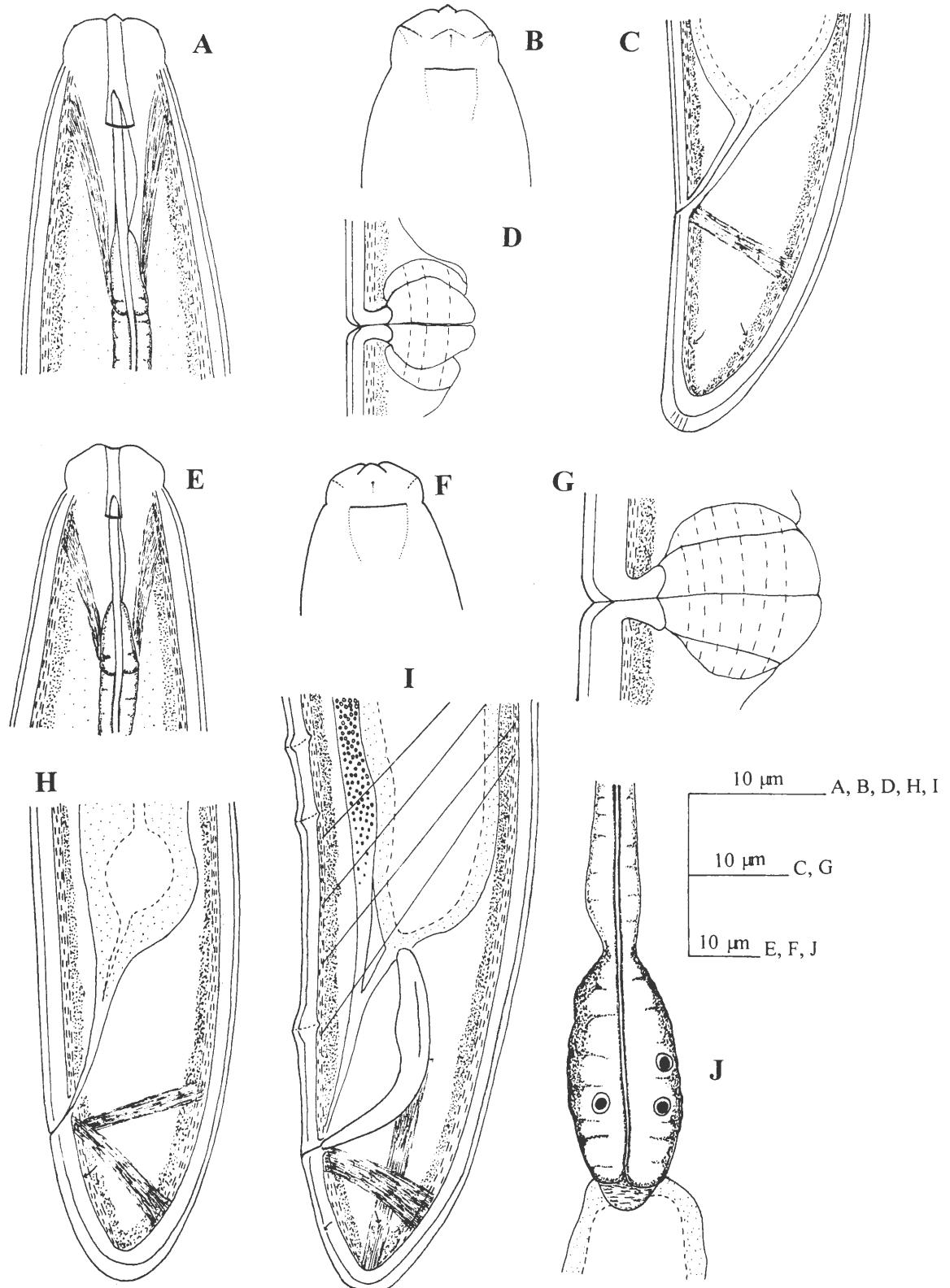


Fig. 3. *Tylencholaimellus paracinctus* Peralta & Peña Santiago, 1996 (female). A: Anterior end in median view. B: Same in lateral surface view. C: Caudal region. D: Vagina. *Tylencholaimellus polonicus* Szczygiel, 1962. E: Female anterior end in median view. F: Same in lateral surface view. G: Vagina. H: Female caudal region. I: Male caudal region. J: Female pharyngeal bulb and cardia.

Table 2. Measurements of *Tylencholaimellus* species from Romania (All measurements in µm).

Species	<i>T. grandis</i>	<i>T. eskei</i>	<i>T. paracinctus</i>	<i>T. polonicus</i>			
Habitat	Cliff vegetation	Spruce forest	Grassland	Sand dunes		Deciduous forest	
Locality	Caraiman peak (Bucegi Mountains)	Pietrosul Rodnei (Rodnei Mountains)	Suatu (Transylvanian Plain)	Sacalin Island (Danube Delta)		Letea (Danube Delta)	
n	4 ♀♀	4 ♀♀	6 ♀♀	1 ♂	2 ♀♀	1 ♂	1 ♀
L	1117.5±69.9 (1050-1200)	539.8±33.9 (490-564)	673.0±37.6 (620-730)	616	1180, 1430	1037	1105
a	20.7±0.8 (19.8-21.8)	21.0±1.0 (19.9-21.9)	25.8±2.2 (23.4-29.2)	25.2	27.1, 28.6	23.7	24.0
b	7.3±0.5 (6.7-7.8)	5.6±0.8 (4.6-6.4)	6.7±0.9 (5.6-7.9)	5.1	7.4, 8.6	6.9	7.1
c	43.3±1.9 (42.0-46.2)	27.1±5.2 (20.3-32.8)	31.9±1.6 (29.8-34.1)	27.4	38.2, 40.4	41.5	39.5
c'	0.7±0	1.0±0.2 (0.9-1.2)	1.3±0.1 (1.2-1.5)	1.3	0.9, 1.0	0.8	0.8
V/T	31.6±1.3 (29.9-32.8)	37.7±1.4 (35.8-38.9)	38.5±1.6 (36.3-40.3)	34.1	24.5, 26.3	50.8	25.2
Lip region diam.	12.5±0	7.5±0.6 (7.0-8.0)	7.5±0.5 (7.0-8.0)	8.0	12.5, 14.0	14.0	15.0
Amphid opening	7.0±0	4.0±0	4.5±0.5 (4.0-5.0)	5.0	-	8.0	8.5
Odontostyle	15.7±1.2 (15.0-17.0)	9.5±0.6 (9.0-10.0)	10.3±0.4 (9.5-10.5)	10.0	16.5, 17.5	18.5	20.0
Odontophore	11.3±0.6 (11.0-12.0)	8.4±0.5 (8.0-9.0)	7.0±0.5 (6.5-8.0)	7.5	11.0, 12.5	9.0	10.0
Stylet length	27.0±1.0 (26.0-28.0)	17.9±0.9 (17.0-19.0)	17.3±0.3 (17.0-17.5)	17.5	27.5, 30.0	27.5	30.0
Neck	152.5±3.9 (147-156)	97.0±9.9 (87-106)	102.3±11.1 (91-120)	120.0	137.0, 193.0	150.0	155.0
Pharyngeal bulb length	30.8±0.5 (30.0-31.0)	19.8±2.5 (17.0-23.0)	18.8±3.4 (15.0-25.0)	25.0	-	37.5	31.0
Anterior genital branch	68.1±1.7 (65.6-69.3)	24.3±3.6 (19.0-27.0)	29.9±5.3 (25.0-40.0)	-	56.0, 68.0	45.0	-
Cuticle anterior region	2.0±0	1.3±0.2 (1.0-1.5)	1.0±0	1.0	1.0, 1.0	2.0	2.0
Cuticle midbody	3.8±0.5 (3.0-4.0)	3.0±0	2.0±0	2.0	3.5, 4.0	4.0	4.5
Cuticle tail	6.3±0.5 (6.0-7.0)	4.3±1.0 (3.0-5.0)	2.5±0	2.5	3.5, 5.0	4.5	5.0
Body diam. neck base	45.3±1.9 (44.0-48.0)	21.5±1.7 (20.0-23.0)	22.8±0.3 (22.5-23.0)	23.0	35.0, 40.0	39.0	44.0
Body diam. midbody	54.0±1.8 (52.0-56.0)	25.8±1.7 (24.0-28.0)	26.2±1.9 (24.5-29.5)	24.5	44.0, 50.0	43.0	46.0
Body diam. anus	36.8±0.8 (36.0-37.5)	17.5±2.1 (15.0-20.0)	16.2±1.3 (15.0-17.5)	17.0	26.0, 37.0	32.0	30.0
Prerectum	74.3±10.0 (63.0-84.4)	35.3±7.4 (28.0-43.0)	66.0±25.2 (38.0-105.0)	45.0	92.0, 144.0	234.0	106.0
Rectum	31.2±4.5 (28.0-37.5)	13.3±3.1 (9.0-16.0)	13.7±1.0 (13.0-15.0)	27.0	22.0, 25.0	45.0	26.0
Tail	26.0±1.4 (25.0-28.0)	18.0±1.4 (17.0-20.0)	21.2±1.4 (19.0-22.5)	22.5	29.0, 37.0	23.0	28.0
Spicule	-	-	-	24.0	-	40.0	-
						43.0, 43.0	

***Tylencholaimellus paracinctus* Peralta & Peña-Santiago, 1996
(Fig. 3 A-D)**

Material examined. Six females and one male collected from the Suatu botanical reserve (Transylvanian Plain), Table 1, site no. 5.

Measurements. See Table 2.

Female. Moderately slender nematodes of small size, 0.62-0.73 mm long. Body arcuate ventrad, adopting an open "C" shape upon fixation. Body cuticle 1.0 μm thick at anterior region, 2.0 μm at midbody and 2.5 μm at tail; outer cuticle layer thin and with fine transverse striations; inner layer about 2.5-3.0 times thicker than the outer one. Lateral chord occupying 30-36% of the corresponding body diameter at midbody. Lip region offset by a more or less marked constriction, about 2.5 as wide as high. Lips rather amalgamated and slightly angular, their inner portion forming perioral liplets. Amphid fovea cup-like, opening at level of the cephalic constriction and occupying 4.0-5.0 μm or 57-71% of the corresponding body diameter. Odontostyle 1.3-1.5 times longer than lip region width. Odontophore 67-84% of the odontostyle length. Stylet length equal to 2.1-2.5 times lip region width. Pharynx difficult to observe in the specimens examined. Ovary reflexed, well developed, usually reaching and surpassing the vulva level; oocytes arranged first in several rows and then in one single row. Oviduct joining subterminally the ovary and consisting of a tubular part and a moderately developed *pars dilatata*. A sphincter separates oviduct from uterus. Uterus not differentiated, 35-40 μm long, or 1.3-1.6 body diameters. Uterine sac 25-40 μm long, 0.9-1.5 times the corresponding body diameter. Vagina cylindrical or pear-shaped, extending inwards to less than half (37-40%) of the corresponding body diameter. *Pars proximalis vaginae* 6.0-6.5 x 6.5-7.0 μm ; its walls surrounded by well developed musculature. *Pars distalis vaginae* measuring about 3.5-4.0 μm . Vulva a transverse slit. Spermatozoa 4-5 μm long, observed throughout the genital tract in some specimens. Prerectum 2.5-6.2 times as long as anal body diameter. Rectum shorter than, or equal to anal body diameter. Tail conoid, longer than anal body diameter; its ventral side straight or slightly concave, the dorsal side convex. Two pairs of caudal pores located at the middle of tail (one subdorsal, the other subventral).

Male. General morphology similar to female, but with the posterior body region more ventrally

curved. Apart from the adanal pair, only one ventromedian supplement present, outside the range of spicule. Tail more strongly curved ventrad. Spicules 1.4 anal body diameters long. Lateral guiding pieces obscure. Caudal pores as in female.

Remarks. The Romanian specimens are very similar to the Iberian ones studied in the original description of the species (Peralta & Peña Santiago, 1996), except for some minor differences in the body and tail length (vs slightly longer in Spanish material, but showing a wide overlap), which are considered as intraspecific variability.

Ciobanu & Popovici (1999) reported *T. eskei* from the Suatu botanical reserve (Transylvanian Plain), but a revision of this material has revealed that it actually belongs to *T. paracinctus*.

The species is new for the Romanian nematode fauna and this is the first record out of the Iberian Peninsula.

***Tylencholaimellus polonicus* Szczygiel, 1962
(Fig. 3 E-J)**

Material examined. Two females and one male collected from the Sacalin Island, and one female and two males collected from Letea; both localities situated in the Danube Delta, Table 1, sites no. 2 and 3.

Measurements. See Table 2.

Female. Moderately slender nematodes of medium size, 1.10-1.43 mm long. Body more or less arcuate ventrad, adopting an open "C" shape upon fixation. Body cuticle 1.0-2.0 μm thick at anterior region, 3.5-4.5 μm at midbody and 3.5-5.0 μm at tail; outer cuticle layer thin and with fine transverse striations; inner layer about 3.0-3.5 times thicker than the outer one. Lateral chord occupying about one-fourth of the corresponding body diameter at midbody, with abundant glandular bodies. Lip region offset by a deep constriction, 1.9-2.5 times as wide as high. Lips practically amalgamated with prominent inner part. Amphid fovea cup-like, opening at level of the cephalic constriction and occupying 8.5 μm or about three-fifths of the corresponding body diameter. Odontostyle relatively robust, 1.1-1.4 times longer than lip region width. Stylet length equal to 2.0-2.4 times lip region width. Pharynx consisting of a narrow and weakly muscular anterior part and the basal bulb, which occupies 20-23% of the total neck length, and is 1.7-2.6 times as long as wide or 0.7-1.1 body diameters at neck base. Nerve ring located at 49-64% of the total neck length. Cardia

rounded-conoid, 4.0-5.0 μm long, 2.1-2.3 times as wide as long. Ovary moderately developed, reflexed; oocytes arranged first in several rows and then in one single row. Oviduct joining subterminally the ovary and consisting of a tubular part and a well developed *pars dilatata*. A sphincter separates oviduct from uterus. Uterus not differentiated 45-50 μm long or equal to the body diameter. Uterine sac 45-68 μm or 1.0-1.4 times the corresponding body diameter long. Vagina cylindrical, extending inwards to less than half (39-47%) of the corresponding body diameter. *Pars proximalis vaginae* 15.0-16.0 x 11.0-12.0 μm ; its walls are surrounded by well developed musculature. *Pars distalis vaginae* measuring about 7.0-8.0 μm . Vulva a transverse slit. Prerectum 3.5-3.9 times as long as anal body diameter. Rectum shorter than or equal to anal body diameter. Tail conoid-rounded, slightly shorter than or equal to anal body diameter. Two pairs of subventral caudal pores, at the middle of tail.

Male. General morphology similar to female, but with posterior body region more ventrally curved. Apart from the adanal pair, two or three ventromedian supplements present, outside the range of spicule. Tail slightly more conoid than in female. Spicules 1.3-1.5 anal body diameters long. Lateral guiding pieces obscure. Two pairs of caudal pores located at the middle of tail (one ventral, the other lateral).

Remarks. Romanian specimens fit well with the type material (Szczygciel, 1962) and with several Spanish populations (Peralta & Peña-Santiago, 1995). No significant differences have been observed.

This is the first record of *T. polonicus* in Romania. It is a widely distributed species in European soils.

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REFERENCES

- Brakenhoff, H.** 1914. Beitrag zur Kenntnis der Nematoden-Fauna des nordwestdeutschen Flachlandes. *Abhandlungen des Naturwissenschaftlichen Vereins* 22: 267-311.
- Ciobanu, M. & Popovici, I.** 1999. Diversity of soil nematode communities in the Suatu Nature Reserve. *Studia Universitatis Babeș-Bolyai Biologia* 44: 45-51.
- Coldea, G.** 1991. Prodrome des associations végétales des Carpates du Sud-Est (Carpates Roumaines). *Documents phytosociologiques Camerino* 13: 539 pp.
- Conea, A., Florea, N. & Puiu, S. (Eds).** 1980. Sistemul român de clasificare a solurilor. *ASAS, Institutul de Cercetări Pedologice și Agronomice. Metode, rapoarte, ondrușări* 12: 178 pp.
- De Grisse, A.** 1969. Redescription ou modification de quelques techniques utilisées dans l'étude des nématodes phytoparasitaires. *Mededelingen Rijksfaculteit Landbouwwetenschappen Gent* 34: 351-369.
- Goseco, C.G., Ferris, V.R. & Ferris, J.M.** 1975. Revisions in Leptonchoidea (Nematoda: Dorylaimida). *Tylencholaimellus*, *Dorylillum*, *Gerthus* n. gen. and *Agmodorus* in Tylencholaimellidae; and *Aulolaimoides* and *Adenolaimus* in Aulolaimoididae. *Purdue University, Agricultural Experiment Station Research Bulletin, West Lafayette, Indiana* 928: 40 pp.
- Peña-Santiago, R. & Peralta, M.** 1999a. La distribución de especies de doriláimidos (Nematoda: Dorylaimida) en Andalucía Oriental. I. Especies de las familias Dorylaimoididae, Tylencholaimellidae, Leptonchidae y Aulolaimoididae en relación con comunidades vegetales. In: M. Román-Rayó (Coord.), *Educar enseñando*: 305-312. Servicio de Publicaciones, Universidad de Jaén. 445 pp.
- Peña-Santiago, R. & Peralta, M.** 1999b. The genus *Tylencholaimellus* Cobb in M.V. Cobb, 1915 (Nematoda: Dorylaimida): general morphology, taxonomy, compendium and polytomous key to the species. *Nematology* 1: 183-194.
- Peralta, M. & Peña-Santiago R.** 1995. Nematodes of the order Dorylaimida from Andalucía Oriental, Spain. The family Tylencholaimellidae Jairajpuri, 1964. Part 1. *Fundamental and Applied Nematology* 18: 479-492.
- Peralta, M. & Peña-Santiago R.** 1996. Nematodes of the order Dorylaimida from Andalucía Oriental, Spain. The family Tylencholaimellidae Jairajpuri, 1964. Part 2. *Fundamental and Applied Nematology* 19: 53-66.
- Popovici, I.** 1973. Nematode din sol în fauna României. *Studii și cercetări de biologie, Seria Zoologie București* 25: 9-15.
- Popovici, I.** 1974. Nematodele din sol în relațiiile lor dinamice cu natura solului și a vegetației. Teză de doctorat, Universitatea "Babeș-Bolyai" Cluj. 280 pp.
- Popovici, I.** 1977. The specific structure and affinity of nematode populations in brown-humus soil and leached chernozem. *Pedobiologia* 17: 216-225.
- Popovici, I.** 1998. Structure of nematode communities in mountain grasslands from Romania. In: *Nematode*

- communities of northern temperate grassland ecosystems (R. De Goede & T. Bongers Eds.). pp. 221-240. Focus Verlag Giessen.
- Seinhorst, J.W. 1959.** A rapid method for the transfer of nematodes from fixative to anhydrous glycerin. *Nematologica* 4: 67-69.
- Siddiqi, M.R. & Khan, E. 1964.** *Tylencholaimellus eskei* n. sp. (Nematoda: Leptonchidae), with a key to the species of *Tylencholaimellus*. *Nematologica* 10: 105-107.
- Szczygiel, A. 1962.** A new soil nematode *Tylen-*
- choaimellus polonicus* sp. n. (Nematoda: Leptonchidae) from Poland. *Bulletin de l'Academie polonaise des Sciences* 10: 473-477.
- Thorne, G. 1939.** A monograph of the nematodes of the Superfamily Dorylaimoidea. *Capita Zoologica* 8: 1-261.
- Thorne, G. 1974.** Nematodes of the Great Northern Plains. Part II. *Technical Bulletin Agricultural Experimental Station, South Dakota State University* 41:1-120.

Ciobanu, M. Popovici, I., Peña-Santiago, R. Нематоды отряда Dorylaimida из Румынии: к познанию рода *Tylencholaimellus* Cobb in M. V. Cobb, 1915.

Резюме. С помощью световой микроскопии исследованы особи четырех видов рода *Tylencholaimellus* (*T. grandis* Thorne, 1974, *T. eskei* Siddiqi & Khan, 1964, *T. paracinctus* Peralta & Peña-Santiago, 1996 и *T. polonicus* Szczygiel, 1962), собранные в различных районах Румынии. Приводятся новые данные по распределению *T. eskei*. Впервые для Румынии отмечены *Tylencholaimellus grandis*, *T. paracinctus* и *T. polonicus*, а *T. grandis* впервые обнаружен в Европе. Приводятся описания морфологии, морфометрия и данные по распределению видов рода *Tylencholaimellus*.