

# Nematodes of the order Dorylaimida from Andalucía Oriental, Spain. The genus *Discolaimus* Cobb, 1913. II. Two previously known species, with comments on their taxonomy

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**Summary.** Two close known species of the genus *Discolaimus*, *D. major* and *D. agricolus*, are described and illustrated, including SEM observations, from material collected in southeastern Spain. The identity and the taxonomy of both species are discussed and new criteria for their separation are proposed. A revision of data from literature reveals that *D. major* is the most widely distributed *Discolaimus* species in the world, but also that some of its previous records may be doubtful and/or erroneous. *D. paramajor* and *D. perplexans* are considered new junior synonyms of *D. major*.

**Key words:** description, *Discolaimus*, new synonyms, Spain, taxonomy.

Most part of the abundant material of the genus *Discolaimus* Cobb, 1913 collected in Andalucía Oriental (southeastern Spain) in a general nematological survey carried out during the last twenty years belongs to two closely related and previously known species: *D. major* Thorne, 1939 and *D. agricolus* Sauer & Annells, 1985. The study of Iberian populations of both species revealed new data of taxonomic interest that are presented below.

For additional data concerning precedents and material and methods the reader is referred to our previous paper (Peña-Santiago *et al.*, 2002) on the genus *Discolaimus*.

## DESCRIPTION

### *Discolaimus major* Thorne, 1939 (Figs. 1 & 2E-I)

Syn. *D. arenicolus* Yeates, 1967

*D. paramajor* Coomans, 1966 syn. n.

*D. perplexans* Siddiqi, 1964 syn. n.

**Measurements:** see Table 1.

**Female.** Slender nematodes (a-ratio almost always over 35) of medium size, 1.4-2.3 mm but rarely less than 1.5 mm or more than 2 mm long. Habitus after fixation curved ventrad, to an open

"C" shape. Body cylindrical, tapering towards both ends but more so towards the anterior extremity. Cuticle 1.0-1.5  $\mu\text{m}$  thick at anterior region, 1.5-2.0  $\mu\text{m}$  at midbody, and 4.0-6.0  $\mu\text{m}$  at tail, with two layers. Outer cuticle layer thin throughout the body, with fine transverse striations that are usually well visible; inner cuticle layer little wider than the outer one but clearly thickened at level of tail. Lateral chord one-fourth to one-third of the midbody diameter. Abundant lateral glandular bodies along the body, arranged in a single row and each of them connected with a coarse lateral pore: 14 from anterior end to neck base (n=1); 13-25 from neck base to vulva (n=6), and 34-49 from vulva to anus (n=6). Lip region expanded, sucker-like but with the oral field only moderately sunken, 3.5-4.1 times as wide as high. Labial disc with six distinct labial sectors separated by narrow and shallow interlabial radial grooves; eighteen longitudinal grooves divide the outer margin of the labial disc in six labial and twelve interlabial lobes. Labial and cephalic papillae with clear innervation. Amphid fovea stirrup-shaped, its aperture slit-like and occupying one-fourth to one-third of the corresponding body width. Odontostyle quite strong, 6.0-7.2 times as long as wide, almost equal (0.8-1.0 times) to the lip region width, and wider

(about twice) than the cuticle at its level; aperture 53-60% of the total length. Odontophore rod-like, about 1.3-1.6 times the odontostyle. Guiding ring weakly sclerotized. Pharynx consisting of a slender but clearly muscular anterior portion which extends gradually into the basal expansion. In addition to the typical swelling surrounding the odontophore base, a more or less developed second swelling appears behind the first. Pharyngeal expansion practically cylindrical, 8.4-9.4 times as long as wide, 4.5-5.7 times as long as the body diameter at neck base, and starting at 42-45% of the total neck length. Pharyngeal gland nuclei location ( $n=2$ ): DO=51-56%; AS1=?; AS2=43-47%; PS1=77-81%; PS2=79-82%. Cardia cylindroid, 1.3-2.0 times as long as wide, enveloped by intestinal tissue; its junction to the pharyngeal expansion base separated by a more transparent zone. A series of large cell bodies surrounds the cardia area. Genital system didelphic-amphidelphic. Ovaries reflexed, relatively short since they can reach, but usually without surpassing, the oviduct-uterus junction. Oviduct 93-126  $\mu\text{m}$  or 1.4-2.3 times the corresponding body width long, constituted of prismatic cells, and without a distinct *pars dilatata*. Uterus a relatively short tube 39-69  $\mu\text{m}$  or 0.9-1.3 times the body diameter long and without specialized portions. Spermatozoa not observed. Vagina extending inwards to one-third to two-fifths of the midbody diameter; *pars proximalis vaginae* practically as wide as long (8-12 x 9-12  $\mu\text{m}$ ), with distally convergent walls and surrounded by weak musculature; *pars distalis vaginae* 3 x 5-6  $\mu\text{m}$ . Vulva a transverse slit. Prerectum quite short, 1.0-1.6 anal body diameters long, with a more or less pronounced dorsal blind sac. Rectum 0.8-1.0 times the anal body width. Tail conoid, dorsally convex, ventrally somewhat more straight. Caudal pores two pairs, one subdorsal, another lateral.

**Male.** Not found.

**Diagnosis.** Spanish material of *D. paramajor* here examined is distinguished by its medium size ( $L=1.4$ -2.3 mm, but almost always  $L=1.5$ -2.0 mm) and slender body ( $a=29$ -45, but usually  $a > 35$ ), lip region 25-33  $\mu\text{m}$  wide, odontostyle 24-29  $\mu\text{m}$  long,  $V=49$ -59%, large cell bodies usually present around the cardia, prerectum with a blind sac, female tail rounded conoid (22-30  $\mu\text{m}$ ,  $c=59$ -95,  $c'=0.7$ -1.1), and males absent.

The species shows a wide general morphometric variability, with the lip region diameter and particularly the odontostyle length its most reliable diagnostic features.

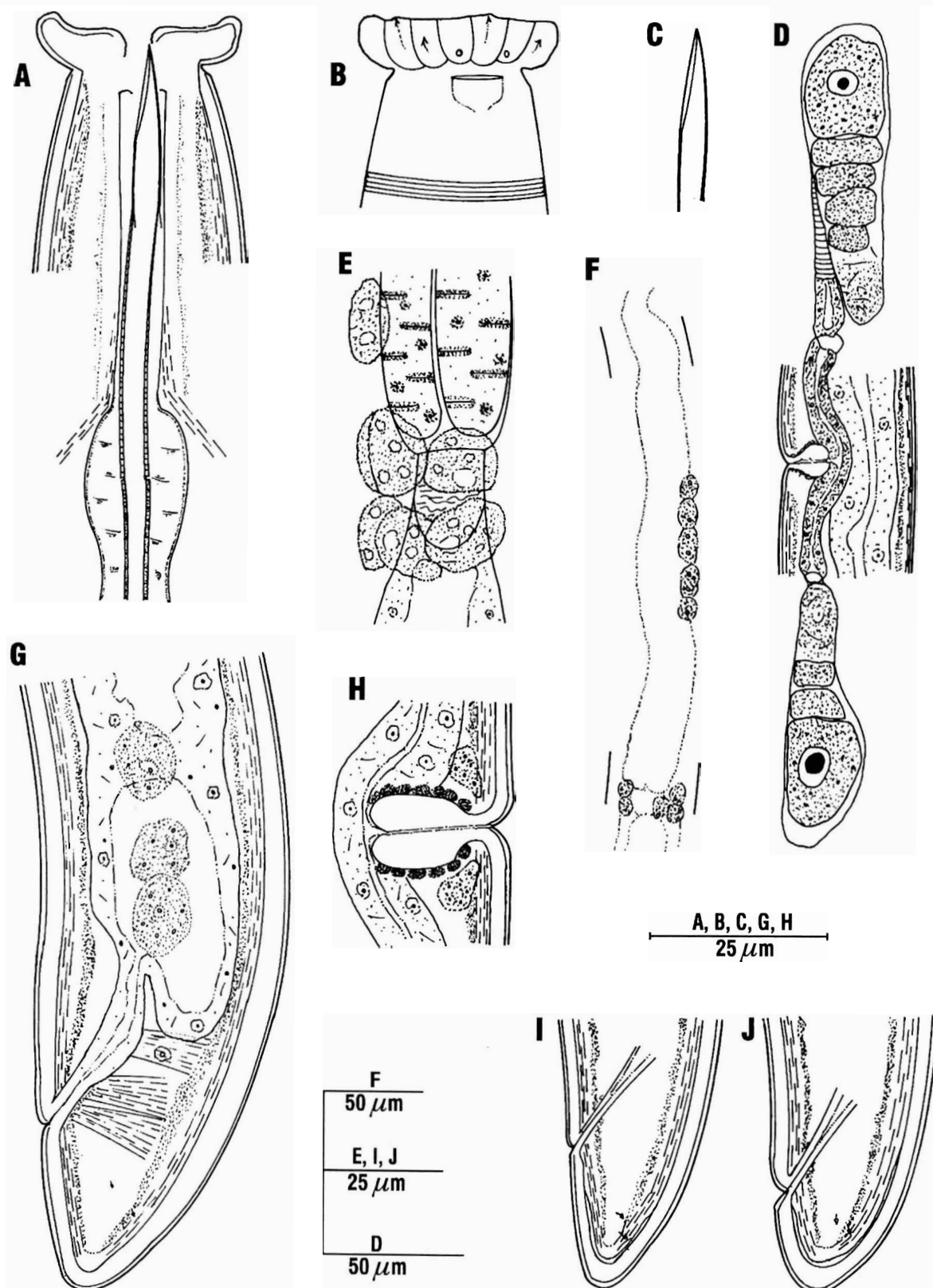
**Remarks: comparison with previously known populations.** *D. major* is the most widely distributed species of the genus, having been reported from many countries throughout the world (*cf.* Andr ssy, 1990), although some doubt should be the precise identity of several records (see below). No major difference in both morphometrics and general description has been observed between the Iberian populations and the original description by Thorne (1939) [see also the information provided by Coomans (1966) concerning type material of the species] if we except the existence of large cells around the cardia and a short blind prerectal sac. Other populations or specimens studied by Williams (1959), Heyns (1963), Yeates (1967), Baqri & Coomans (1973), Thorne (1974), Sauer & Annells (1985) and Bongers (1988) also conform to the description of type material, excepting the somewhat longer female tail in the specimens examined by Thorne (1974) and Bongers (1988) (40 and 37  $\mu\text{m}$  respectively, calculated from indices).

Spanish specimens are characterized by the presence of large cell bodies surrounding the cardia, but this feature was already mentioned by Sauer & Annells (1985) in Australian populations. Also, SEM observations of Spanish material fit well with those made by Australian authors.

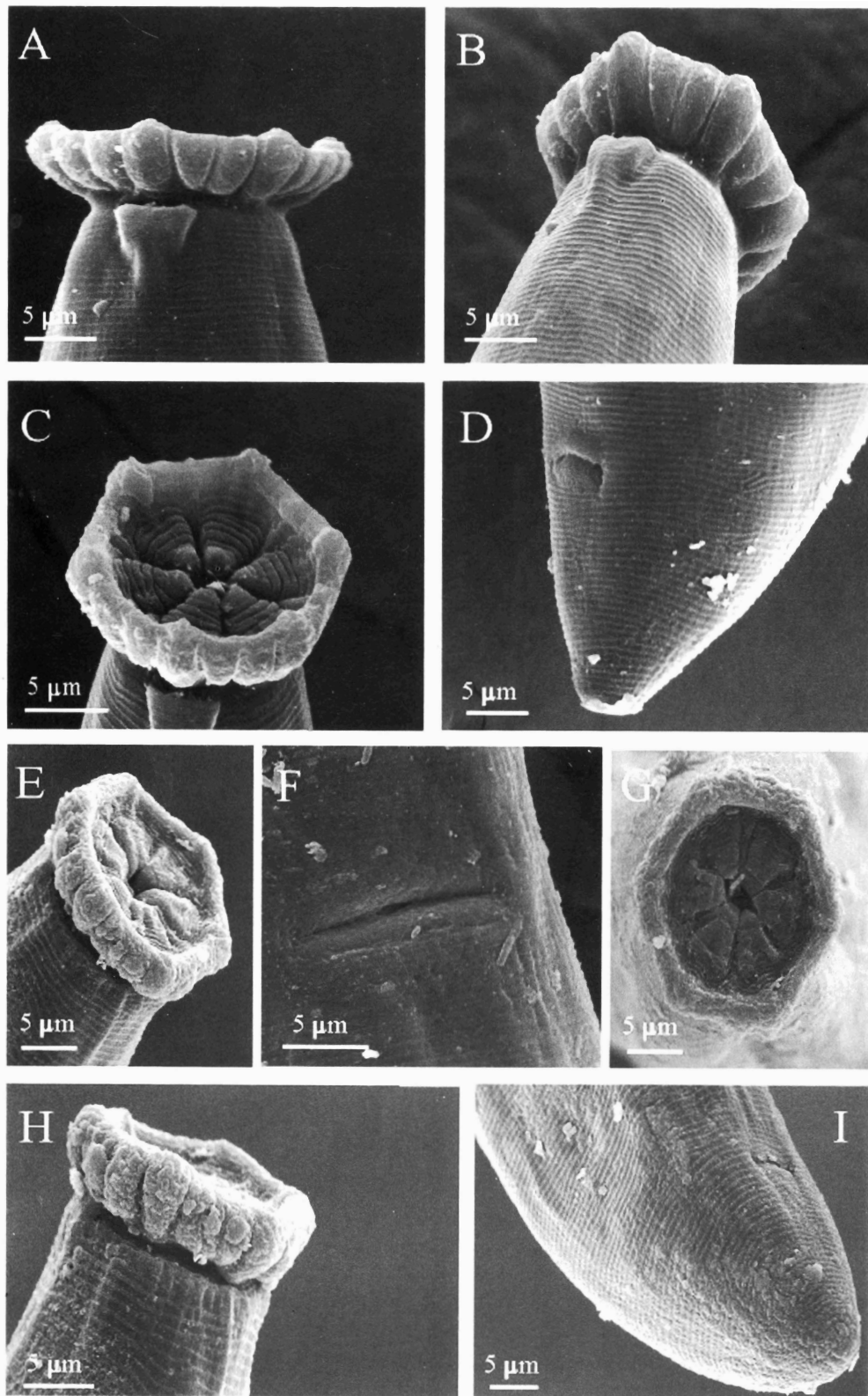
**Previous records of *D. major* that probably do not correspond to this species.** Several authors have reported the presence of *D. major* in different countries but their description and/or measurements indicate that their material is probably not conspecific with type and other comparable populations:

1. Altherr (1953): One specimen of very large general size ( $L=2.8$ , pharynx 645  $\mu\text{m}$  long).
2. Goodey (1963): Slightly longer body ( $L=2.4$ ), odontostyle (about 30  $\mu\text{m}$ ), and pharyngeal bulb (two-thirds of total neck length), and more conical female tail.
3. Andr ssy (1964): Shorter odontostyle (21  $\mu\text{m}$ ) and slightly more anterior vulva ( $V=47$ ).
4. Loof (1964): Shorter odontostyle (19-20  $\mu\text{m}$ ).
5. Siddiqi (1964): Longer odontostyle (32  $\mu\text{m}$ ).
6. Botha & Heyns (1990, 1991): Shorter odontostyle (20-22 and 18-19  $\mu\text{m}$ , respectively).
7. De Bruin & Heyns (1992): Shorter odontostyle (19-21  $\mu\text{m}$ ).

**Comparison of *D. major* and *D. paramajor*.** *D. paramajor* has been recorded from Congo (Coomans, 1966; original description), Italy (Vin-



**Fig. 1.** *Discolaimus major* Thorne, 1939 (female). A: Anterior region in median view; B: Lip region in lateral surface view. C: Odontostyle. D: Genital system. E: Cardia; F: Pharyngeal expansion with cell bodies. G, I, J: Tail. H: Vagina and vulva.



**Fig. 2.** A-D: *Discolaimus agricolus* Sauer & Annells, 1985 (SEM observations). A,B: Lip region in lateral view. C: Same in frontal view. D: Tail. E-I: *Discolaimus major* Thorne, 1939 (SEM observations). E: Lip region in lateral-frontal view. F: Vulva. G: Lip region in frontal view. H: Same in lateral view. I: Tail.

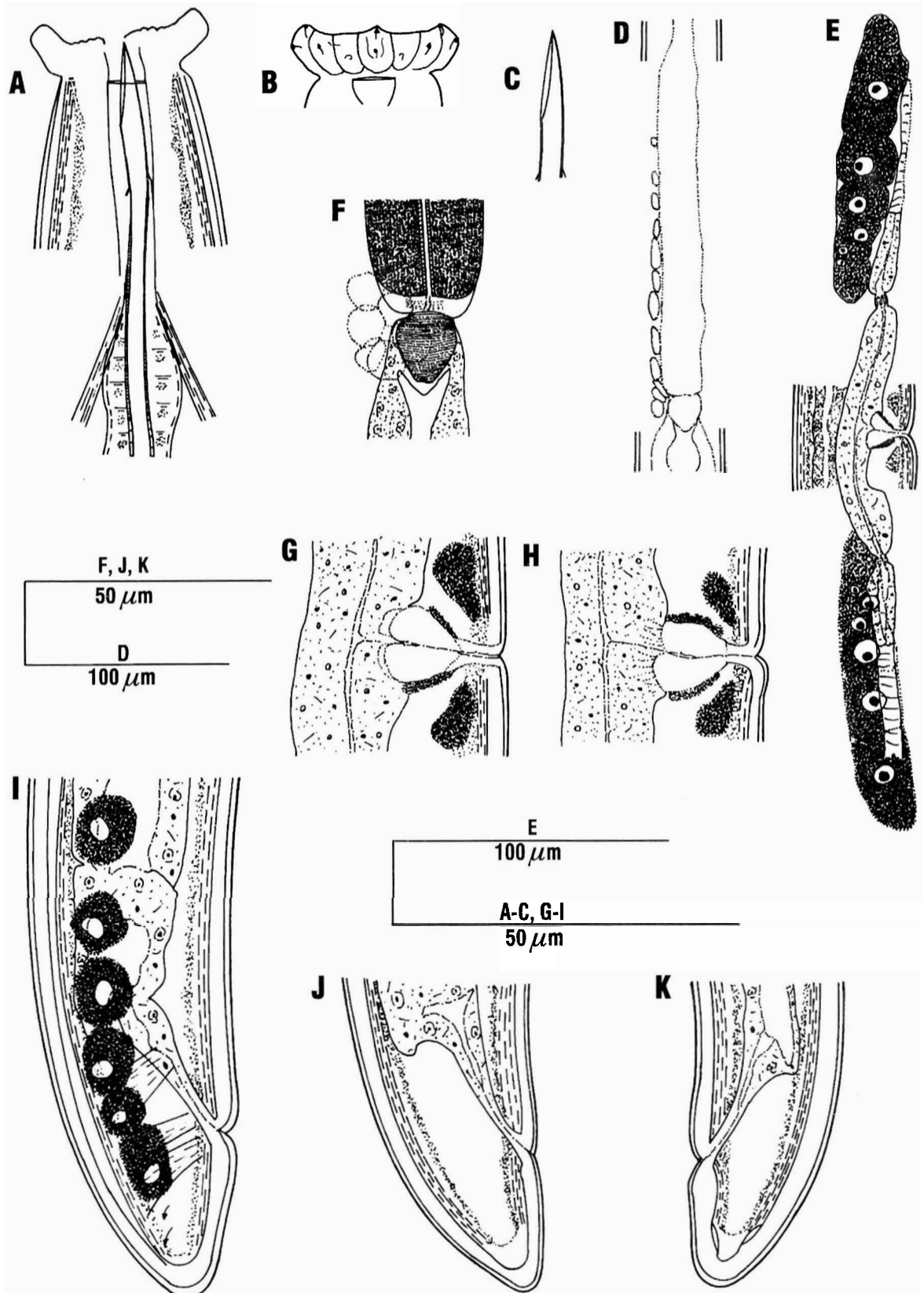


Fig. 3. *Discolaimus agricolus* Sauer & Annells, 1985 (female). A: Anterior body region in median view. B: Lip region in lateral surface view. C: Odontostyle. D: Pharyngeal expansion with cell bodies. E: Genital system. F: Cardia. G,H: Vagina and vulva. I-K: Tail.

**Table 1.** Measurement of *Discolaimus major* (all measurements in  $\mu\text{m}$  except L in mm).

Habitat	Oak	Poplar	Thyme	Ash	Brushwood	Meadow	Pine	?	Eucaliptus	Pine	Esparto grass	<i>Pistacia terebinthus</i>	Pine	Oak
Locality	Sierra Caracolera	Campillo de Arenas	Caniles	Sierra de Andújar	Sierra Nevada	Sierra Nevada	Alhama	Sierra de Cazorla	Carretera de Casares	Sierra Mágina	Sierra Mágina	Sierra Mágina	Sierra Mágina	Sierra Mágina
Province	Jaén	Jaén	Almería	Jaén	Granada	Granada	Granada	Jaén	Málaga	Jaén	Jaén	Jaén	Jaén	Jaén
n	3 ♀♀	4 ♀♀	6 ♀♀	4 ♀♀	1 ♀	7 ♀♀	12 ♀♀	8 ♀♀	1 ♀	1 ♀	3 ♀♀	1 ♀	1 ♀	1 ♀
L	1.87±0.11 (1.78-2.00)	1.63±0.07 (1.56-1.73)	1.81±0.21 (1.57-2.00)	1.79±0.21 (1.60-2.08)	1.97	1.93±0.23 (1.66-2.30)	1.49±0.09 (1.38-1.64)	1.73±0.07 (1.61-1.84)	1.97	2.34	1.80±0.07 (1.73-1.88)	1.70	1.76	1.80
a	39±1.3 (38-40)	38±1.4 (36-39)	39±3.5 (35-45)	39, 42 (n=2)	37.0	39±3.8 (31-43)	35±2.9 (29-38)	37±2.8 (34-43)	40	41	38±1.72 (37-40)	37	38	37
b	4.5±0.2 (4.4-4.8)	4.0±0.3 (3.9-4.5)	4.5±0.4 (4.2-5.0)	4.0±0.5 (3.5-4.7)	4.5	5.0±0.5 (4.1-5.5)	4.5±0.4 (3.9-5.2)	4.5±0.2 (3.9-4.6)	6.5	7.0	4.5±0.27 (4.25-4.78)	4.5	4.5	4.5
c	81±3.3 (76-83)	68±3.6 (64-71)	67±7.0 (59-78)	74±15.0 (61-94)	82	75±7.0 (66-84)	64±6.7 (53-74)	70±3.3 (65-75)	75	93	87±2.2 (84-88)	85	73	90
V(%)	53.5±1.9 (52-55)	51±1.2 (49-52)	52±1.4 (49-53)	54±0.7 (53-55)	51	56±2.3 (53-59)	54±2.1 (51-58)	52±1.2 (50-55)	45	50	53±1.23 (52-54)	50	52	51
c'	0.8±0.02 (0.8)	0.9±0.05 (0.8-0.9)	1.0±0.08 (0.9-1.1)	0.7±0.06 (0.7-0.8)	0.8	0.9±0.04 (0.8-1.0)	0.8±0.08 (0.7-1.0)	0.8±0.06 (0.7-0.9)	0.9	0.8	0.8±0.04 (0.8-0.9)	0.8	0.9	0.8
Lip region width	29±1.1 (27-29)	27±1.0 (25-28)	31±1.6 (28-32)	30±1.5 (28-31)	31	30±2.1 (26-32)	27±1.5 (24-29)	28±1.6 (25-31)	27	31	28±0.6 (27-28)	29	28	27
Odontostyle length	26±1.0 (25-27)	25±1.04 (23-26)	26±0.5 (25-27)	28±0.9 (27-29)	27	27±1.0 (25-27)	26±1.5 (23-27)	24±1.0 (22-25)	26	28	24±1.3 (22-25)	23	24	25
Neck length	406±32 (370-430)	395±12 (383-410)	402±29 (358-435)	440±30 (410-480)	435	406±34.6 (363-470)	343±33 (263-380)	404±21 (383-438)	310	336	400±6.5 (393-406)	386	?	380
Pharyngeal expansion	230±23 (205-250)	220±13 (205-235)	232±20.5 (199-250)	250±14.1 (240-270)	250	220±23.6 (195-260)	197±22 (145-225)	225±13 (210-245)	156	166	226±6.5 (220-233)	200	?	205
Body width-midbody	49±3.8 (46-53)	43±1.2 (42-44)	46±5.3 (41-56)	44, 47 (n=2)	53	51±5.4 (41-57)	44±5.2 (38-56)	47±2.3 (43-50)	49	57	47.5±3.1 (45-51)	46	46	48
Body width-anus	29±1.0 (28-30)	28±0 (28)	28±1.5 (26-30)	30 (n=2)	30	29±1.6 (27-31)	28±2.4 (26-32)	31±1.7 (28-33)	30	32	26.0±1.0 (25-27)	25	26	26
Prerectum length	31±0.6 (30-31)	30±10.0 (22-41)	39±4.8 (32-43)	35±4.0 (31-39)	45	45±3.7 (41-49)	38±13.8 (24-67)	32±5.4 (28-43)	16	38	27.0±11.1 (17-39)	27	?	?
Rectum length	22±7.0 (14-28)	26±3.1 (22-28)	27±2.9 (22-30)	21±4.2 (16-24)	28	25±2.0 (22-28)	22±2.5 (16-25)	28±2.3 (26-32)	18	25	24.0±1.0 (23-25)	30	?	28
Tail length	24±1.6 (22-24)	25±1.5 (23-26)	27±2.2 (24-30)	25±1.9 (22-26)	24	26±1.3 (24-28)	24±2.3 (20-26)	25±1.2 (24-27)	26	25	20.5±0.6 (20-21)	20	24	20

Table 2. Measurements of *Discolaimus agricolus* (all measurements in  $\mu\text{m}$  except L in mm).

Habitat	Brushwood	Brushwood	Sandy soil	Broom	Olive	Pasture	Broom	<i>Cistus</i> sp.	Broom	Broom	Esparto-grass	Olive	Pine-juniper
Locality	Frigiliana	Carvajales	Isleta del Moro	Calar Alto	Sierra Mágina	Salinas Cabo de Gata	Mini-hollywood	Puerto Torres	to Nijar	Lanjaryn	Sierra Mágina	Sierra Mágina	Sierra Mágina
Province	Málaga	Málaga	Almería	Almería	Jaén	Almería	Almería	Jaén	Almería	Granada	Jaén	Jaén	Jaén
n	5 ♀♀	4 ♀♀	22 ♀♀	15 ♀♀	10 ♀♀	4 ♀♀	1 ♀	1 ♀	1 ♀	2 ♀♀	1 ♀	5 ♀♀	2 ♀♀
L	1.28±0.07 (1.23-1.39)	1.52±0.11 (1.38-1.65)	1.68±0.13 (1.39-1.98)	1.67±0.09 (1.52-1.84)	1.37±0.08 (1.26-1.49)	1.57±0.16 (1.38-1.77)	1.81	1.28	1.41	1.5, 1.69	1.40	1.59±0.12 (1.46-1.73)	1.49, 1.54
a	31.0±3.5 (28-37)	34.5±2.3 (32-38)	37.0±2.6 (30-41)	35.5±3.7 (28-41)	30.0±1.7 (28-33)	35.0±2.6 (31-37)	33	28	32	35, 39	30	35.0±1.5 (33-37)	35, 37
b	3.5±0.3 (3.2-4.0)	4.0±0.2 (4.0-4.6)	4.5±0.2 (4.1-4.9)	4.5±0.3 (4.1-5.3)	4.0±0.1 (3.6-4.1)	4.5±0.3 (4.1-4.8)	4.5	4.0	4.0	4.0, 4.5	4.0	4.0 (n=1)	4.0, 4.5
c	53±4.4 (47-58)	56±2.1 (53-57)	62±5.0 (54-75)	60±4.0 (54-69)	66±7.0 (58-78)	60±8 (53-71)	?	58	64	60, 65	58	75.0±12 (66-94)	59, 62
V(%)	49±2.2 (47-54)	49±1.7 (47-51)	48±1.6 (45-52)	48±2 (44-51)	47±1.7 (44-51)	51±1.7 (49-53)	47	52	43	45, 45	49	51.0±0.5 (50-51) (n=3)	46, 48
c'	1.0±0.05 (0.9-1.1)	1.0±0.04 (0.9-1.0)	1.0±0.07 (0.8-1.1)	1.0±0.06 (0.9-1.1)	0.9±0.06 (0.7-1.0)	0.9±0.07 (0.8-1.0)	?	0.8	0.9	1.0, 0.9	0.9	0.9±0.07 (0.8-0.9)	1.0
Lip region width	24±1.1 (21-24)	26±0.4 (25-25)	24±1.2 (21-26)	25±0.7 (22-25)	25±0.9 (23-25)	26±0.6 (25-26)	27	25	25	25	26	26±1.1 (24-27)	22, 23
Odontostyle length	22±0.35 (21)	21±0.2 (21)	21±1.1 (19-23)	22±0.5 (21-23)	21±1.2 (19-22)	22±0.5 (21-22)	22	21	21	21, 21	20	22±0.5 (21-22)	20, 21
Neck length	346±23.9 (325-385)	359±11.0 (343-368)	379±21 (340-420)	370±30 (305-405)	352±26.0 (300-390)	352±27 (315-375)	405	340	350	380, 388	336	403 (n=1)	355, 385
Pharyngeal expansion	184±9.6 (170-195)	194±6.5 (185-200)	197±11 (175-215)	191±19 (145-210)	191±22.3 (140-213)	188±6 (180-195)	215	215	193	200, 205	?	226 (n=1)	?
Body width-midbody	41±3.1 (38-45)	45±1.0 (43-45)	46±3 (41-52)	48±4.3 (40-55)	46±3.5 (41-51)	45±4.2 (41-51)	55	46	44	42, 43	47	46±3.0 (42-50)	40, 44
Body width-anus	25±0.5 (24-25)	28±1.2 (26-28)	28±1.1 (25-30)	27±1.3 (25-30)	24±1.3 (22-25)	29±1.3 (27-30)	32	28	25	26, 28	26	25±0.9 (24-26)	24, 26
Prerectum length	28±2.6 (24-30)	48±7.0 (41-55)	32±10.3 (16-57)	24±5.6 (14-35)	32±4.4 (25-37)	27±4.2 (22-32)	?	43	24	22 (n=1)	?	34 (n=1)	28 (n=1)
Rectum length	24±3.6 (18-26)	26±1.2 (24-26)	26±2.4 (22-30)	22±3.9 (12-26)	25±2.9 (21-29)	25±2.4 (22-28)	?	28	28	24, 26	?	26 (n=1)	?
Tail length	25±1.3 (23-26)	27±1.2 (26-28)	27±2.1 (22-31)	28±1.6 (24-30)	21±1.7 (19-23)	27±1.3 (25-28)	?	22	22	25, 26	24	22±1.9 (18-23)	24, 26



ciguerra & Giannetto, 1987), and Cameroon (Ahmad *et al.*, 1996). [Zullini (1977) also recorded "*Discolaimus prope paramajor*" from Mexico, but this material certainly is not conspecific with the others since its odontostyle is notably shorter (18  $\mu\text{m}$ ).]. Apart from the original description, only Ahmad *et al.* (1996) have provided morphological and morphometric data; this material, however, differs from the type population in two relevant features (V=40-45 and pharyngeal expansion 35-40% of the total neck length), and hence some doubts persist on the true identity of these specimens.

Coomans (1966) distinguished *D. paramajor* from the very similar species *D. major* mainly by the presence of a blind sac in the prerectum (vs no sac), three caudal pores (vs two), more anterior vulva (V=45-52 vs V=50-55), and presence of males. The same author (*op. cit.*: p. 297) indicated some doubt on the identity of the new species stating that "I have hesitated much describing *D. paramajor* as a new species". Earlier records of *D. major* (see above) have shown that this species has an important intraspecific variability affecting the development of the prerectal blind sac (Sauer & Annells, 1985; de Bruin & Heyns, 1992), two or three caudal pores (Sauer & Annells, 1985; de Bruin & Heyns, 1992), more anterior vulva (Williams, 1959; Yeates, 1967, as *D. arenicolus*; Thorne, 1974), and presence of males (Sauer & Annells, 1985), making difficult its separation from *D. paramajor*. De Bruin and Heyns (1992: p. 161) were aware of this fact, and considered the possibility that these species were the same, but did not propose any nomenclatorial change. Because of the impossibility of distinguishing both species, *D. paramajor* is here considered to be a junior synonym of *D. major*. Another coincidence supports this action: Coomans (1966) mentioned the presence of a "vestigial spear tip (mucro)" in the second anterior swelling of the pharynx, and this same feature was described and illustrated by Yeates (1967) in relation with *D. arenicolus* (later also considered to be a junior synonym of *D. major*).

**On the identity of *D. perplexans*.** Siddiqi (1964) proposed the new species *D. perplexans* for the material from Romania described by Andr ssy (1959) as *D. major* because of many differences "especially in having a spear which is shorter than head-width and whose aperture measures more than half its length". Andr ssy's measurements are, among others, lip region about 33  $\mu\text{m}$  wide (calculated from Andr ssy's Fig. 6A) and odontostyle

25  $\mu\text{m}$  long, that is, the odontostyle is about 0.75 times as long as the lip region width. Romanian specimens could hence belong to *D. major* because if the wide variability of this species is taking into account, the differences are not relevant, and less to the proposal of a new taxon. Therefore, *D. perplexans* is also considered a junior synonym of *D. major*.

### ***Discolaimus agricolus* Sauer & Annells, 1985 (Figs. 2A-D & 3)**

**Measurements:** see Table 2.

**Female.** Moderately slender nematodes of medium size, 1.2-2.0 mm but usually around 1.5 mm long. Habitus after fixation more or less curved ventrad, usually an open "C" shape, but a few specimens adopting "G" shape, and others with sigmoid aspect. Body cylindrical, tapering towards both extremities but more so towards the anterior end. Outer layer of the cuticle thinner than the inner one and with distinct transverse striations throughout the body; inner cuticle layer thickened at the posterior body region, especially at the tail. Lateral chord one-sixth to one-fifth of the mid-body diameter. Glandular lateral bodies visible along the body, but becoming obscure in some specimens: 15-17 at the neck region (n=2), 10-18 between neck base and vulva level (n=2), 38-43 between vulva and anus (n=3); they all connect with their respective coarse lateral pore. Lip region expanded and sucker-like, with sunken oral field, and 3.3-4.0 times as wide as high. Labial disc with six deep interlabial grooves separating six distinct labial sectors, each of these bearing coarse tangential striations; eighteen well marked longitudinal grooves dividing the outer margin of the labial disc in six labial and twelve interlabial lobes. Labial and cephalic papillae well distinct. Amphid fovea cup-shaped, its opening a transverse slit occupying one-fourth to one-third of the lip region width. Odontostyle quite robust, 6.4-6.8 times as long as wide, scarcely shorter or equal (0.9-1.0 times) to the lip region diameter, and wider (about twice) than the cuticle at its level; its aperture about three-fifths (55-60%) of the total length. Guiding ring simple. Odontophore rod-like, 1.7 times the odontostyle. Pharynx consisting of a slender but muscular anterior part expanding rather abruptly. Basal expansion cylindrical although somewhat thickened in its posterior portion, 8.0-8.4 times as long as wide, 4.9-5.5 times as long as the body diameter at neck base, and starting at 44-47% of the total neck length. Pharyngeal gland nuclei distinct in two specimens: DN=59, 60%, AS<sub>1</sub>=38,



49%,  $AS_2=57$ , 56%,  $PS_1=72$ , 73%,  $PS_2=72$ , 75%. Cardia conoid, almost as wide as long (9.5-10.0 x 10.0-12.5  $\mu\text{m}$ ), enveloped by the intestinal wall. A transparent structure separating the cardia and pharyngeal expansion base, and a few medium sized cell bodies just close to this area, sometimes forming a longitudinal series. Female genital system didelphic-amphidelphic. Ovaries reflexed and quite short (1.8-2.0 times the body diameter), usually not reaching the oviduct-uterus junction, but one specimen having ovaries about three body diameters long and slightly surpassing the sphincter level. Oviduct 1.5-2.0 times the body diameter, with a slender and not differentiated slender part and a poorly developed *pars dilatata*. Sphincter separating oviduct and uterus. Uterus a short tube 0.8-1.0 times the corresponding body diameter long, with narrow lumen and no specialization. Sperm not observed within the genital tract. Vagina pear-shaped, extending inwards to two-fifths of the corresponding body diameter. *Pars proximalis vaginae* almost as wide as long (9.5-11.0 x 9.0-11.0  $\mu\text{m}$ ), spheroid. *Pars distalis vaginae* 3 x 6  $\mu\text{m}$ . Vulva a transverse slit preceded by a depression because its margins are quite prominent. Prerectum 1.2-1.7 anal body widths long, with a quite distinct short blind sac in some specimens. Rectum little shorter than or equal to anal body diameter. Tail rounded conoid, ventrally more straight and dorsally more convex. Caudal pores two lateral pairs at the middle of the tail length.

**Male.** Unknown.

**Diagnosis.** Spanish material of *D. agricolus* is characterized by its relatively small body ( $L = 1.23$ -1.98), lip region 22-28  $\mu\text{m}$  wide, odontostyle 20-24  $\mu\text{m}$  long, presence of cell bodies near the cardia,  $V = 44$ -52%, uterus not longer than the corresponding body diameter, prerectum with a distinct blind sac, and tail rounded conoid (19-28  $\mu\text{m}$ ;  $c=47$ -78;  $c'=0.7$ -1.1).

**Remarks.** *D. agricolus* is a very similar species to *D. major* but it can be separated by its shorter odontostyle (vs 23.5-29.0  $\mu\text{m}$ ); moreover, although overlapping has been observed, the body is in general shorter, the lip region narrower and the vulva more anterior. Some doubt may arise on the identity of an isolated specimen but not when a population (even with just a few individuals) are examined.

This species is relatively frequent in southeastern Spain, and both morphometry and

description of Iberian material are identical to those of the Australian type population. Its geographical spread (Australia and Spain, both reciprocal antipodes) is apparently surprising, but taking into consideration its closeness to *D. major*, it is possible that some records of this latter species really belong to *D. agricolus*; for instance, Andr ssy (1964), Loof (1964), Botha & Heyns (1991) and de Bruin & Heyns (1992) found populations that they identified as *D. major*, but having shorter body and odontostyle lengths, which better fit the *D. agricolus* diagnosis.

Andr ssy (1990) stated that *D. agricolus* was possibly identical with *D. perplexans* Siddiqi, 1964 (syn. *D. major apud* Andr ssy, 1959) but several morphometric features such as body length ( $L=1.90$ ), odontostyle length (25  $\mu\text{m}$ ) and posterior vulva ( $V=54$ ) indicate that *D. perplexans* is closer to *D. major* than *D. agricolus* (see above).

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**Peña-Santiago, Torres, B., Liébanas, G.** Нематоды отряда Dorylaimida из Восточной Андалусии, Испания. Род *Discolaimus* Cobb, 1913. II. Два известных вида с комментариями по их таксономии. Резюме. По материалам, собранным из юго-восточной Испании, приводятся переописание и иллюстрации, включая сделанные в СЭМ, двух ранее известных видов рода *Discolaimus*: *D. major* и *D. agriculus*. Обсуждаются проблемы таксономии этих видов, а также критерии их идентификации. Ревизия литературных данных показывает, что *D. major* является наиболее распространенным видом рода *Discolaimus* в мировой фауне. Предполагается, однако, что некоторые сообщения об обнаружении этого вида сомнительны или ошибочны. *D. paramajor* и *D. perplexans* рассматриваются как младшие синонимы *D. major*.

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