

Dipartimento di Biologia Animale, Università di Catania. 95124 Catania, Italy

NEMATODES FROM ITALIAN SAND DUNES.1. THREE NEW AND ONE KNOWN SPECIES OF ENOPLIDA

by

L. ORSELLI and M. T. VINCIGUERRA

Summary. Three new and one known species of Enoplida (Nematoda) are described and illustrated. *Eurystomina vincxi* sp. n. is characterized by the structure of the mouth cavity, with five rows of denticles and two teeth, of which the subventral anteriorly resembles an odontostyle, by the presence of a protruding spinneret in the tail, by the spicules shape and by the gubernaculum provided with a pointed dorsal apophysis. *Trissonchulus dubius* sp. n. is characterized by the very reduced female anterior genital tract, the convex-conoid tail with blunt terminus, the ventral opening of the caudal glands and by the gubernaculum shape. *Trissonchulus provulvatus* sp. n. is characterized by the reduced female anterior genital tract, the very anterior vulva, the shape of spicules and gubernaculum and the absence of ventral precloacal papillae. *Enoplus schulzi* Gerlach, 1952 is also described: for the first time the presence of ocelli in this species is reported.

During a survey on nematodes of the sand dunes of Sicily (Italy) three new and a known species of Enoplida were found, which are here described and illustrated.

Materials and methods

Samples were collected with a plexiglas soil corer to a depth of 60 cm. Nematodes were extracted by centrifugation, killed and fixed in hot 4% formalin and processed to anhydrous glycerin. Measurements were made with the aid of a camera lucida.

Descriptions

EURYSTOMINA VINCXI sp. n.

(Fig. 1)

Holotype male: L = 5.05 mm; a = 88; b = 4.6; c = 34.8; c' = 2.6.

Paratypes females (n = 5): L = 5.4-6.4 (5.89±0.4) mm; a = 80-92 (85.6±4.3); b = 4.5-5.4 (4.9±0.4); c = 29.4-35.6 (33.3±2.4); c' = 3.4-4.3 (3.7±0.3); V = 61.4-64.8 (63.9±1.4).

Male. Body very long and slender. Cuticle 3.2 µm thick, without striation, but with longitudinal ridges in the anterior part of body. Head hemispheroid, with six lips, set off from adjoining body by a constriction. Ten cephalic setae, six longer and four shorter: the latter closely adjoined to the four longer subventral and subdorsal setae. Longer setae 8.2 µm long, shorter ones 5.5 µm long. Amphid cup-shaped. Mouth cavity large, 26.6 µm long and 14.7 µm wide. Walls of mouth cavity covered with five complete rows of denticles; two large teeth are also present: the subventral one, 9.2 µm long, is larger than the dorsal, 5.5 µm long. The subventral tooth, massive at its base, lengthens anteriorly to form a hollow and slender structure, open apically, similar in shape to a mural odontostyle of Dorylaimida, which reaches the most anterior row of den-

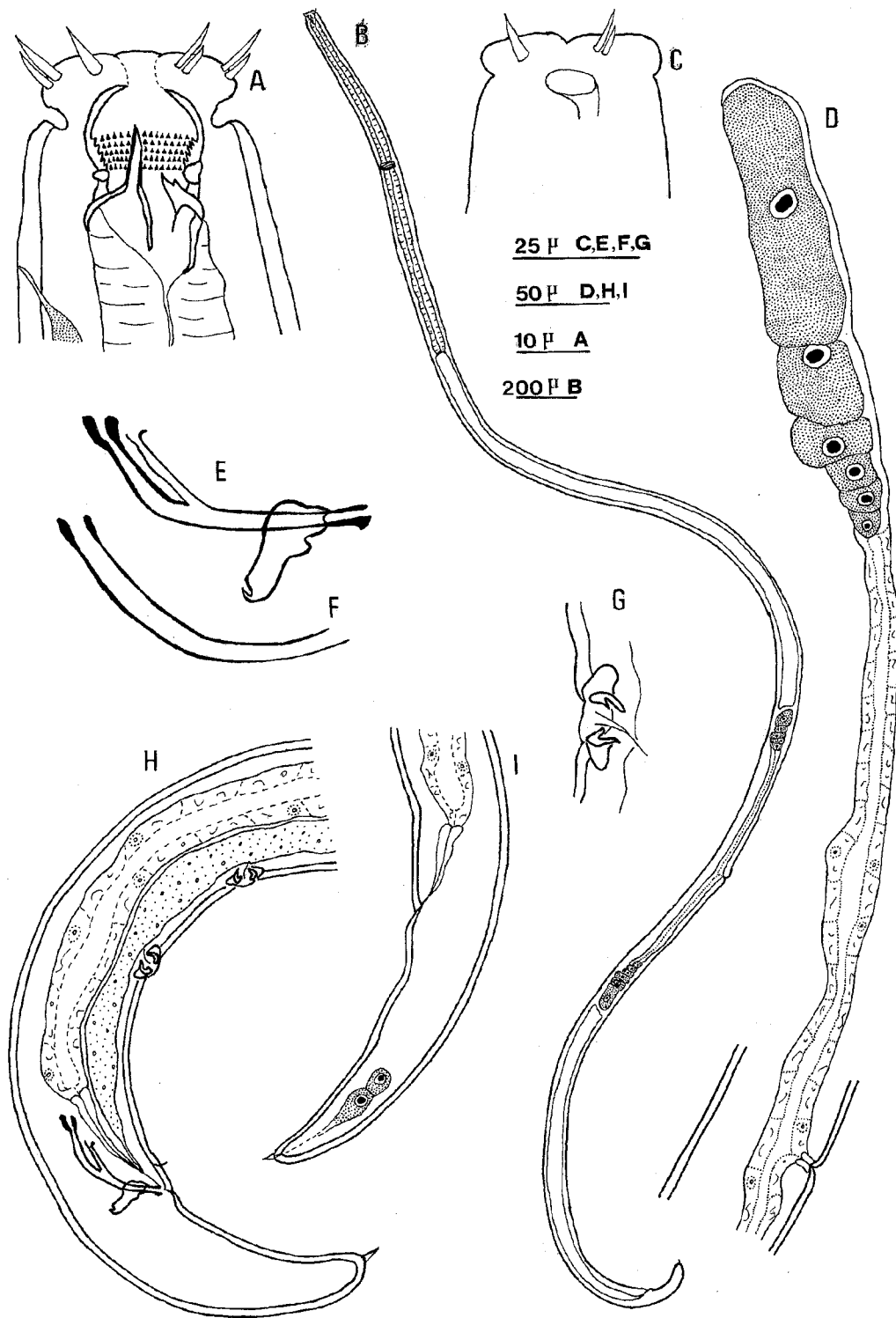


Fig. 1 - *Eurystomina vincxi* sp. n.: A, C, anterior ends; B, female body; D, anterior genital branch; E, holotype right spicule; F, holotype left spicule; G, detail of a ventral precloacal papilla; H, male posterior end; I, female posterior end.

ticles; the dorsal tooth, well sclerotized, reaches the most posterior row of denticles. Excretory pore very anterior, just after the amphids; numerous papillae and many hypodermal glands scattered along body. No well defined ocelli were observed in the fixed specimens, but some pigmented material dispersed along the pharynx. Pharynx 1080 μm long, cylindroid; nerve ring at about 25% of its length. Testes paired, rather obscure in the single specimen. Spicules proximally cephalate, ventrally curved, 70 μm long; the right one appears bifid at the proximal extremity. Gubernaculum 23 μm long, massive, with a pointed dorsal apophysis. Two cup-shaped ventral pre-cloacal papillae, typical of the genus, are present; they are located respectively at 125 μm and 195 μm from cloacal opening. A setiform supplement, just anterior to the cloacal opening, is also present. Tail conoid, 135 μm long, ending with a protruding, pointed spinneret.

Female. Very similar to male. Cuticle 1.8-2.7 μm thick. The longer cephalic setae 8.2-11 μm long, the shorter ones 4.6-6.4 μm long. Mouth cavity 26.6-31.2 μm long and 19.3-20.2 μm wide. Subventral tooth 8.2-10.1 μm and dorsal tooth 4.6-6.4 μm long. Amphidial fovea 7.3-8.2 μm large. Pharynx 1125-1225 μm . Genital apparatus paired and reflexed; vulva transverse and vagina not sclerotized. Tail similar to that of male, but longer, 165-197 μm long.

Diagnosis and relationship

Eurystomina vincxi sp. n. is characterized by the structure of the mouth cavity, with five rows of denticles and two teeth, of which the subventral anteriorly resembles an odontostyle, by the presence in the tail of a protruding spinneret, which differs from those of the other species, by the peculiar shape of the spicules and by the gubernaculum with a dorsal pointed apophysis. The new species in the mouth cavity structure resembles *E. whangae* Yeates, 1967, which was also found in dunes, but in the latter there are four rows of denticles and three large teeth, the spinneret does not protrude and the

gubernaculum lacks the dorsal pointed apophysis. The species is named in honour of Prof. Magda Vinc of the University of Gent.

Type locality and habitat

Portopalo (Siracusa, Italy): dune sand.

Type specimens

Holotype and paratypes are deposited in the collection of the Dipartimento di Biologia Animale, University of Catania.

TRISSONCHULUS DUBIUS sp. n.

(Fig. 2)

Holotype male: L = 2.475 mm; a = 52; b = 7.2; c = 38.1; c' = 1.6.

Paratype male: L = 2.0 mm; a = 47; b = 7.9; c = 34.7; c' = 1.6.

Paratype female: L = 2.525 mm; a = 44; b = 7.2; c = 60.9; c' = 0.8; V = 57.4.

Male. Body long and slender. Cuticle smooth, 2.7 μm thick. Lip region set off by a constriction, with an anterior circle of six labial papillae and a posterior circle of ten cephalic papillae. The inner and upper surface of the three lips is covered with minute denticles. Three large teeth are present in the mouth cavity. Stoma in the shape of a sclerotized tube 35.8-36.8 μm long. Amphid pocket-like, located just behind lips, 6.4-7.3 μm wide. Excretory pore also opening near lips. Pharynx 252-342 μm long, dorylaimoid in shape, widening posteriorly at about 2/3 of its length. Nerve ring at half pharynx length. Testes paired and opposed. Spicules, 32.2-36.8 μm long, cephalate at the proximal end and ventrally curved; conspicuous copulatory muscles are present. Gubernaculum 15.6 μm long, well developed in its distal part, but rather obscure proximally. There are no pre-cloacal papillae. Tail convex-conoid with blunt terminus, 57.5-65 μm long; opening of the caudal glands ventral, at about half tail length.

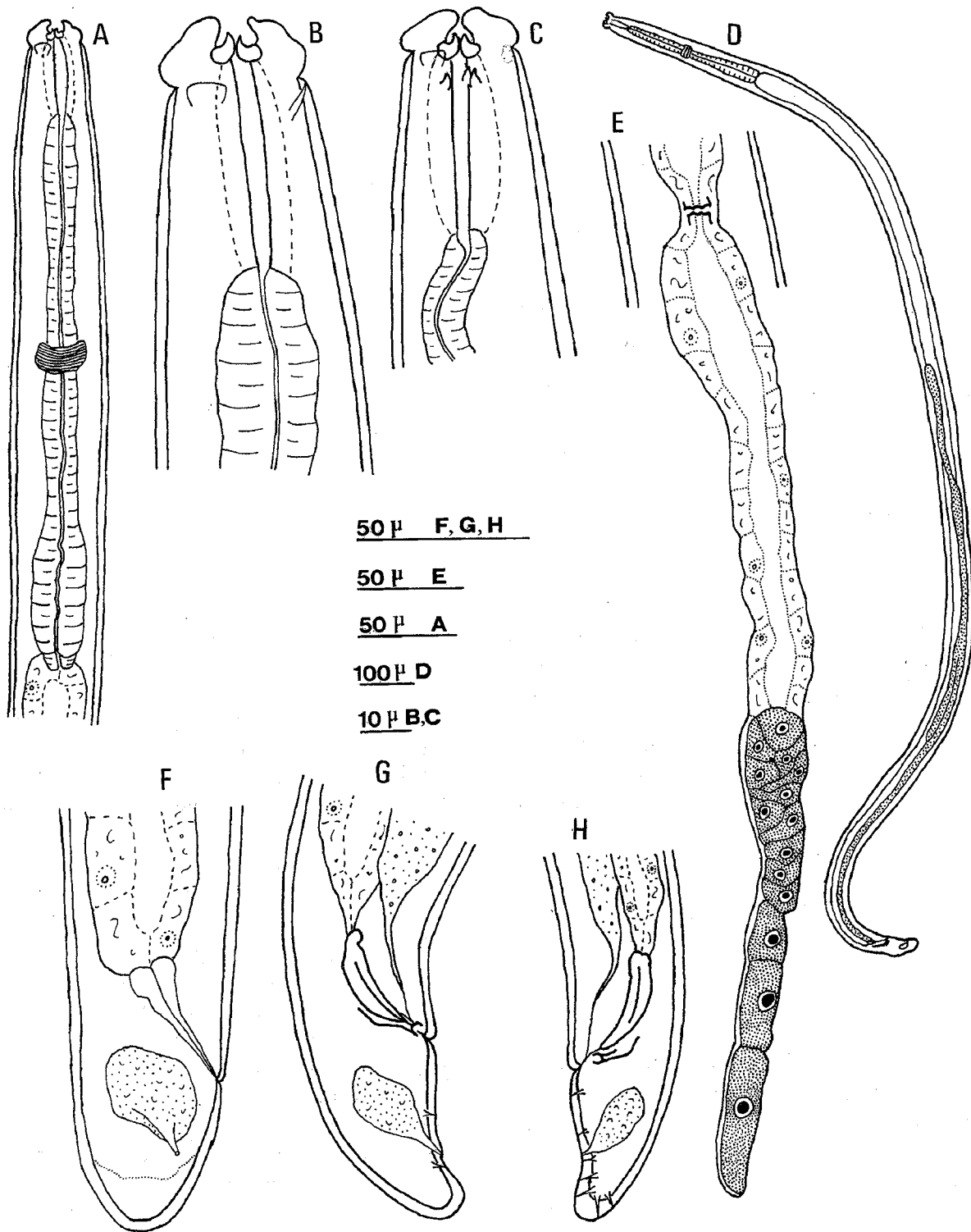


Fig. 2 - *Trissonchulus dubius* sp. n.: A, B male anterior ends; C, juvenile anterior end; D, male body; E, posterior genital branch; F, female posterior end; G, H, male posterior ends.

Female. Similar to male. Cuticle 3.6 μm thick. Stoma 41.4 μm long. Amphid 9.2 μm wide. Pharynx length 350 μm . Genital apparatus with anterior tract strongly reduced; vulva postequatorial. Tail 41.4 μm long, similar in shape to that of male, with caudal glands opening ventrally.

Diagnosis and relationship

Trissonchulus dubius sp. n. is characterized by the very reduced anterior female genital tract, the convex-conoid tail with blunt terminus, the ventral opening of the caudal glands and by the gubernaculum shape. It greatly resembles *T. raskii* Chitwood 1960, from which it differs in smaller size, shorter stoma, shorter tail, longer pharynx and different shape of spicules.

Type locality and habitat

Siculiana, Manfria and Portopalo (Southern Sicilian coast, Italy): dune sand.

Type specimens

Holotype and paratypes are deposited in the collection of the Dipartimento di Biologia Animale, University of Catania.

TRISSONCHULUS PROVULVATUS sp. n.

(Fig. 3)

Holotype female: L = 3.75 mm; a = 58; b = 8.5; c = 57.6; c' = 1.1; V = 38.6.

Paratype male: L = 3.57 mm; a = 68; b = 8.7; c = 62; c' = 1.0.

Female. Body very long and slender. Cuticle smooth, 2.7 μm thick. Lip region set off by a constriction, constituted by three lips; internal surface of lips sclerotized and covered with numerous rows of minute denticles. On the lips an anterior circle of six labial papillae and a posterior circle of ten cephalic papillae. In the mouth cavity, 50.6 μm long, three large teeth are present. Amphid pocket-like, 8.2 μm wide, located just behind lips. Excretory pore also opening

near lips. Pharynx 440 μm long, dorylaimoid in shape, widening posteriorly at about 2/3 of its length. Nerve ring at half pharynx length. Genital apparatus with anterior tract rudimentary. In the posterior part of the uterus there is a spermatheca containing many sperms. Vulva transverse, pre-equatorial. Tail 65 μm long, with rounded terminus; caudal glands opening ventrally.

Male. Similar to female in most respects. Cuticle 2.7 μm thick. Stoma 49.6 μm long. Amphid 11 μm wide. Pharynx length 410 μm . Testes paired and opposed. Spicules 50 μm long, ventrally curved, cephalate at the proximal end; gubernaculum 22.5 μm long, well developed distally, not readily visible at its proximal end. No ventral precloacal papillae were observed. Tail 57.5 μm long; caudal glands opening ventrally; one pair of precloacal and six pairs of postcloacal papillae are present.

Diagnosis and relationship

Trissonchulus provulvatus sp. n. is characterized by the reduced anterior female genital tract, the very anterior vulva, the shape of spicules and gubernaculum and the absence of ventral precloacal papillae. The new species is similar to *T. oceanus* Cobb, 1920, from which it differs mainly in the absence of the precloacal papillae and in the shape of gubernaculum.

Type locality and habitat

Mouth of River Simeto (Catania, Italy): dune sand.

Type specimens

Holotype and paratype are deposited in the collection of the Dipartimento di Biologia Animale, University of Catania.

ENOPLUS SCHULZI Gerlach, 1952

(Fig. 4)

Male: L = 1.66 mm; a = 32; b = 5.3; c = 36.8; c' = 1.2.

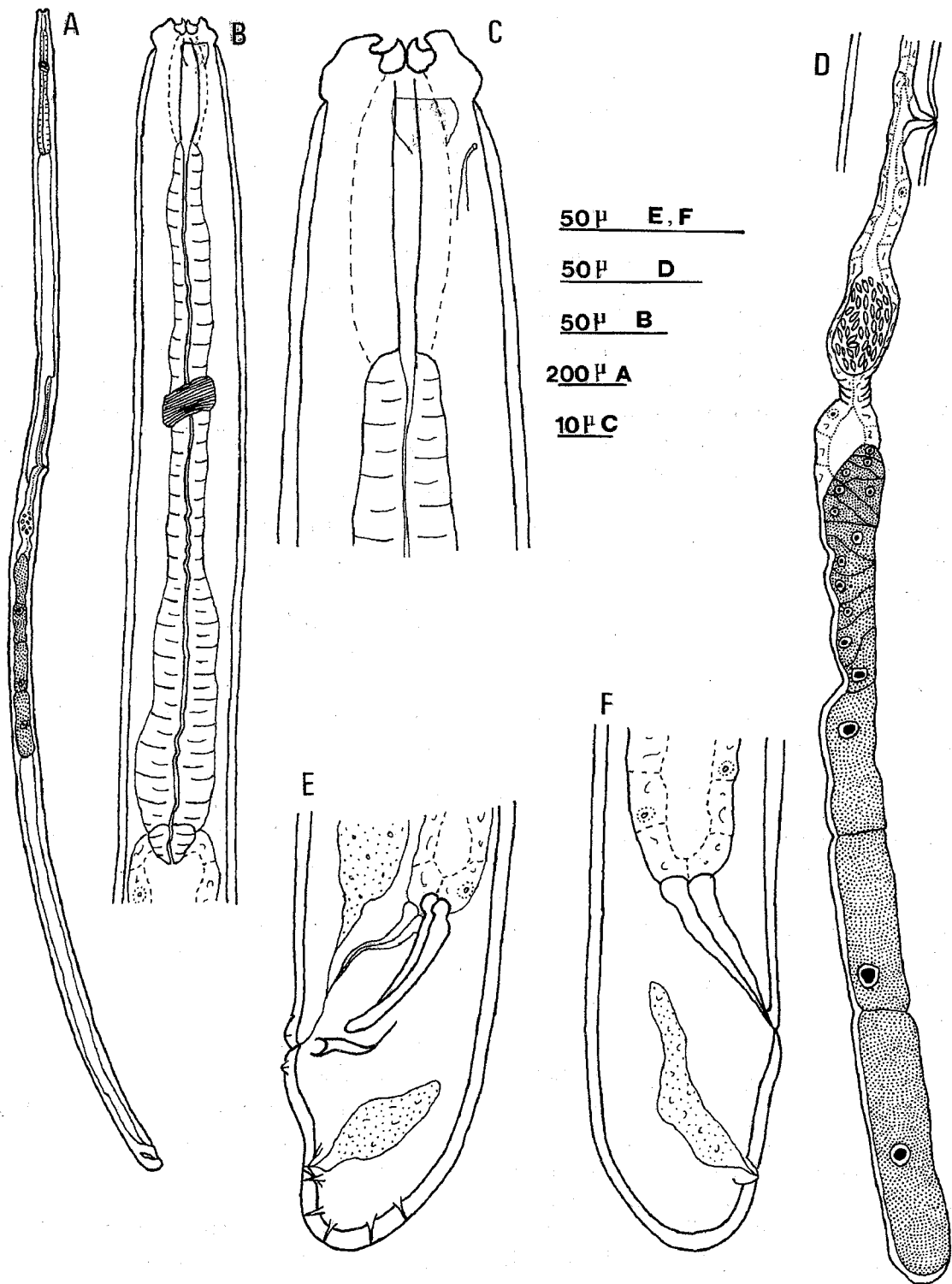


Fig. 3 - *Trissonchulus provulvatus* sp. n.: A, female body; B, C, anterior ends; D, posterior genital branch; E, male posterior end; F, female posterior end.

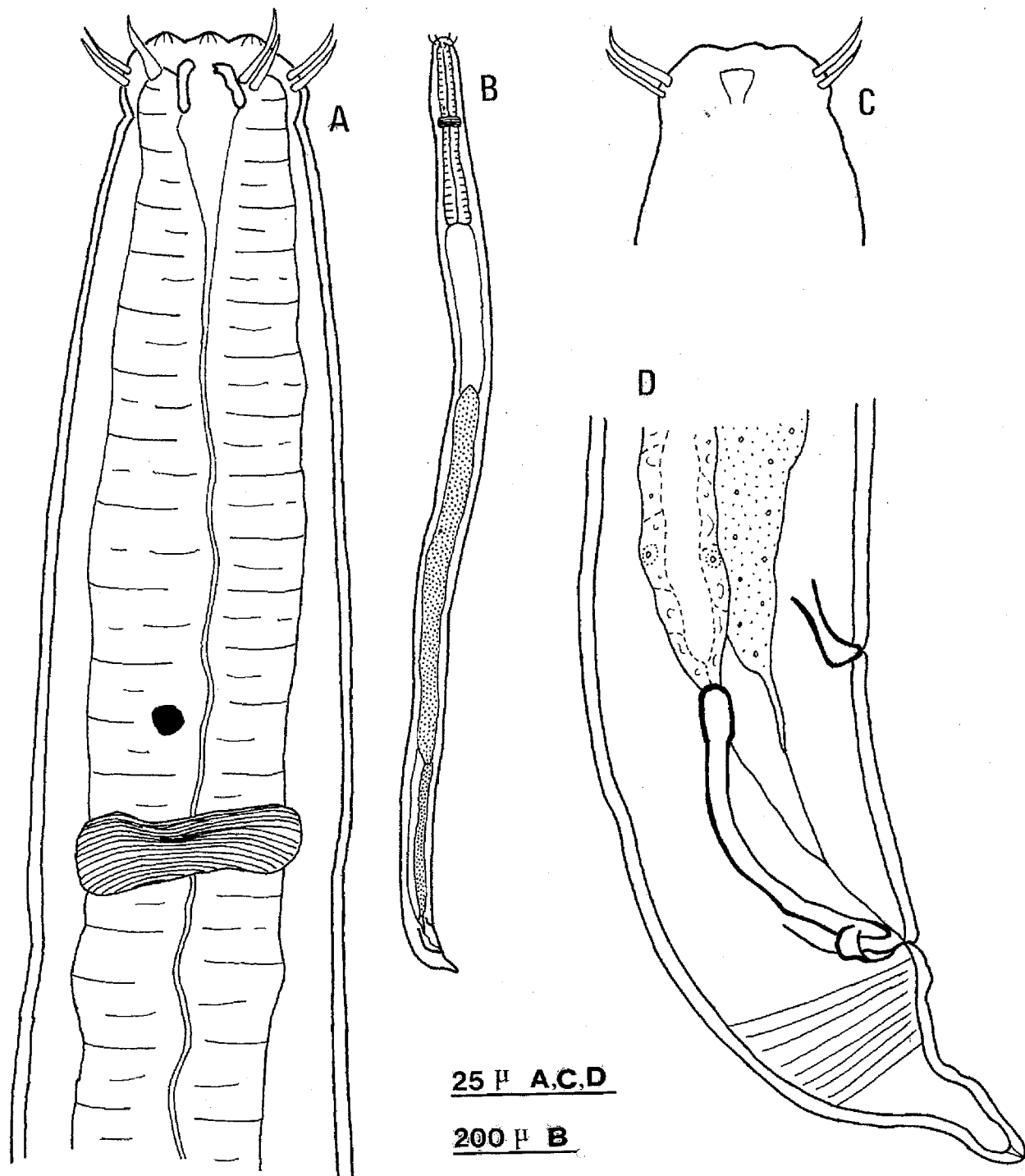


Fig. 4 - *Enoplus schulzi*: A, C anterior ends; B, male body; D, male posterior end.

Body rather stout, only slightly tapering at both extremities. Cuticle 0.9 μm thick, finely transversely striated. Lip region set off, hemispheroid, with six conspicuous lips, each apically bearing a prominent papilla. Ten cephalic setae, six longer and four shorter: the latter closely adjoined to the four longer subventral and subdorsal setae. Longer setae 12.8 μm , almost half head width measured at its base. Amphidial fovea cup-shaped, its opening 5.5 μm wide, about 1/4 head width. In the mouth cavity there are three mandibles 9.2 μm long. Pharynx cylindrical, 310 μm long; nerve ring in the anterior half of pharynx, at 132 μm from anterior end. There are ocelli lying at 115 μm from anterior end. Excretory pore not seen. Testes paired, rather obscure. Spicules 62.5 μm long, 1.5 times tail length, slender, ventrally curved, slightly bigger at their proximal end. Gubernaculum well developed, 10.1 μm long. A single tubular precloacal organ, 17.4 μm long, is located 45 μm from cloacal opening. Tail short, 45 μm in length, lacking setae, convex-conoid, with a long pointed digitate structure at the end of which the terminal duct of caudal glands opens.

This species was found along the coasts of Chile, Germany, England and Mediterranean countries, in dune sands or in brackish water. In our specimen the ocelli, which have never been described so far in this species, are clearly evident.

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