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## TWO NEW SPECIES OF *TOBRILUS* (NEMATODA) FROM ITALY

by

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**Summary.** Two rather similar species of *Tobrilus*, *T. siculus* and *T. sardus* from Sicily and Sardinia, are described. The former species was previously described by Vinciguerra (1972) as *T. graciloides* (Daday). The two new species are also compared with *T. africanus* and *T. granatensis*.

Vinciguerra (1972) described as *Tobrilus graciloides* (Daday, 1908) Andrassy, 1959 a species of *Tobrilus* found in the Flascio river, between Etna and the Nebrodi mounts (Sicily, Italy), and in a nearby mesopsammic environment. The finding of a Spanish population of *Tobrilus*, described by Ocaña and Zullini (1988) as *T. granatensis* n.sp., and of a population from the island Maddalena (Sardinia, Italy), both very similar to the Sicilian one, has prompted a more detailed observation of the last population and a comparison with the other two. The result of this study has led to the proposal of two new species of *Tobrilus*, which are described here.

### *TOBRILUS SICULUS* sp.n.

(Figs. 1 and 3 a, c, e, f) syn.

*Tobrilus graciloides* apud Vinciguerra 1972 nec Daday 1908

Holotype ♂: L = 2.37 mm; a = 37; b = 6.7; c = 16; c' = 3.

♀ (n = 5): L = 1.28-2.31 mm; a = 18-38; b = 4.8-5.7; c = 8.5-10; V = 43-48; c' = 3.7-4.8.

♂ (n = 12): L = 1.81-2.11 mm; a = 22-26; b = 4.5-5.6; c = 11-12; c' = 2.5- 3.3.

**Female.** Body straight in fixed specimens; cuticle, 2.5-4 µm thick at midbody, smooth in the head region then finely but clearly transversely striated (cuticular rings 1.8 µm), covered with setae scattered all over the body. Length of the longer cephalic setae 6-7 µm (1/4 of the head width); the shorter setae measure 4-5 µm; cephalic diameter 26-30 µm. Stoma, 26-34 µm long, with two pouches separated by a short isthmus, each with one tooth; the distance between the teeth 10-13 µm; between the anterior one and the head end 12-16 µm. Amphids opening at the level of the anterior tooth or slightly before, 7 µm large,

about 1/5 of the corresponding body width. At this level bundles of longitudinally elongate crystalloids are visible. Pharynx 278-374 µm long; cardiac glands ovoid 27-33 µm long. Rectum length 44-56 µm, about as long as anal body width. Vulva transverse; vagina musculature obscure, apparently striated. In one specimen an almost spherical egg is present in the uterus, measuring 56 x 61 µm. Tail proximally convex-conoid, distally cylindrical, slender, slightly clavate, 148-206 µm long, almost 4 anal body widths. A subterminal dorsal seta is present.

**Male.** Very similar to female. Body straight except the posterior end, hook-shaped. Tail relatively shorter than in female, more abruptly tapering, slightly S-shaped. Testes two. Vas deferens joining ductus ejaculatorius apparently after the second supplement. Supplements 6, the most posterior much smaller than the others. Distance between them as follows (in µm; in parantheses the mean for 5 specimens):

S1-S2 = 38 — 57 (46)  
 S2-S3 = 33 — 51 (44)  
 S3-S4 = 59 — 81 (74)  
 S4-S5 = 25 — 50 (37)  
 S5-S6 = 39 — 50 (45)  
 S6-anus = 15 — 20 (17)

Between supplements numerous small ventral papillae are present; their number between them as follows (n = 3):

S1-S2 = 14 13 14  
 S2-S3 = 11 13 17  
 S3-S4 = 26 26 26  
 S4-S5 = 9 9 10  
 S5-S6 = 11 12 10  
 S6-anus = 2 2 2

Spiculae slender, variously enlarged at the proximal end, 40-46 µm long; gubernaculum 21-22 µm long.

*Diagnosis.* *Tobrilus siculus* sp.n. is characterized by cuticle finely striated, relatively thick, stoma with two pouches, each with one tooth, distance between teeth 10-13  $\mu\text{m}$ , egg almost spherical, ejaculatory duct joining vas deferens after the second supplement, 6 supplements, the last of which smaller than the others, with many ventral papillae between them and with the largest distance between S3 and S4, spiculae slender, 40-46  $\mu\text{m}$  long.

*Tobrilus siculus* sp.n., described by Vinciguerra (1972) as *T. graciloides* (Daday, 1908) Andr ssy, 1959, resembles the latter in many respects, such as stoma shape, number and position of supplements, shape of gubernaculum and size of spiculae; nevertheless significant differences exist in the shape both of spiculae and supplements and in the tail length.

The new species greatly resembles *T. africanus* Zullini, 1988, *T. granatensis* Oca a et Zullini, 1988 and *T. sardus* sp.n. It differs from the first in having shorter tail, striated cuticle, greater distance between S3 and S4, almost spherical egg. From the second it differs in having shorter tail, striated cuticle, a large cephalic diameter, in the egg shape and in having a single smaller supplement. From the last species, the most similar, it differs essentially in the greater distance between S3 and S4 and in the striated and thicker cuticle. From all three species it differs in the greater number of ventral papillae between supplements.

*Type locality.* Periphyton and mesopsammon, Flascio river (Sicily, Italy), October 1970.

*Type material.* Holotype, 5 female paratypes and 10 male paratypes in the collection of the Dipartimento di Biologia Animale, University of Catania; 1 male paratype in the Instituut voor Dierkunde, Rijksuniversiteit Gent; 1 male paratype in the collection of Prof. I. Andrassy, Budapest.

#### ***TOBRILUS SARDUS* sp. n.**

(Figs. 2 and 3 b, d)

Holotype  $\sigma$ : L = 1.27 mm; a = 40; b = 4.7; c = 10.6; VD = 40; c' = 4.3

Allotype  $\varphi$ : L = 1.26 mm; a = 26; b = 4.8; c = 9.5; V = 46; c' 4.8

Paratypes  $\varphi$  (n = 4): L = 1.10-1.26 mm; a = 25-30; b = 4.5-4.8; c = 8.3- 9.6; V = 46-52; c' = 4.5-6.0.

Paratypes  $\sigma$  (n = 5): L = 1.02-1.38 mm; a = 32-43; b = 4.7-5.3; c = 8.5- 12.3; VD = 36-40; c' 2.5-4.3.

*Female.* Body slightly ventrally curved. Cuticle 1.5-2.5  $\mu\text{m}$  thick at midbody, almost smooth (cuticular rings 1.0  $\mu\text{m}$ ). Longer cephalic setae measuring 5-6  $\mu\text{m}$ ; length of the shorter setae 2.5- 4  $\mu\text{m}$ . Cephalic diameter 20  $\mu\text{m}$ . Stoma, 23-32  $\mu\text{m}$  long, with two pouches, separated by a

short isthmus, each with one tooth; distance between teeth 8-11  $\mu\text{m}$ ; anterior tooth 12-15  $\mu\text{m}$  far from the head end. Amphid opening at the level of anterior tooth or slightly posterior. Pharynx 238-274  $\mu\text{m}$  long; cardiac glands length 15-19  $\mu\text{m}$ . Rectum length 24-30  $\mu\text{m}$ , almost the same as anal body width. Gonads well developed in all specimens; vulva transverse; vagina with clearly striated musculature; uterus with a single egg in some specimens, with two or three in others. Eggs globose; their size when single in the uterus 26-31  $\mu\text{m}$  x 37-38  $\mu\text{m}$ ; smaller in the other case. Tail 120-150  $\mu\text{m}$  long, convex- conoid then slender, cylindrical, slightly clavate. Subterminal seta present.

*Male.* Resembling female in most respects. Body more curved than in female, especially in the posterior end. Distance between head end and anterior tooth 9.5-13.5  $\mu\text{m}$ , between teeth 10.5-12  $\mu\text{m}$ . Amphids usually very evident. Vas deferens joining ductus ejaculatorius apparently at 220-250  $\mu\text{m}$  before the first supplement, but in some specimens a constriction (ductus?) is visible at the level of the first supplement. Supplements 6 (7 in a single specimen), the posteriormost of them smaller than the others; distance between them as follows (in  $\mu\text{m}$ ; in parentheses the mean for 3 specimens):

S1-S2	=	32 — 40	(37)
S2-S3	=	28 — 39	(35)
S3-S4	=	40 — 42	(41)
S4-S5	=	24 — 32	(29)
S5-S6	=	28 — 32	(30)
S6-anus	=	9 — 15	(11)

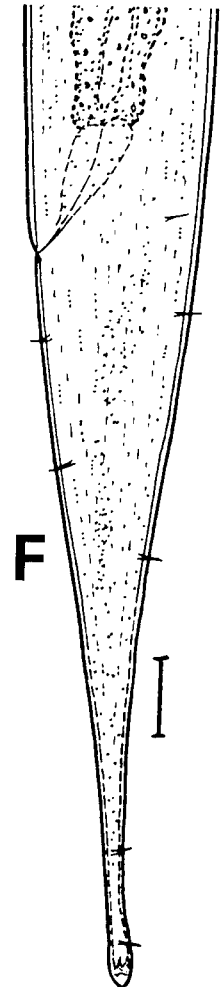
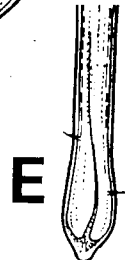
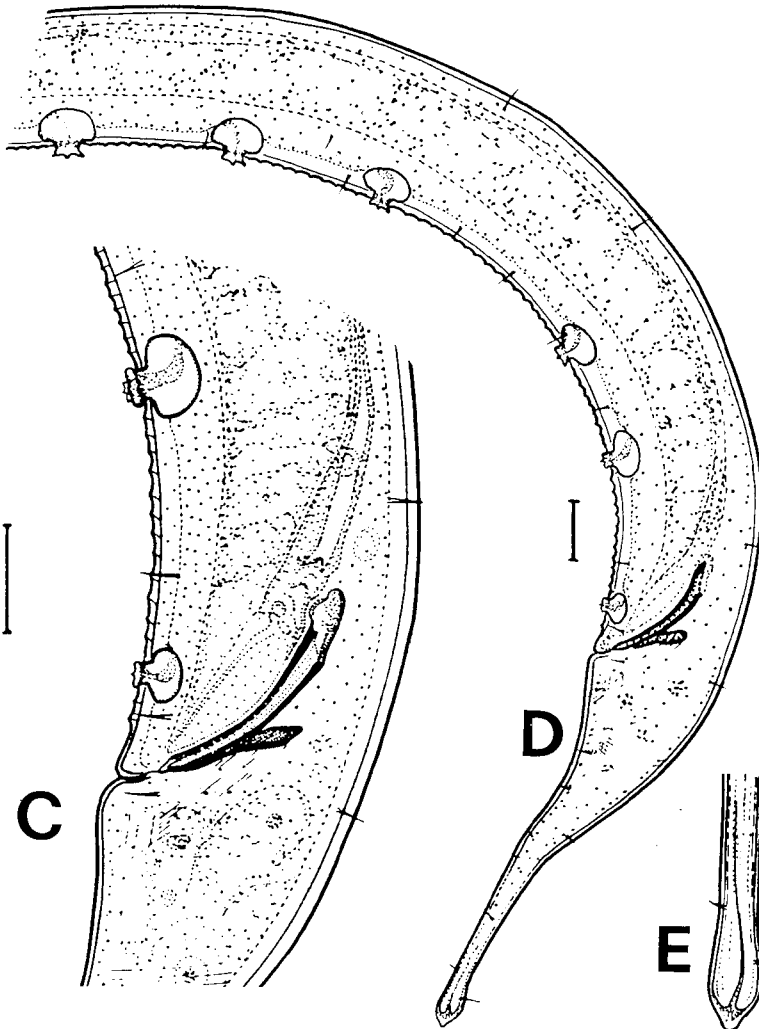
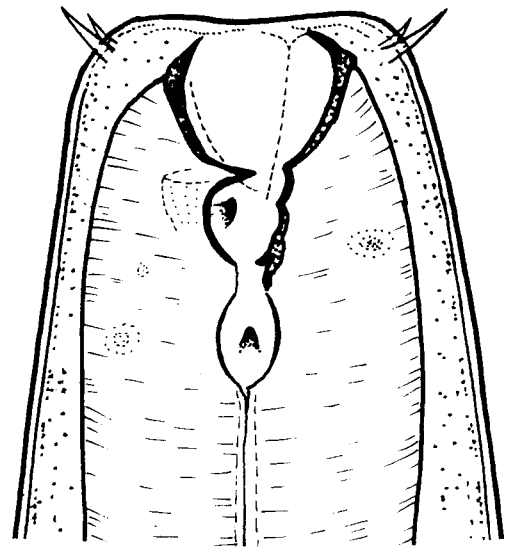
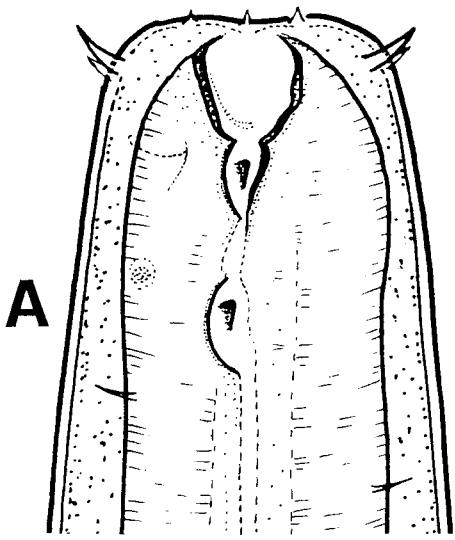
The number of the ventral papillae between the supplements are as follows (n = 2):

S1-S2	=	6 8
S2-S3	=	4 6
S3-S4	=	7 10
S4-S5	=	4 6
S5-S6	=	6 6
S6-anus	=	2 2

Spiculae slender, apparently deformable, 23-31  $\mu\text{m}$  long, tapering at the proximal end; gubernaculum 11-14  $\mu\text{m}$  long.

*Diagnosis.* *Tobrilus sardus* sp. n. is characterized by small size, smooth and thin cuticle, amphids clearly visible especially in male, stoma with two pouches, each with one tooth, distance between teeth 8-12  $\mu\text{m}$ , eggs almost spherical, ejaculatory duct joining vas deferens after the second supplement, 6 supplements, the last of which smaller than the others, spiculae slender, 23- 31  $\mu\text{m}$  long, apparently deformable.

Fig. 1 (Front page) - *Tobrilus siculus* sp. n.: A) head of male; B) head of female; C) spicular region; D) posterior end of male; E) particular of the tail tip; F) tail of female. Bar = 20  $\mu\text{m}$ .



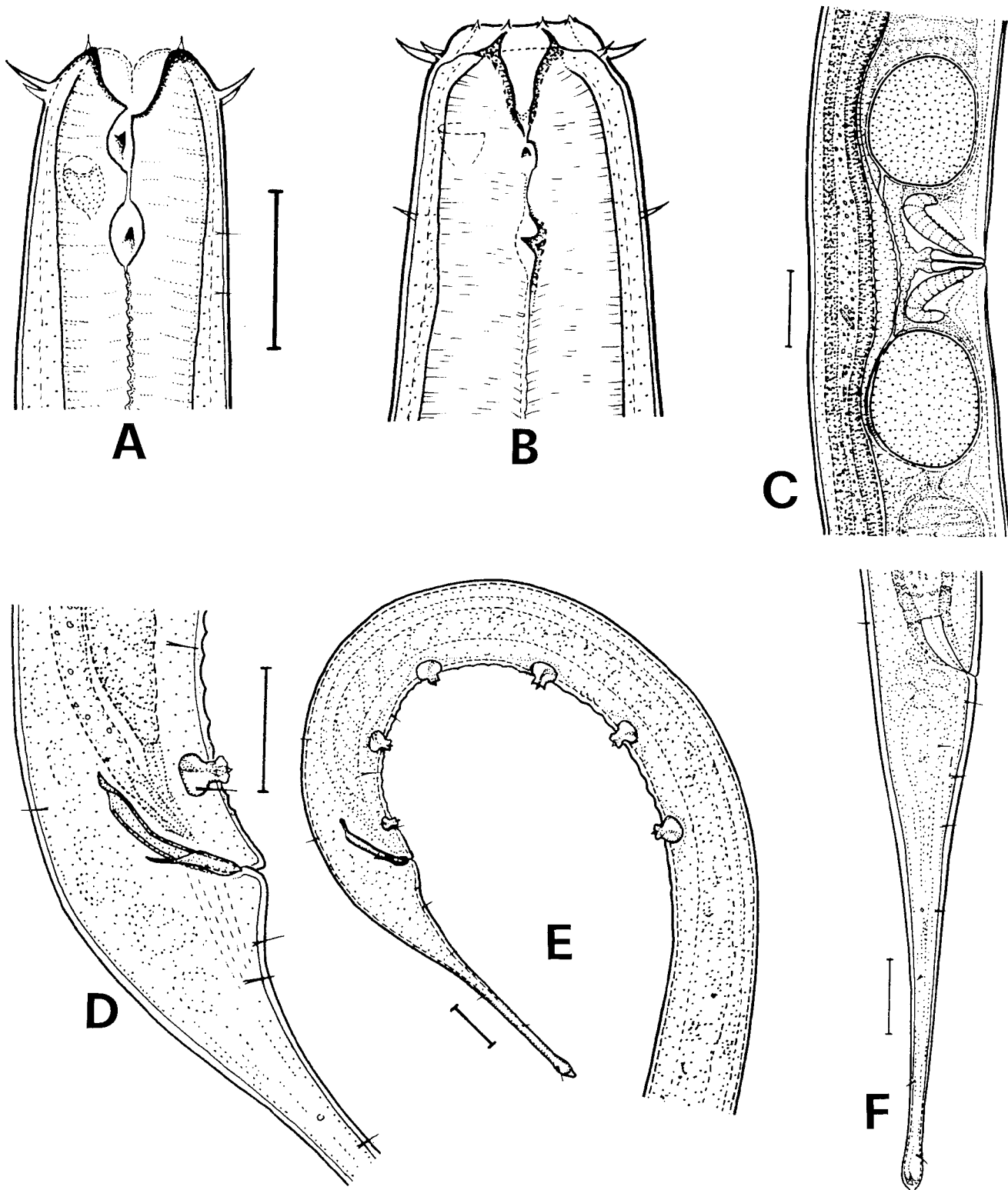


Fig. 2 - *Tobrilus sardus* sp. n.: A) head of male; B) head of female; C) vulval region; D) spicular region; E) posterior end of male; F) tail of female. Bar = 20  $\mu$ m.

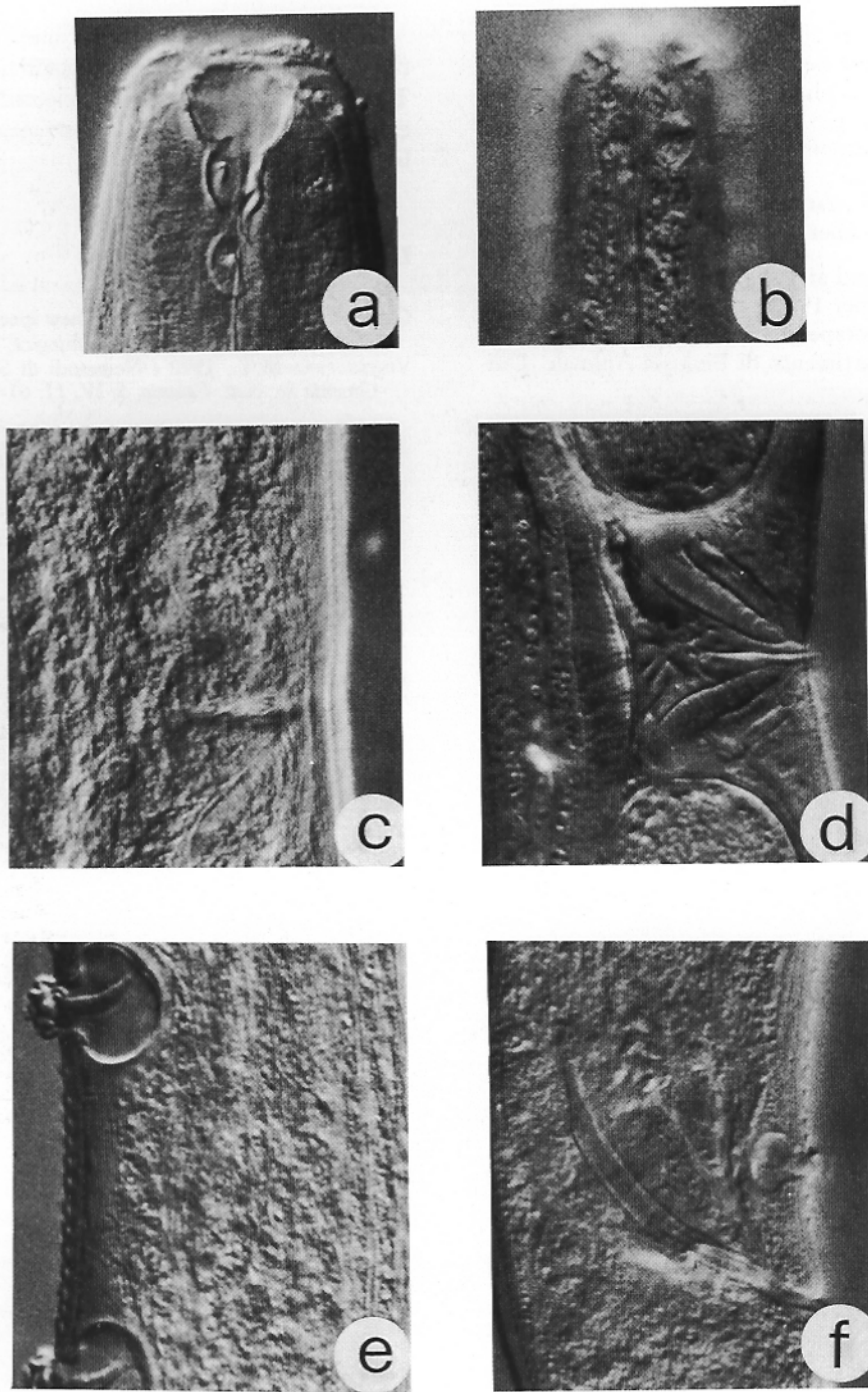


Fig. 3 - *Tobrilus siculus* sp. n.: a) head of female; c) vulval region and cuticular rings; e) male supplements and ventral papillae; f) spicules of male. *Tobrilus sardus* sp. n.: b) cuticle of male head focused on amphid; d) vulval region.

*T. sardus* sp. n; is very similar to *T. siculus* sp. n., from which it can essentially be distinguished by the smooth cuticle, the smaller cephalic diameter, the relatively smaller distance between S3 and S4, the lower number of papillae between supplements, the peculiar spicula shape, the relatively longer tail.

*Type locality.* Pond near the lighthouse, Razzoli Island (Sardinia, Italy) November 1986.

*Other localities.* Pond at Venalonga, Maddalena Island (Sardinia, Italy) October 1989.

*Type material.* Holotype, allotype and paratypes in the collection of the Dipartimento di Biologia Animale, University of Catania.

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#### Literature cited

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