

Mesorhabditis minuta n. sp. from Greece (Nematoda : Rhabditidae)

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SUMMARY

Mesorhabditis minuta n. sp. is described from soil near the shoreline at Kokari on the island of Samos, Greece. Males of the new species are 300-350 μm long, have 22-25 μm long spicules fused at tip, and bursal papillae arranged as 2 + 4 + 3. *M. minuta* n. sp. can be separated from all other bisexual species of *Mesorhabditis* by the small body length of the males. It resembles most closely *M. juglandicola* (Fuchs, 1937) Dougherty, 1955, but differs from it by a longer vulva-anus distance, a smaller male body size and somewhat longer spicules.

RÉSUMÉ

Mesorhabditis minuta n. sp. provenant de Grèce (Nematoda : Rhabditidae)

Description est donnée de *Mesorhabditis minuta* n. sp. provenant du sol près du rivage, à Kokari dans l'île de Samos (Grèce). Les mâles sont longs de 300-350 μm ; les spicules, soudés à leur extrémité, mesurent 22-25 μm ; les papilles de la bourse sont disposées suivant le schéma 2 + 4 + 3. *M. minuta* n. sp. se différencie de toutes les espèces bisexuées de *Mesorhabditis* par la faible longueur du corps du mâle. Il est le plus proche de *M. juglandicola* (Fuchs, 1937) Dougherty, 1955 mais s'en sépare par la distance vulve-anus plus grande, la plus faible taille du mâle et les spicules légèrement plus longs.

In soil samples from the island of Samos, Greece, a small yet undescribed species of *Mesorhabditis* (Osche, 1952) Dougherty, 1953 was detected.

For light microscopy (LM) nematodes were killed by heat, fixed in cold TAF, processed to glycerine by a slow method (Hooper, 1970) and mounted on slides as described in Boström and Gydemo (1983). Female specimens to be studied by scanning electron microscopy (SEM) were processed as described in Boström (1989). Measurements are given as: $\bar{x} \pm \text{SE}$ (range).

The description of the new species based on LM — and SEM — studies is given below.

Mesorhabditis minuta n. sp. (Figs 1, 2)

MEASUREMENTS

Female (paratypes; n = 26) : L = 464 \pm 22 (430-510) μm ; a = 20 \pm 1 (18-22); b = 3.9 \pm 0.2 (3.7-4.3); c = 9.4 \pm 0.6 (7.5-10.3); c' = 4.0 \pm 0.4 (3.2-4.5); V = 76 \pm 1 (72-79).

Male (paratypes; n = 8) : L = 327 \pm 7 (300-350) μm ; a = 16 \pm 0.2 (16-17); b = 3.5 \pm 0.1 (3.2-3.8); c = 18 \pm 0.7 (14-20); c' = 1.3 \pm 0.05 (1.2-1.4); T = 58 \pm 1.5 (53-64); spicules = 23 \pm 0.5 (22-25) μm ; gubernaculum = 9 \pm 0.4 (8-10) μm .

Holotype (female) : L = 450 μm ; a = 18; b = 3.9; c = 9.4; c' = 3.8; V = 76.

Allotype (male) : L = 350 μm ; a = 16; b = 3.3; c = 17; c' = 1.4; T = 55; spicules = 25 μm ; gubernaculum = 10 μm .

DESCRIPTION

Adult : When relaxed by heat specimens of both sexes slightly ventrally arcuate. Body width 24 \pm 0.4 (21-29) μm in females, 20 \pm 0.5 (18-22) μm in males. Cuticle finely and faintly annulated, annules about 1.4-1.6 μm wide at midbody of females, 1.2-1.4 μm of males. Lateral field with five incisures at midbody terminating at phasmid in females, termination obscure in males. Head, 8-9 μm wide in females and 6-7 μm in males, with six distinctly separated lips, each ending in a setose papilla. Amphids oval. Stoma length (measured from head end) 14-17 μm in females and 10-14 μm in males, i.e. 1.8-2.3 and 1.6-2.1 times of head width, respectively. Cheilostom small, weakly sclerotized; promesostom tubiform; metasom isoglottoid, three swellings each bearing two small less prominent denticles. Pharyngeal collar not visible. Pharynx 118 \pm 1 (107-129) μm long in females, 94 \pm 2 (85-100) μm in males; metacarpus swollen; prometacarpus 52-55 % and 53-56 % of total pharynx length, respectively; isthmus

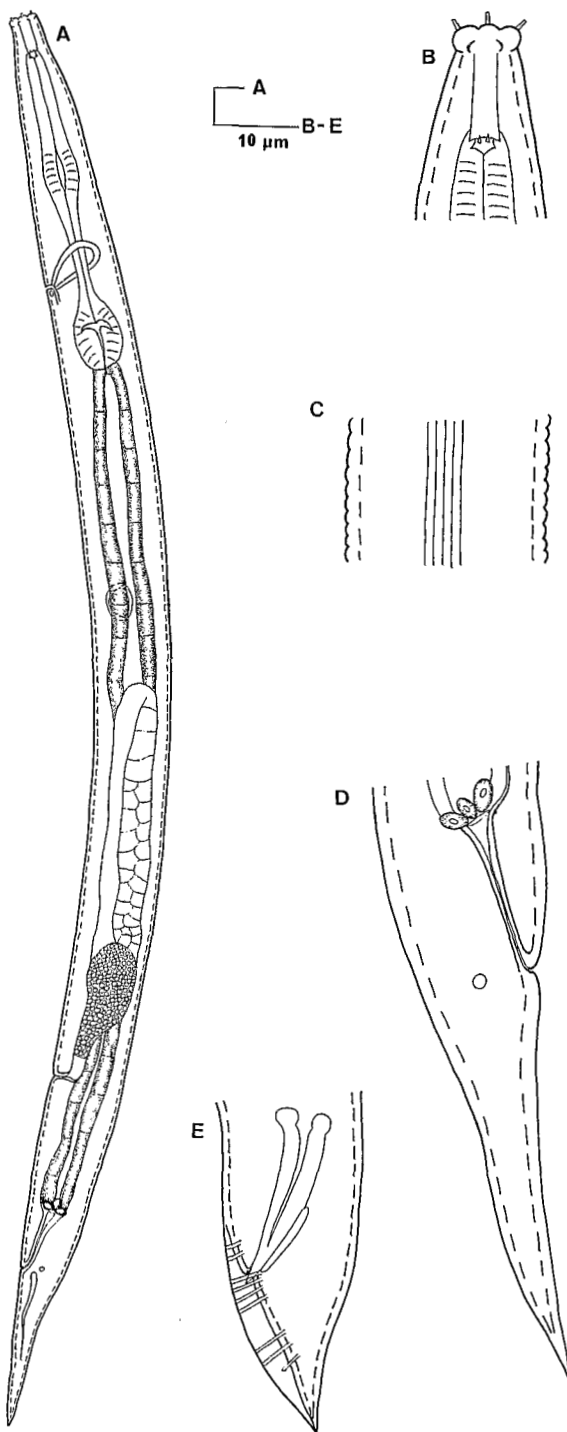


Fig. 1. *Mesorhabditis minuta* n. sp. Female. A : Entire body (holotype); B : Anterior end (holotype); C : Lateral field; D : Posterior end. Male. E : Posterior end.

narrow; basal bulb ovoid with valves. Excretory pore and nerve ring at posterior part of isthmus in females, at anterior part of isthmus in males. A hemizonid at level of anterior isthmus in females, not seen in males.

Female : Genital organ mesorhabditid; monodelphic, prodelphic, reflexed anteriorly, with a posterior vulva. Vulva a transverse slit with slightly protruding lips. Distance vulva-anus 1.3 ± 0.01 (1.1-1.4) times tail length and same distance 5.0 ± 0.1 (4.1-5.5) times anal body width (ABW). Uterus distended to form a spermatheca measuring $21 \times 8-36 \times 12 \mu\text{m}$. Only single uterine eggs found. Postuterine branch absent. Tail 50 ± 1 (44-62) μm long, elongate with pointed terminus. Rectum about 1.5 times ABW. Phasmids at anus, the latter a transverse slit.

Male : Monorchic, testis reflexed anteriorly. Spicules slender, slightly ventrally arcuate, cephalated, distally fused, slightly longer than tail length. Tail 18 ± 0.5 (17-21) μm long, conoid with elongate, acute terminus. Bursa peloderan with nine pairs of bursal papillae arranged in three groups : two pairs preanal, four pairs ad-postanal, three pairs subterminal (last pair shorter than the others), i.e. 2 + 4 + 3.

TYPE HABITAT AND LOCALITY

Soil, covered with grass, near the shoreline at Kokari on the island of Samos, Greece, collected in June 1988 by Dr Björn Sohlenius.

TYPE MATERIAL

Holotype female and fifteen paratype females (access no. 4152), and allotype male and six paratype males (access no. 4153) deposited at the Swedish Museum of Natural History, Section of Invertebrate Zoology, 104 05 Stockholm, Sweden. Six paratype females and one paratype male deposited in the Nematode Collection of the Instituut voor Dierkunde, Rijksuniversiteit Gent, Ledeganckstraat 35, 9000 Gent, Belgium. Five paratype females and one paratype male deposited in the Muséum national d'Histoire naturelle, Laboratoire des Vers, 61, rue de Buffon, 75005 Paris, France.

DIAGNOSTIS AND RELATIONSHIP

M. minuta n. sp. is separated from all other bisexual species of *Mesorhabditis* by the small body length of the males.

It most closely resembles *M. juglandicola* (Fuchs, 1937) Dougherty, 1955 from which it differs by longer vulva-anus distance, smaller body length in males and somewhat longer spicules.

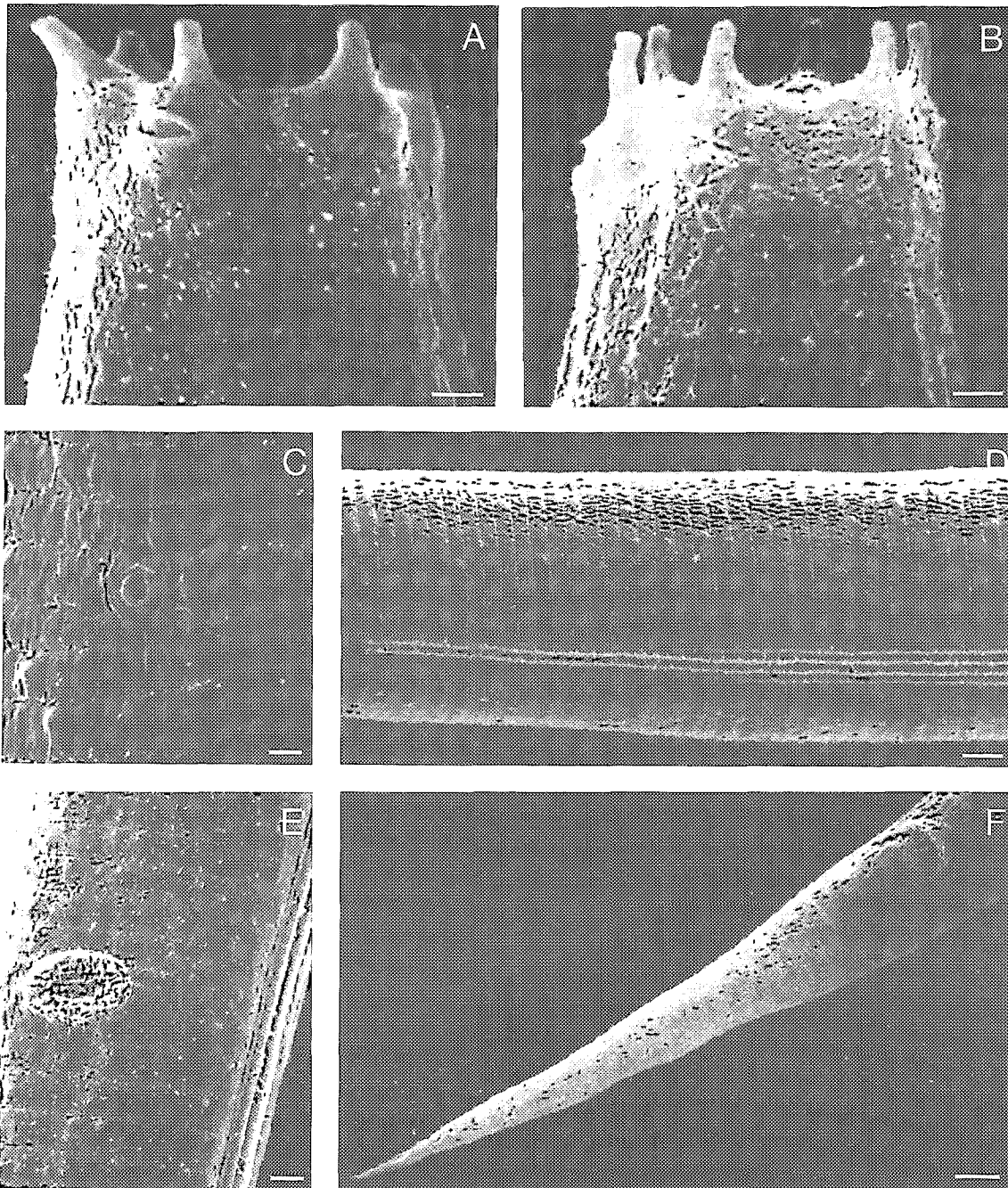


Fig. 2. *Mesorhabditis minuta* n. sp. Female. A : Lateral view of head; B : Ventral view of head; C : Excretory pore; D : Lateral field; E : Vulva; F : Ventral view of tail. (Bar equivalents : A-C = 1 μ m; E = 2 μ m; D, F = 4 μ m).

DISCUSSION

Most species of *Mesorhabditis*, described with males, have spicules longer than 30 µm. In Andrassy's (1984) most recent review of the valid species of the genus, there are only three species with spicules shorter than 30 µm, viz. *M. graciliformis* (Goffart, 1935) Dougherty, 1955, *M. juglandicola* (Fuchs, 1937) Dougherty, 1955, and *M. belari* (Nigon, 1949) Dougherty, 1953. The body lengths of these males are, however, much larger (ranging from 420 to 750 µm) than in *M. minuta* n. sp. which have the smallest males of *Mesorhabditis* described so far.

Sudhaus (1978) transferred *M. graciliformis* to subgenus *Cruzinema* Artigas, 1927 and stated that *M. juglandicola* was an uncertain species. Both were, however, considered as valid species under *Mesorhabditis* by Andrassy (1983, 1984).

In the large group of species with a vulva-anus distance equalling the length of the tail, there are several representatives having ranges of female body length grading into that of *M. minuta* n. sp. Those are *M. spiculigera* (Steiner, 1936) Dougherty, 1953, *M. juglandicola*, *M. inarimensis* (Meyl, 1953) Dougherty, 1955, *M. cranganorensis* (Khera, 1968) Andrassy, 1983, and *M. miotki* (Sudhaus, 1978) Andrassy, 1983.

M. spiculigera has a very wide range in female body length (410-940 µm) and two species described without males, i.e. *M. acuminata* (Kreis, 1929) Dougherty, 1955 and *M. contaminata* (Khera, 1971) Andrassy, 1980, have been synonymised with it (Andrassy, 1983). Its lateral field is, in the original description (as *Rhabditis spiculigera*) by Steiner (1936), described as consisting of two low ridges occupying 1/10 of body width as compared with four ridges occupying 1/5-1/4 of body width in *M. minuta* n. sp.

Kreis' (1929) description of *M. acuminata* (as *Pseudorhabditis acuminatus*) is somewhat doubtful, as the anterior end is said to be rounded, without lips. *M. acuminata* otherwise in most respects resembles *M. minuta* n. sp., except that males were not recorded.

Females of *M. contaminata*, originally described as *Rhabditoides contaminata* by Khera (1971), have in addition to the single setose papilla on each lip numerous forwardly directed head bristles. *M. contaminata* also essentially resembles *M. minuta* n. sp. apart from it being hermaphroditic as sperm was traced in female uteri but no males were found (Khera, 1971).

M. cranganorensis, described as *Rhabditis (Uniovaria) cranganorensis* by Khera (1968), is described without males and the females differ from females of *M. minuta* n. sp. by a much more slender body ($a = 28-31$) and by possession of two spiny papillae on each lip.

In *M. juglandicola*, described by Fuchs (1937) as *Rhabditis juglandicola*, the males have spicules

17-22 µm long and a bursal papillae arrangement of 2 + 4 + 3, but larger body length (420-500 µm) than *M. minuta* n. sp. The main differences between females of *M. juglandicola* and *M. minuta* n. sp. are the very posterior vulva ($V = 87-92\%$), the short vulva-anus distance (1/4 of tail) and the larger body size (460-740 µm) of the former.

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