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TWO NEW SHEATHOID NEMATODES (NEMATODA:
CRICONEMATIDAE) FROM THE MEDITERRANEAN REGION

by

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Twenty five species of *Hemicriconemoides* have been described from several countries (Dasgupta *et al.*, 1969; Germani and Luc, 1970; Heyns, 1970; Pinochet and Raski, 1975). Two new species, found in 1977, one in Greece and the other from southern Italy, are described in this paper.

MATERIALS AND METHODS

Nematodes were extracted from soil samples by Cobb's sieving and decanting method, fixed in hot aqueous solution of 4% formaldehyde + 1% propionic acid and processed to dehydrated glycerin. Some specimens of one of the species were also fixed in hot (60-70° C) lactophenol, washed and dehydrated in acetone, dried for 10-12 hr at room temperature, coated with gold and observed with a scanning electron microscope (SEM).

SPECIES DESCRIPTION

Hemicriconemoides alexis n. sp. (Fig. 1).

FEMALE

Paratypes (20 females): L=0.52 (0.48-0.56) mm; a=18 (16-19); b=4.3 (4.1-4.5); c=16 (12-17); V=87 (86-88)%; V'=60 (55-66) μ m; R=110

(105-120); RSt=18 (17-19); ROes=27 (26-28); Rex=32 (29-34); RV=15 (14-16); Ran = 10 (9-10); RVan = 5 (4-6); Stylet = 72 (65-77) μm ; VL/VB=2.4 (2.1-2.7).

Holotype (Female): L=0.51 mm; a=16; b=4.2; c=14; V=88%; V'=57 μm ; R=110; RST=19; ROes=28; Rex=30; RV=14; Ran=9; RVan=5; Stylet=73 μm ; VL/VB=2.2.

Lip region of female slightly set off from body with two rounded annules and conspicuous and elevated labial disc. Body cylindrical slightly curved ventrally with conical terminus (Fig. 1 C, D). No lateral lines or anastomoses of annules observed (Fig. 1 E).

Body annules smooth and 5 μm wide, stylet long 14 (13-15)% of the body and 69 (66-75)% of the oesophagus length, with strong rounded knobs 8 μm width (Fig. 1 A, B). Oesophagus typical of the genus, 98 μm (97-103) long with a large mid-bulb, a long isthmus surrounded by the nerve ring and with a small basal-bulb. Cuticular sheath attached to the body at anterior end, at vulva and rarely at the tail tip. Excretory pore 137 μm (135-142) from anterior end at the level of 32nd (29-34) body annule. Vulva on 15th (14-16) annule from the terminus. Anus located 4-6 annules after vulva. Vulva terminus (VL) is 2.4 (2.1-2.7) times the body width (VB) and 1.2 (1.1-1.3) times the stylet length. Spermatheca slightly oval, opposite the 11 th - 14 th annule anterior to the vulva; sperms small and rounded.

MALE: not found.

Holotype (Female): collected August 1977. Slide V. 11/1/1 Istituto Nematologia Agraria, C.N.R., Bari, Italy.

Type habitat and locality: from rhizosphere of *Zea mais* L., Filippias (Epirus), Greece.

Paratypes distributed as follows: Slides V. 11/1/2-8 Istituto Nematologia Agraria, C.N.R., Bari, Italy.

Four females each at: 1) Plantenziektenkundige Dienst, Wageningen, The Netherlands; 2) University of California, Nematode Survey Collection, Davis, California, U.S.A.; 3) U.S. Department of Agriculture, Nematode Collection, Beltsville, Maryland, U.S.A. and 4) Nematology Department, Rothamsted Experimental Station, Harpenden, Herts, England.

Diagnosis and relationships: *H. alexis* n. sp. is closely related to *H. varionodus* Choi et Geraert, 1972 and *H. californianus* Pinochet et Raski, 1975.

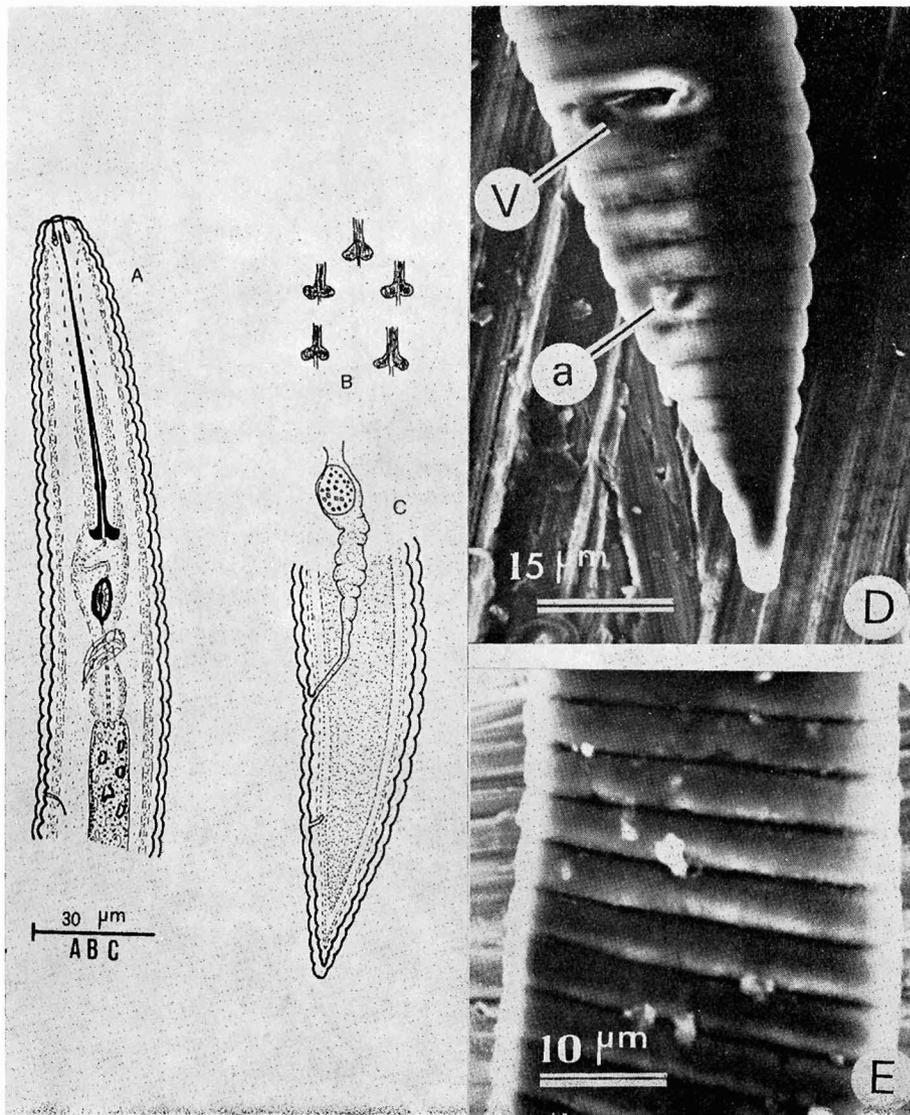


Fig. 1 - A-E. *Hemicriconemoides alexis* n.sp. A) Anterior portion of the female body. B) Variation of stylet knobs in female. C) Posterior portion of the female body. D) Posterior portion of the female body showing vulva (V) and anus (a) apertures. E) Annulation in the middle portion of the female body (D and E, SEM micrographs).

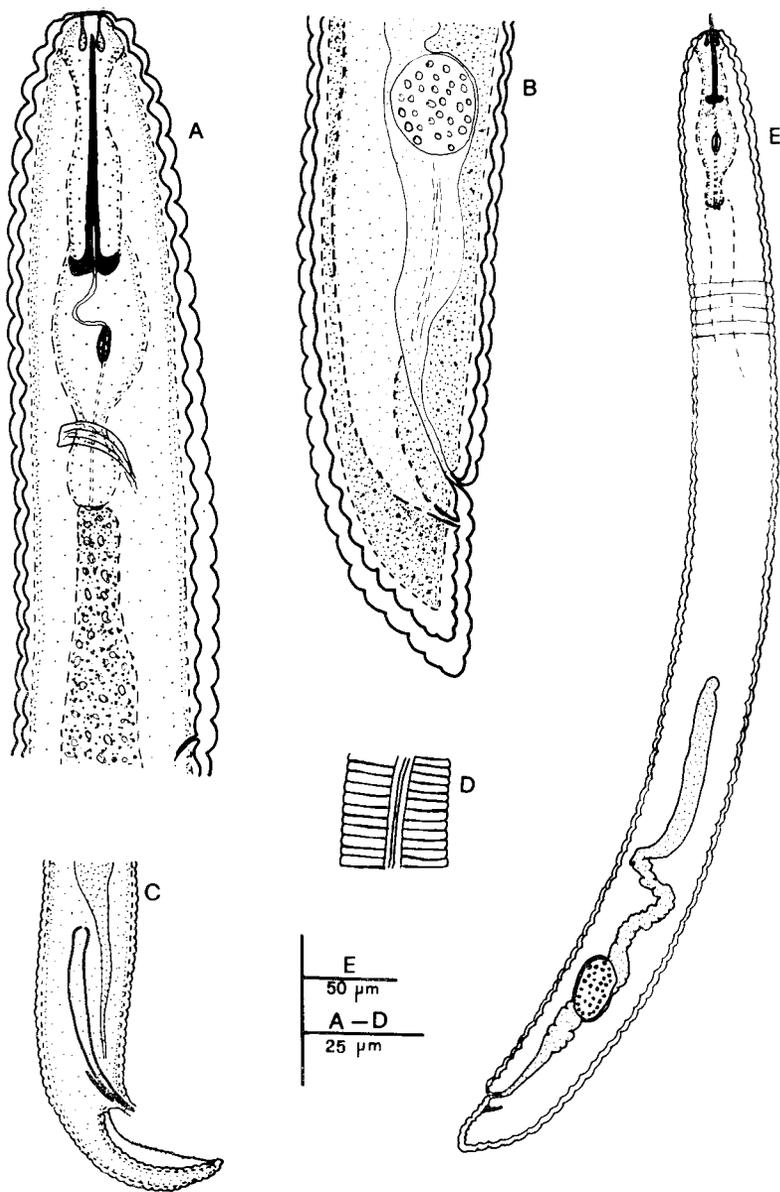


Fig. 2 - A-E. *Hemicriconemoides promissus* n.sp. A-B) Anterior and posterior portion of the female body. C) Male posterior portion of the body. D) Male lateral field. E) General view of the female body.

It is differentiated from *H. varionodus* by its smaller stylet (65-77 μm vs. 84-98 μm), anus position (9-10 vs. 6-8 annules from terminus), the much more conspicuous, elevated labial disc and the more conical tail. *H. alexis* differs from *H. californianus* by the anterior vulva position ($V=86-88\%$ vs. $90-92\%$), higher value of V' (55-66 μm vs. 33-44 μm), the ratio VL/VB (2.1-2.7 vs. 1.3-1.8), RV (14-16 vs. 10-12), and Ran (9-10 vs. 5-6). In addition, the stylet knobs are mostly rounded in *H. alexis* but anchor-shaped in *H. californianus*.

Hemicriconemoides promissus n. sp. (Fig. 2).

FEMALES

Paratypes (20 females): $L=0.58$ (0.46-0.75) mm; $a=16$ (15-20); $b=5.8$ (5.5-6.4); $c=30$ (27-35); $V=94-95\%$; $V'=28$ (27-32) μm ; $R=97$ (89-102); $RSt=8-9$; $ROes=15$ (14-16); $Rex=24$ (23-26); $RV=7-8$; $Ran=6-7$; $RVan=1$; $Stylet=49$ (48-51) μm ; $VL/VB=0.9$ (0.8-1.0). Ex. pore= 159 (155-165) μm from anterior end.

Holotype (Female): $L=0.64$ mm; $a=15$; $b=6.1$; $c=32$; $V=95\%$; $V'=28$ μm ; $R=99$; $RSt=8$; $ROes=15$; $Rex=24$; $RV=8$; $Ran=7$; $RVan=1$; $Stylet=49$ μm ; $VL/VB=0.9$.

Female body slightly curved ventrally, cylindrical with a truncated lip region (Fig. 2, A). First ten annules narrowing regularly anteriorly. Body diameter sometimes narrows by about 10% immediately posterior to vulva (Fig. 2, E). Cuticular sheath attached to the body at anterior end and to vulva. Vulva sheath absent. No lateral lines, ornamentations or anastomoses were observed. Body annules 6-7 μm wide. Stylet long 8.4% (6.8-10.4) of the body and 47% (45-49) of the oesophagus length, with strong anchor-shaped knobs, 8.5-9 μm wide. Oesophagus typical of the genus. Excretory pore at the level of 24 th (23-26) body annule. Vulva terminus (VL) is 0.9 (0.8-1.0) times the body width at the level of the vulva (VB) and 1.6 (1.5-1.7) times the stylet length. Spermatheca rounded at the 12 th - 15 th annule anterior to the vulva with visible sperms 2 μm large (Fig. 2, B). Tail conical, ending with a small rounded lobe.

MALE

Paratypes (4 Males): $L=0.50$ (0.45-0.58) mm; $a=25$ (24-35); $b=?$; $c=16$ (15-19); spicules= 36 (34-40) μm ; gubernaculum= 7 μm ; $T=36$ (28-48).

Allotype (Male): $L=0.57$ mm; $a=28$; $b=?$; $c=18$; spicules= 37 μm ; gubernaculum= 7 μm ; $T=44$.

Lip region of the male continuous, not set off. Oesophagus and stylet degenerate. Body annules 1.8 μm wide. Lateral field with 4 incisures (Fig. 2, D). Spicules arcuate, cephalated and distally pointed. Caudal alae rudimentary with crenate margin beginning slightly posterior to cloaca and ending two annules before the terminus (Fig. 2, C). Anterior end-excretory pore distance 151-158 μm long. Hemizonid distinct, 2-3 annules long and ten annules (18 μm) anterior to excretory pore. Testis single occupying about 36% of the body length. Gubernaculum straight 7 μm long proximal and with thick-end (Fig. 2, C). Anal tubercle 4-5 μm long, directed posteriorly, without annulation. Tail terminus annulation regular (Fig. 2, C).

Holotype (Female) collected October 1977. Slide V. 11/2/1 Type collection Istituto Nematologia Agraria, C.N.R., Bari, Italy,

Allotype (Male) collected same date as holotype, slide V. 11/3/1 collection Istituto Nematologia Agraria, C.N.R., Bari, Italy,
Type habitat and locality: from rhizosphere of halophilic plants in sandy dunes, Torre Canne, Brindisi, Italy.

Paratypes distributed as for of *H. alexis* and slides V. 11/2/2-30 at Istituto Nematologia Agraria, C.N.R., Bari, Italy.

Diagnosis and relationships: *Hemicriconemoides promissus* n. sp. is characterized by the short stylet 49 μm (48-51) long and by the very great body length ranging from 0.46 to 0.75 mm. Forty per cent of the paratypes were much longer than 0.63 mm that is the greatest length reported for *Hemicriconemoides* sp. (Dasgupta *et al.*, 1969).

H. promissus is related to *H. intermedius* (Dasgupta *et al.*, 1969), *H. pseudobrachyurus* De Grisse, 1964 and *H. brachyurus* = syn. *H. sacchariae* Van Den Berg and Heyns, 1977. *H. promissus* can be separated from *H. intermedius* by the longer post-vulvar part of the body ($V' = 27-32 \mu\text{m}$ vs. 14-25 μm) curved ventrally, and by the hemispherical tail shape, which is subacute conoid in *H. intermedius*.

H. promissus differs from *H. pseudobrachyurus* by its smaller stylet (48-51 μm vs. 52-59 μm ; RSt 8-9 vs. 9-13) and for the higher value of the ratio of vulva terminus distance divided by the stylet length ($r = VL/ST$), [1.65 (1.5-1.7) vs. 0.49 (0.39-0.62)]. Finally *H. promissus* differs from *H. brachyurus* by the smaller stylet 48-51 vs. 49-57 μm ; RSt = 8-9 vs. 11-15, and by the absence of the vulvar sheath.

S U M M A R Y

Two new species of *Hemicriconemoides* (*H. alexis* from Greece and *H. promissus* from Apulia, southern Italy) are described and illustrated.

R I A S S U N T O

Due nuove specie di Hemicriconemoides (Nematoda: Criconematidae) nella regione mediterranea.

Vengono descritte ed illustrate due nuove specie di *Hemicriconemoides*, raccolte rispettivamente in Epiro (Grecia) e lungo il litorale adriatico della Puglia. La prima è indicata con il nome di *H. alexis*, mentre la seconda con quello di *H. promissus*.

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