

Hexameris macrostoma n. sp. (Nemata : Mermithidae) parasitizing the cricket *Grylloides laplatae* (Orthoptera : Gryllidae) in Argentina

Nora B. CAMINO and S. Patricia STOCK

CIC-CEPAVE, Centro de Estudios Parasitológicos y de Vectores,
Calle 2 No. 584, 1900 La Plata, Argentina.

Accepted for publication 28 October 1993.

Summary – In this paper a new species *Hexameris macrostoma* n. sp. is described and illustrated. A key for the identification of the Argentinian *Hexameris* species is presented.

Résumé – *Hexameris macrostoma* n. sp. (Nematoda : Mermithidae) parasitant le grillon *Grylloides laplatae* (Orthoptera : Gryllidae) en Argentine – Dans cet article est décrite et illustrée la nouvelle espèce *Hexameris macrostoma* n. sp. Une clé d'identification des espèces argentines du genre *Hexameris* est proposée.

Key words : Argentina, cricket, *Grylloides*, *Hexameris*, nematodes.

At present three species belonging to the genus *Hexameris* Steiner, 1924 have been isolated from Argentina, two being parasites of orthopterans : *H. ovistriata* Stock & Camino, 1992 and *H. cochlearius* Stock & Camino, 1992. The third one, *H. hortensis* Camino & Stock, 1989 is a parasite of *Spodoptera frugiperda* (Lepidoptera : Noctuidae).

While conducting a field survey on horticulture pests in the area of City Bell (Province of Buenos Aires, Argentina) we found some dying crickets which were parasitized by mermithid nematodes. They represented a new species described below under the name of *Hexameris macrostoma* n. sp.

Parasitized crickets were placed in plastic containers with sterilized moist sand where post-parasitic nematodes migrated to mature. Adults and post-parasitic juveniles were observed alive and then killed in distilled water at 60 °C for 2 min, fixed in TAF and processed to glycerin by Seinhorst's method (Curran & Hominick, 1980). Drawings and measurements were made from living and fixed specimens with a camera lucida microscope, and a micrometer in a Zeiss light microscope.

Hexameris macrostoma n. sp.

(Fig. 1)

MEASUREMENTS

Female (Paratypes; n = 15) : L = 49-120 (84.67 ± 23.41) mm; head diam. at cephalic papillae level = 64-70.5 (67.08 ± 2.35) µm; stoma = 6.1-6.3 × 12.3-12.6 (6.25 ± 0.3 × 12.5 ± 0.4) µm; max. body diam. = 240-360 (281.33 ± 39.84) µm; diam. at post. end of trophosome level = 192-280 (228 ± 28.28) µm; dist. ant. end to nerve ring = 312-420 (366.67 ± 38.34) µm;

V = 40-51 (45.5 ± 5.4); vagina length = 208-328 (271 ± 43.67) µm; vagina width = 48-120 (72 ± 28.14) µm.

Male (paratypes; n = 16) : L = 12-48 (26.86 ± 10.15) mm; head diam. at cephalic papillae level = 60-70.6 (62.24 ± 3.64) µm; stoma = 6-6.2 × 12.2-12.5 (6.1 ± 0.1 × 12.3 ± 0.3) µm; body diam. at nerve ring level = 104-130 (118.21 ± 9.00) µm; max. body diam. = 129-188 (149.20 ± 19.33) µm; dist. ant. to nerve ring = 264-364 (297 ± 33.98) µm; tail length = 124-192.70 (152.93 ± 26) µm; spicule length = 128-157.40 (140.30 ± 11.13) µm; spicule width = 16-28.20 (22.79 ± 3.68) µm.

Holotype (male) : L = 28 mm; head diam. at cephalic papillae level = 65 µm; body diam. at nerve ring level = 122.2 µm; max. body diam. = 159.8 µm; body diam. at anus level = 173.9 µm; dist. ant. end to nerve ring = 364 µm; tail length = 192.7 µm; spicule length = 141 µm; spicule width = 25.8 µm.

Allotype (female) : L = 86 mm; head diam. at cephalic papillae level = 64 µm; body diam. at nerve ring level = 164 µm; max. body diam. = 300 µm; body diam. at post. end of trophosome level = 220 µm; dist. ant. end to nerve ring = 380 µm; vagina length = 260 µm; vagina width = 60 µm.

DESCRIPTION

Adults : Long white nematodes. Cuticle with criss-cross fibres visible with the light microscope. Head homocephalic. Six cephalic papillae surrounding the mouth. Stoma large and wide. Mouth terminal and central. Amphids small, amphidial opening inconspicuous. Six hypodermal chords; lateral chords containing one

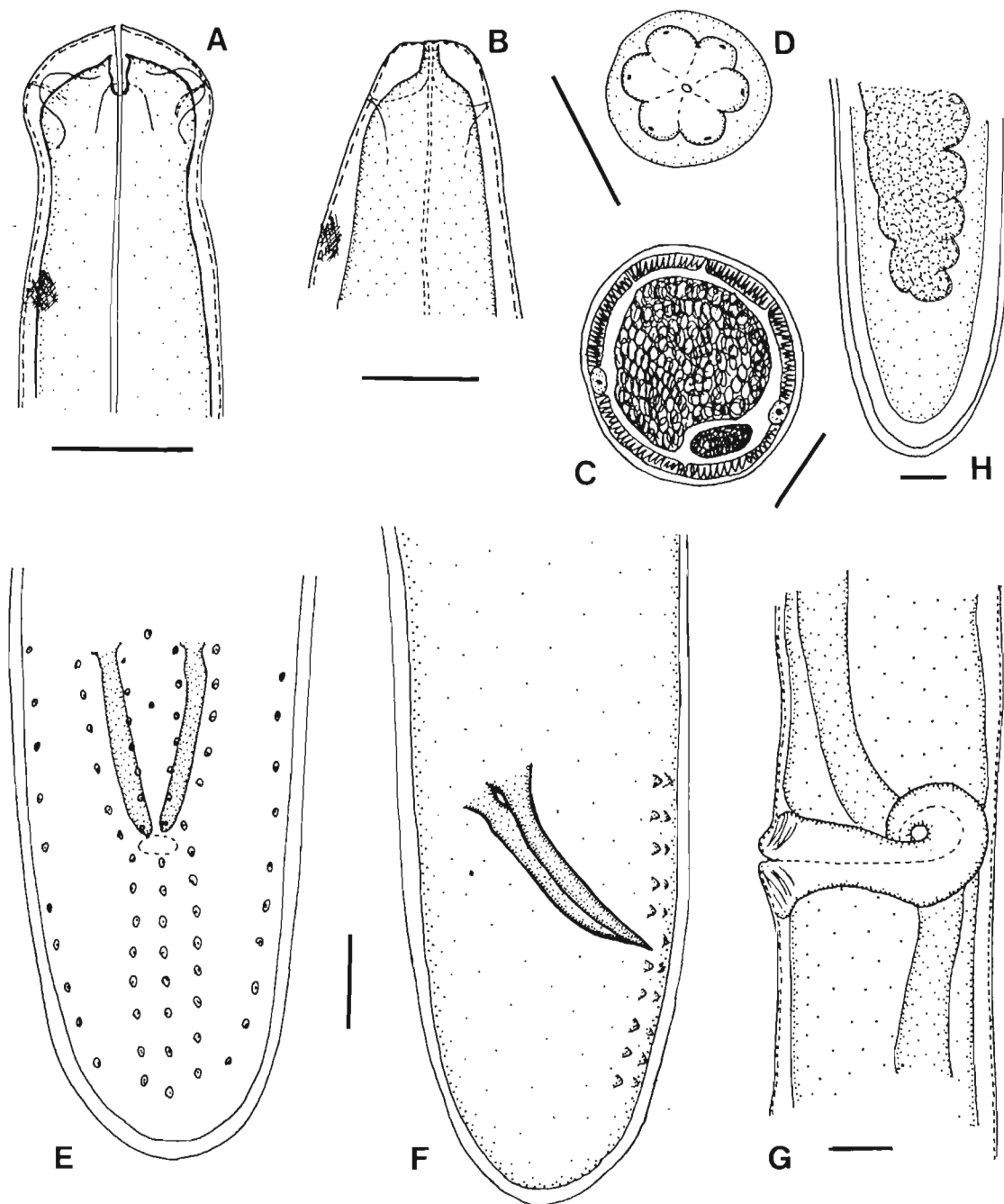


Fig. 1. *Hexameris macrostoma* n. sp. A : Dorsal view of female head; B : Dorsal view of male head; C : Cross section at midbody; D : En face view of male head; E : Ventral view of male tail; F : Lateral view of male tail; G : Vagina; H : Lateral view of postparasitic juvenile tail. (Bars = 50 μ m.)

row of big cells along the body; dorsal, subventral and ventral chords also containing one row of cells.

Females : Head rounded. Vulva a longitudinal slit. Vagina "J" shaped, orientated at 90° to the longitudinal body axis. Anterior portion of the vagina muscularized

and slightly protruding with a descending branch forming a loop before joining the uterus. Tail without appendage.

Males : Head structure similar to that of female. Spicules paired, medium sized, never exceeding the width

of the body at anal level. Spicule tip rounded, simple and not sculptured. Three rows of genital papillae; the external rows with ten papillae situated in a single line; ventral row with 30 preanal papillae: seven pairs arranged in two rows and two single papillae, one situated above the beginning of the seven pairs, and the other one between the 2nd. and 3rd. pairs; and 24 postanal papillae situated in eight triplets. Tail without appendage.

Eggs: Non embryonated in uterus. Oval, shell smooth and without bysi. Eggs = 110-130 (121.6 ± 7.08) \times 90-120 (98.4 ± 11.41) μm .

Preparasitic juveniles: n = 15. L = 1.50-1.80 mm. Diam. = 10-20 μm . Stylet length = 30.55 μm . One homococcyte; 16 stychocytes.

Postparasitic juveniles: Dimensions similar to that of adults. Without caudal appendage.

TYPE HOST AND LOCALITY

Adults of *Grylloides laplatae* Sauss (Orthoptera: Gryllidae). City Bell, Buenos Aires, Argentina.

TYPE SPECIMENS

Holotype: deposited in the Helminthological Collection at CEPAVE. *Allotype* and *paratypes*: deposited in the Invertebrata Division, Facultad de Ciencias Naturales y Museo de La Plata, Buenos Aires, Argentina.

DIAGNOSIS AND RELATIONSHIPS

Mermithidae Braun, 1883. *Hexameris* Steiner, 1924. *Hexameris macrostoma* n. sp. is characterized by: *i*) the stoma size, *ii*) a J-shaped vagina, situated transversally near the middle of the body, *iii*) spicules medium sized, never exceeding the width of body at anal level, without sculpturing, *iv*) ventral genital papillae arranged as follows: four preanal rows with 30 papillae and three postanal rows with 24 postanal.

H. macrostoma n. sp. shares the morphology of J-shaped vagina with the four South American *Hexameris* species that have already been described: *H. dactylocercus* Poinar & Linares, 1985, *H. hortensis* Camino & Stock, 1989, *H. ovistriata* Stock & Camino, 1992 and *H. cochlearius* Stock & Camino, 1992.

H. dactylocercus has a tail appendage on the postparasitic juveniles, and cuticular projections on adult tails. It can also be separated from *H. macrostoma* n. sp. by the large size of the spicules (114-206 μm) and the genital papillae arrangement in six or seven broken rows, which are variable in number and location.

H. hortensis differs in the number and arrangement of the male's genital papillae as follows: eight papillae surrounding the anus, double row of six medianventral preanal papillae, double row of fifteen lateroventral papillae.

H. cochlearius can be distinguished from the new species by having shorter spicules (115 μm) and by the unique shape of the spicule, which have a concavity in the internal face of the tip, forming a receptaculum. Genital papillae arrangement differs from *H. macrostoma* sp. n. in that there is a single preanal papilla, two single ones situated on each side of the anus and seven pairs of postanal papillae.

H. ovistriata can be separated from the new species by the amphids which are bigger (23.5 $\mu\text{m} \times 6 \mu\text{m}$) than *H. macrostoma* n. sp., and also by the distribution of the genital papillae (six rows of genital papillae, double row of lateral papillae, ventral row with fourteen preanal papillae and eighteen postanal papillae).

Key for the identification of the Argentinian species of *Hexameris*

- 1 – Spicules slightly curved a concavity in the internal face of the tip forming a receptaculum *H. cochlearius*
– Spicules without a concavity 2
- 2 – Stoma large size always more than 6 $\mu\text{m} \times 12 \mu\text{m}$ *H. macrostoma* n. sp.
– Stoma small size not more than 6 $\mu\text{m} \times 12 \mu\text{m}$ 3
- 3 – Males with fourteen preanal and eighteen postanal genital papillae *H. ovistriata*
– Males with thirteen preanal and sixteen postanal genital papillae *H. hortensis*

References

- CAMINO, N. B. & STOCK, S. P. (1989). *Hexameris hortensis* n. sp. (Nematoda: Mermithidae), parásita de larvas de *Spodoptera frugiperda* (Smith) (Lepidoptera: Noctuidae) en Argentina. *Revista Iber. Parasit.*, 49: 329-333.
- CURRAN, J. & HOMINICK, W. M. (1980). Effect of mounting methods on taxonomic characters of adult male mermithids (Nematoda: Mermithidae). *Nematologica*, 26: 455-466.
- POINAR, G. O. Jr & LINARES, B. (1985). *Hexameris dactylocercus* sp. n. (Mermithidae: Nematoda), a parasite of *Aeneolamia varia* (Cercopidae: Homoptera) in Venezuela. *Revue Nématol.*, 8: 109-111.
- STOCK, S. P. & CAMINO, N. B. (1992 a). *Hexameris ovistriata* n. sp. (Nematoda: Mermithidae) a parasite of the grasshopper *Staurorhectus longicornis* Giglio-Tos (Orthoptera: Acridiidae) in Argentina. *Fundam. appl. Nematol.*, 15: 15-18.
- STOCK, S. P. & CAMINO, N. B. (1992 b). *Hexameris cochlearius* sp. n. (Nematoda: Mermithidae) a parasite of *Dichroplus elongatus* Giglio-Tos (Orthoptera: Acridiidae) in Argentina. *Nematol. medit.*, 20: 167-169.