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## A NEW *CEPHALOBIMUM* COBB (NEMATODA, CEPHALOBIIDAE), A PARASITE OF *ANUROGRYLLUS MUTICUS* (DE GEER) (ORTHOPTERA, GRYLLIDAE) FROM ARGENTINA

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### ABSTRACT

*A new species of Cephalobium from Gorina, La Plata, Argentina, parasiting nymphs of Anurogryllus muticus (De Geer) (Orthoptera, Gryllidae) is described and illustrated. This nematode can be characterized by having the stoma longer than broad, the glottoid apparatus anisoglottid and anisomorphic, divided into two portions, one with cuticularized walls and the other with three simple dorsal teeth. The male is further characterized by the presence of two long and separated spicules and short gubernaculum without any projection. Genital papillae are arranged in five postanal pairs.*

KEYWORDS: *Cephalobium tridentata* n. sp., taxonomy.

### INTRODUCTION

The genus *Cephalobium* was established by Cobb (1920) with its type species *C. microbivorum*, to allocate nematodes parasites of North American crickets. Artigas (1929) described another species called *C. nitidum*, isolated from mole crickets from Brazil. Rao & Rao (1965) described a new parasite of crickets, *C. microvata*, from India. Spiridonov & Van Luc (1994) described *C. montanum*, from crickets in Vietnam. Camino & Reboredo (2000) described *C. bidentata* a parasite of crickets from Argentina, and reported *C. laplata*, *C. polidentata* and *C. dispar*, parasites of the intestine of *Grylodes laplatae* Saussure, 1877 (Orthoptera; Gryllidae) from Argentina (Carmino & Reboredo, 2004). A new species is described

and illustrated herein as *C. tridentata* n. sp. parasite of the cricket *Anurogryllus muticus* (De Geer) from Argentina. A key of argentinian species of the genus *Cephalobium* is also provided.

### MATERIAL AND METHODS

Nymphs of *A. muticus* from Gorina, La Plata, Buenos Aires Province, Argentina, were collected by hand and then placed in individual vials. The insects were kept at 5°C for 10 minutes, and then dissected in Petri dishes filled with distilled water, under a stereoscope microscope. The nematodes were killed in distilled water at 60°C for 2 minutes. They were then

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transferred to a vial of water + trietanamine formalin (TAF) (1:1) for 48 hours, and fixed with pure TAF. The nematodes were transferred from fixative to glycerol for slow evaporation and clearing (Poinar, 1975). Fixed specimens were used for drawings and measurements with a Zeiss microscope and a camera lucida. Measurements were taken in micrometers and the mean and standard deviation are given in parenthesis.

## RESULTS

### *Cephalobium tridentata* n. sp.

(Fig. 1A-H)

*Description:* Nematode of small size. The cuticle is finely annelated along the whole body and almost invisible. There are six labial papillae around the mouth. The amphids are small and pore-shaped. The mouth is opened in an hexagonal oval shape. The stoma is longer than broad (Fig. 1C). The glottoid apparatus is anisoglottid and anisomorphic, divided into two portions, one with strong cuticularized walls and the other with three dorsal unmovable and simple teeth, two in the mesostome and the other one in the telostome (Fig. 1C). The oesophagus is long with a valvulated pseudobulb, the basal bulb without valve. The isthmus is very short (Fig. 1A,B). The intestine is well developed. The excretory pore is situated anteriorly to the pseudobulb. The female has a vulva protruding at mid-body, the vagina is short and strongly muscular (Fig. 1D). Reproductive tract consisting of paired ovaries, didelphic. Eggs are oval with a smooth shell, not embrionated, and situated in the uterus in few quantities and separated of the others (Fig. 1D). Tail is long and pointed (Fig. 1G). The male has a single testis, reflexed, with two long and separated spicules, the gubernaculum is short, without any projection (Fig. 1F). The genital papillae are arranged in five pairs, all postanal and equidistant (Fig. 1H). The tail appendage is filiform. The bursa is not present.

*Male* (n = 10): Body length: 2,295 (2,010 ± 183.6); diameter of labiopapillae: 20 (18 ± 2); stoma length: 40 (20 ± 11.54), stoma width: 6 (4 ± 1.15); oesophagus length: 444 (360 ± 72.33); distance from anterior end to excretory pore: 468 (380 ± 74.44); distance from anterior end to pseudobulb: 248 (190 ± 50.21); greatest width of the body: 132 (118 ± 18.14); spicule length: 60 (56 ± 2.3); gubernaculum length: 28 (26 ± 2); tail length: 60.2 (56.4 ± 2.7).

*Female* (n = 12): Body length: 5,275 (4,850 ± 792.56); diameter of labiopapillae: 40 (28 ± 10.06); oesophagus length: 650 (520 ± 147.32); stoma length: 32 (30 ± 6.42), stoma width: 12 (10 ± 1.15); distance from anterior end to excretory pore: 680 (630 ± 160.72); distance from anterior end to pseudobulb: 570 (460 ± 125.3); greatest width of the body: 430 (172 ± 156.34); width of body at vulva level: 320 (290 ± 35.11); V\*: 52.58% (50.72 ± 2.12); length and width of eggs: 75.2 (63.45 ± 7.96) x 44 (42.3 ± 8.67); tail length: 480 (380 ± 76.81).

\*V = distance from anterior end to vulva/body length x 100

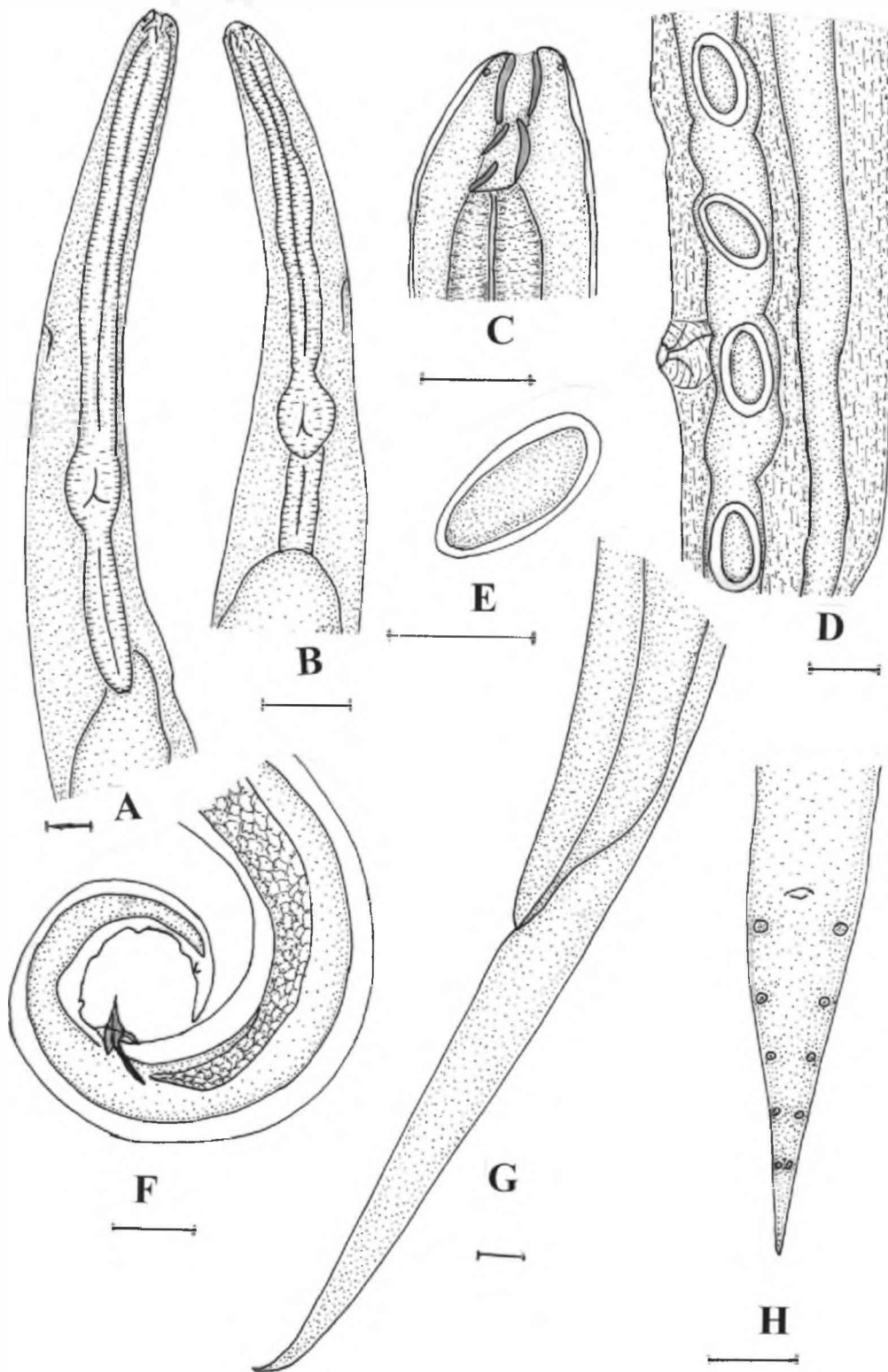
*Type host and locality:* Nymphs of *Anurogryllus muticus* (De Geer) (Orthoptera, Gryllidae) collected in the locality Gorina (34°55'S, 58°02'W), Buenos Aires, Argentina.

*Type material:* Holotype, allotype and paratypes deposited in vial, N° 5484, in the Helminthological collection, Museo de La Plata, Argentina.

## DISCUSSION

*Cephalobium tridentata* n. sp. is more closely related to eight species of the genus: *C. bidentata* Camino & Reboredo, 2000; *C. dispar* Camino & Reboredo, 2004; *C. laplata* Camino & Reboredo, 2004; *C. magdalensis* Reboredo & Camino, 1998; *C. microbivorum* (Cobb, 1920); *C. microvata* Rao & Rao, 1965; *C. montanum* Spiridonov & Van Luc, 1994; *C. polidentata* Camino & Reboredo, 2004.

*Cephalobium bidentata* can be distinguished from our new species by having the stoma with two teeth, female with vulva not protruding and male with six postanal papillae. *C. dispar* is distinguished by having several fan-shaped teeth in the stoma, male with one pair of preanal papilla and six postanal papillae, and a triangular gubernaculum with two wings holding the spicules. *C. laplata* has stoma with an unmovable tooth, three small ventral teeth and two movable claw teeth, vulva not protruding, and gubernaculum triangular. *C. magdalensis* differs from *C. tridentata* n. sp. by the stoma with three teeth (two small and one large and hook-shaped), the gubernaculum is short, wide and triangular, and the male retains seven pairs of postanal papillae. An important difference in *C. microbivorum* is the stoma with a large mobil glottoid organ, and six pairs of postanal papillae in the male. *C. microvata* can be distin-



**FIGURE 1:** *Cephalobium tridentata* n. sp. A) Anterior end of female; B) Anterior end of male; C) Stoma of female; D) Vagina and uteri with eggs; E) Egg; F) Posterior end of male, in lateral view; G) Posterior end of female, lateral view; H) Posterior end of male, ventral view. Bars = 50  $\mu$ .

guished by having one tooth in the stoma, males with one pair of preanal papillae and a very small gubernaculum (12 µm). *C. montanum* is different due to the presence of a dorsal elliptical projection with inner cuticularized folds in the stoma, and males with one pair of preanal papillae. *C. polidentata* differs by having a glottoid apparatus with a moveable ventral tooth, four moveable dorsal teeth and three teeth projected into the lumen and males with a pair of preanal papillae, six postanal papillae and gubernaculum triangular with two pointed projections.

### DIAGNOSIS

*Cephalobium tridentata* n. sp. can be distinguished from all other species of the genus by having *i*) the stoma longer than broad, *ii*) the glottoid apparatus anisoglottid and anisomorphic, divided into two portions, one with cuticularized walls and the other with three dorsal simple teeth, *iii*) the male with two long and separated spicules, *iv*) gubernaculum short without any projection, and *v*) the genital papillae arranged in five pairs of postanal papillae. Based on these characteristics, a key of the argentinian species of the genus *Cephalobium* is proposed:

- Stoma with two teeth, male with seven pairs of postanal papillae ..... *C. magdalensis*
1. Stoma with three or more teeth, male with five or six pairs of postanal papillae ..... 2
  2. Stoma with three teeth ..... *C. tridentata*
  2. Stoma with more than three teeth ..... 3
  3. Glottoid apparatus with teeth in fan-shaped ..... *C. dispar*
  3. Glottoid apparatus with filiform teeth ..... 4
  4. Gubernaculum triangular shaped without pointed projections, excretory pore opened behind the pseudobulb, with five pairs of postanal papillae ... *C. laplata*
  4. Gubernaculum triangular shaped with pointed projections, excretory pore opened at the level of pseudobulb, with six pairs of postanal papillae ..... *C. polidentata*

### RESUMO

Uma espécie nova do gênero *Cephalobium* (Nematoda, Cephalobiidae), parasita de *Anurogryllus muticus* (De Geer) (Orthoptera, Gryllidae) de Gorina, La Plata, Argentina, é descrita e ilustrada. Este nematoda pode ser caracterizado por apresentar estoma mais longo que largo, o aparelho glottoideo anisoglottoideo e anisomórfico, dividido em duas porções, uma com paredes quitinizadas e a outra com três dentes dorsais simples. O macho possui espículas longas e separadas e o gubernáculo curto sem qualquer projeção. As papilas genitais estão organizadas em cinco pares pós-anais.

PALAVRAS-CHAVE: *Cephalobium tridentata* n. sp., taxonomia.

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