



A new species of the genus *Cranifera* Kloss, 1960 (Thelastomatidae, Nematoda) parasitizing larvae of Scarabaeidae (Coleoptera) from Argentina

Uma nova espécie do gênero Cranifera Kloss, 1960 (Thelastomatidae, Nematoda) parasitando larvas de Scarabaeidae (Coleoptera) da Argentina

Nora B. Camino^[a], María Fernanda Achinelly^[b]

Abstract

The presente study describes and illustrates *Cranifera robustum* n. sp. (Nematoda, Thelastomathidae), a parasite of *Cyclocephala signaticollis* larvae (Coleoptera, Scarabaeidae), from Buenos Aires, Argentina. *Cranifera robustum* n. sp. is characterized by its striated cuticle trough all the body, prominent near the anterior end, its lack of intestine caecum, its small stomach, a long oesophagus, with thin irregular walls in male and regular ones in female, with a round valvated basal bulb. Its nerve ring is located in the middle of the oesophagus corpus, and the excretory pore is located at the base of the oesophagus, in both sexes. The female presents a not protruding vulva, located right behind the longitudinal middle line of the body, a short vagina, two ovaries didelphic, amphidelphic, and ellipsoidal ovules, short and conical appendage tail. The male presents one spicule slightly curved, its gubernaculum is absent and its genital papillae is arranged in three pairs: two large ventral preanal pairs and one ventral postanal pair.

Palavras-chave: Coleoptera. *Cranifera robustum* n. sp. Nematode. New host. Taxonomy.

Resumo

O presente estudo descreve e ilustra *Cranifera robustum* sp. n. (Nematoda, Thelastomathidae), parasita de *Cyclocephala signaticollis* (Coleoptera, Scarabaeidae), de Buenos Aires, Argentina. *Cranifera robustum* sp. n. caracteriza-se por possuir cutícula estriada ao longo de todo o corpo, sendo mais proeminentemente na extremidade anterior. Seu intestino não possui cego, o estoma é pequeno, o esôfago é grande, com paredes finas e irregulares, no macho, e regulares, na fêmea, com bulbo basal arredondado e válvulas. O anel nervoso se encontra no meio do esôfago e o poro excretor, na base do esôfago, em ambos os sexos. A fêmea apresenta genitálica não protuberante, situada pouco atrás da linha média longitudinal do corpo, vagina curta, dois ovários didelífcos, anfídélficos, e óvulos elípticos, apêndice caudal curto e cônico. O macho possui uma espícula levemente curvada, gubernáculo ausente e suas papilas genitais se dispõem em três pares: dois pares pré-anais, ventrais e grandes, e um par pós-anal e ventral.

Keywords: Coleoptera. *Cranifera robustum* sp. n. Nematoda. Novo hospedeiro. Taxonomia.



^[a] Researcher (CIC), PhD in Natural Science, Universidad Nacional de La Plata, Center for Parasitological and Vectors Studies (CEPAVE), La Plata, Argentina, e-mail: norabcamino@yahoo.com.ar

^[b] Researcher (CONICET), PhD in Natural Science, Universidad Nacional de La Plata, Center for Parasitological and Vectors Studies (CEPAVE), La Plata, Argentina.

Received: 10/26/2010

Recebido: 26/10/2010

Approved: 02/14/2010

Aprovado: 14/02/2010

Introduction

The study of nematodes of coleoptera of the family Scarabaeidae revealed the presence of the genus of Thelastomatidae, *Cranifera* Kloss, 1960, without a gut diverticulum, with a cephalic annule sep-arating the second one by a deep constriction. Two species were described: *C. cranifera* (1) Kloss, 1960, parasite of cockroach in USA and Europe, and *C. chitwoodi* Kloss, 1966, parasitizing Blattodea in South America, Brazil. In this paper, we described a new species, *Cranifera robustum* n. sp., parasite of *Cyclocephala signaticollis* larvae (Burmeister) (Coleoptera: Scarabaeidae). Also, this is the first report of these genus for Argentina, wich reveals a new host for it.

Materials and methods

Larvae of *Cyclocephala signaticollis* (Burmeister) (n = 20) found in Lincoln (34° 52' S, 61° 33' W, to the West of the province of Buenos Aires), were collected by hand and then put in individual vials. In the laboratory, we used the Poinar (2) techniques. First of all, we put the insects to sleep, at 5 °C, during 10 minutes, and then they were dissected in Petri dishes, with distilled water under microscope stereoscope. The nematodes were found in the intestine of the insects and then killed in distilled water, at 60 °C, during 2 minutes. Posteriorly, they were put in a solution of distilled water + TAF during 48 hours (1:1); finally, we finished the fix in pure TAF. Living and fixed specimens were employed for drawing and measurements using a lucida microscope camera and a micrometer, in a Zeiss compound microscope. Measurements were for the holotype male and allotype female, and the minimum and maximum of paratypes are in parenthesis.

Results

Cranifera robustum n. sp.
(Figure 1, A-F)

Description: Cuticle striated more prominent around the anterior end, about 152 µm long. The first ring is bigger than the others and contains the pair of amphids. The anterior end of the female is conical, but the male one has a cylindrical form. Mouth surrounded by eighth submedian labiopapillae. Lateral

amphids small, pore-like. Stoma small with thin walls. Oesophagus long, thin with irregular walls in male and regular ones in female, with a basal bulb rounded and valvated in both sexes (Figure 1, A, B). The nerve ring is situated in the middle of the oesophagus corp, in both sexes, and the excretory pore is at the base of the oesophagus. Intestine without caecum. Vulva not protruding, behind longitudinal middle line of the body, and short vagina short (Figure 1, C). Two ovaries didelphic, amphidelphic. Ellipsoidal ovules, smooth shell without bissy. The female tail is short and conical (Figure 1, F); the male has one spicule slightly curved (Figure 1, D). Three pairs of genital papillae, two of them being large ventral preanal, and the other one, ventral postanal (Figure 1, E). The male tail is short and conical.

Male (n = 8): Total length: 860 µm (790-932); labiopapillae diameter: 12 µm (10.56-13.12); oesophagus length: 168 µm (140-178.16); distance from anterior end to excretory pore: 160µm (141.56-173.74); greatest width: 60 µm (57.43-76.57); spicule length: 40 µm (36-42); tail length: 12 µm (10.3-12.22).

Female (n = 25): Total length: 5,725 µm (5,419.9 ± 2,833.76); labiopapillae diameter: 32 µm (40.78 ± 21.33); oesophagus length: 496 µm (540.75 ± 81.6); distance from anterior end to excretory pore: 476 µm (440.9 - 612.61); greatest width: 364 µm (277 - 509); vagina length: 58 µm (33.42 - 89.12); vagina width: 48 µm (34.56 - 65.34); V: 62% (56.56 - 66.12); length and width of ovules: 84 µm (75.74 - 86.12) x 54 µm (46.34 - 56.74).

Host type: *Cyclocephala signaticollis* (Burmeister) (Coleoptera: Scarabaeidae).

Type area: Lincoln (34° 52' S, 61° 33' W), Buenos Aires, Argentina.

Material type: deposited in the Helminologica collection, n. 4846, Museo de La Plata, Paseo del Bosque, 1900, La Plata, Argentina.

Site of infection: Intestine, midgut.

Discussion

Cranifera robustum n. sp. is compared with the three species of the genus *C. cranifera* (1) Kloss, 1960, from USA and Germany, *C. chitwoodi* (3), from Brazil, and *C. mexicana* (4) Coy and García, 1995, from Mexico and Cuba (5), all of them cockroaches parasites. *C. cranifera* can be distinguished by having the male short

spicule inconspicuous (0.026 mm)(6) , one pair of preanal papillae and one pair with a median big postanal papilla, at the base of the tail appendage. The female presents the nerve ring situated at the 1/3 anterior of the oesophagus, the anterior end with two cuticular big rings, long tail, thin and filiform.

Cranifera chitwoodi is characterized by having a small spicule slightly visible, one pair of preanal papillae, a big single papilla and a small pair of postanal papillae at the base of the tail appendage. The female has a short diverticulum at the beginning of the intestine, ovaries didelphic, prodelphic.

C. mexicana male has a slightly smaller chitinized spicule and no genital papillae. Both sexes have a long, filiform tail papendage, the anterior end with protruding lips on the first cuticular ring, stomach with wide well sclerotized walls. These characters of the male genitalia distinguish our new species from those previously described. The male is distinguished from *Cranifera robustum* n. sp by having one spicule slightly curved and three pairs of genital papillae,

two of them being large ventral preanal pairs and the other one being a ventral postanal pair.

References

1. Chitwood BG. A synopsis of the nematodes parasitic in insects of the family Blattidae. Z. Parasitenkunde. 1932;5:14-50.
2. Poinar GO Jr. Entomogenous nematodes. A Manual and Host List of Insect-Nematode Association. Leiden: E. J. Brill, 1975.
3. Kloss GR. Revisão dos nematoides de Blattaria do Brasil. Papel Avulsos. 1966;18:147-88.
4. Coy A, García N. Nuevas especies de nemátodos parásitos de insectos mexicanos. Avacient. 1995;12:10-5.
5. García, N, Coy A. Nuevo género, nueva especie y nuevos registros de thelastomatídeos (Oxyurida; Thelastomatidae) parásitos de *Byrsotria* sp. (Dictyoptera; Blaberidae). Avilcennia. 1998;8/9:41-9.
6. Biswas PK, Chakravarty GK. The systematic studies of thezooparasitic oxyuroid nematodes. Z. Parasitenkunde. 1963;23(5):411-28.

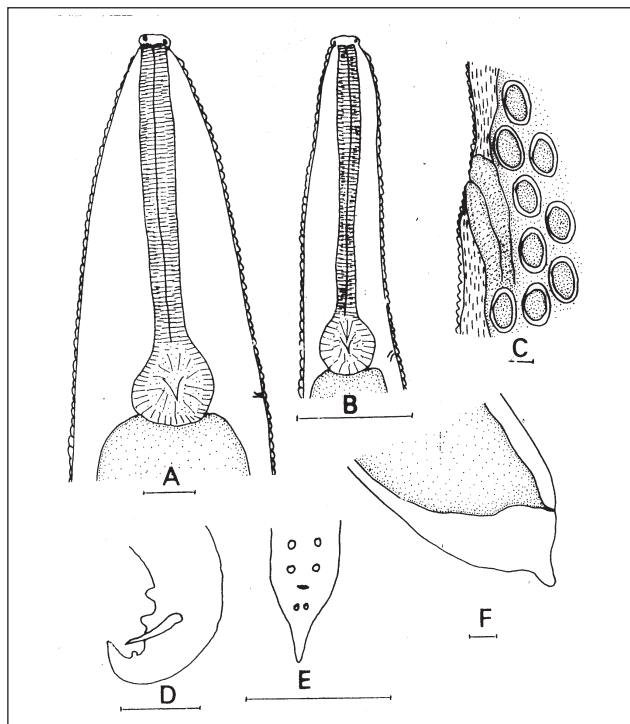


Figure 1 - *Cranifera robustum* n. sp. A: Anterior end of female, ventral view. B: Anterior end of male, ventral view. C: Vagina and uterus with ovules. D: Posterior end of male, lateral view. E: Posterior end of male, ventral view. F: Posterior end of female. Bars = 50 µm.

Source: Research data.