

SHORT NOTE

## Composition of the intestinal nematofauna of *Anurogryllus muticus* and *Neocurtilla claraziana* (Orthoptera) from pastures of La Plata city, Buenos Aires, Argentina

Composición de la nematofauna intestinal de *Anurogryllus muticus* y *Neocurtilla claraziana* (Orthoptera) en pastizales de la ciudad de La Plata, Buenos Aires, Argentina

José Matías Rusconi<sup>1\*</sup> | María Fernanda Achinelly<sup>1</sup>

- Received: 31/oct/2019
- Accepted: 13/jul/2020
- Published online: 14/sep/2020

**Citation:** Rusconi JM, Achinelly MA. 2021. Composition of the intestinal nematofauna of *Anurogryllus muticus* and *Neocurtilla claraziana* (Orthoptera) from pastures of La Plata city, Buenos Aires, Argentina. *Caldasia* 43(1):205-207. doi: <https://dx.doi.org/10.15446/caldasia.v43n1.81201>.

### ABSTRACT

The present study analyzes the intestinal nematofauna of the orthopteran species *Anurogryllus muticus* and *Neocurtilla claraziana* as part of a survey work conducted in pastures from the region of La Plata to isolate entomopathogenic nematode species. Eleven nematode species belonging to the families Thelastomatidae, Travassosinematidae, Cephalobidae, Rhabditidae, and Plectidae are reported. Parasitism percentages from 0.31 to 22.71 % were observed being *Blatticola cristovata* and *Cephalobellus magalhaesi* the most prevalent species. *Cephalobium nitidum*, *Cruznema tripartitum*, and *Plectus parietinus* are reported for the first time from Argentina. The findings of the study contribute to a better understanding of the biodiversity status of insect parasitic nematodes of the region.

**Keywords.** Argentina, diversity, parasitic nematodes, Orthoptera

### RESUMEN

El presente estudio analiza la nematofauna intestinal de los ortópteros *Anurogryllus muticus* y *Neocurtilla claraziana*, como parte de un estudio dirigido en la región de La Plata para aislar especies de nematodos entomopatógenos. Once especies de nematodos pertenecientes a las familias Thelastomatidae, Travassosinematidae, Cephalobidae, Rhabditidae y Plectidae fueron reportadas. Porcentajes de parasitismo de 0,31 a 22,71 % fueron observadas siendo *Blatticola cristovata* y *Cephalobellus magalhaesi* las especies más prevalentes. Las especies *Cephalobium nitidum*, *Cruznema tripartitum* y *Plectus parietinus* son registradas por primera vez en Argentina. Los resultados de este estudio contribuyen a tener un mejor entendimiento de la biodiversidad de los nematodos parásitos de insectos de la región.

**Palabras clave.** Argentina, diversidad, nematodos parásitos, Orthoptera

<sup>1</sup> Centro de Estudios Parasitológicos y de Vectores. CEPAVE (CCT La Plata, CONICET/UNLP), 121 y 60 (1900) La Plata, Buenos Aires, Argentina. [rusconi@cepave.edu.ar](mailto:rusconi@cepave.edu.ar), [fachinelly@cepave.edu.ar](mailto:fachinelly@cepave.edu.ar)

\* Autor para correspondencia



Crickets and mole crickets are important herbivores of the Pampas biogeographic region in Argentina, constituting a serious problem in crops and pastures soils because of their eating habits (Aragón 2006, Bentancourt and Scatoni 2010). Entomopathogenic nematodes are commonly used as biological control agents against several insect pests. However, a large number of nematodes belonging to various families (Adamson and van Waerebeke 1992, Marchissio and Miralles 1993, Jex *et al.* 2006) show a parasitic relationship with their hosts and are frequently found at the intestines of these insects during prospecting studies in the laboratory.

The present study analyzes the intestinal nematofauna of the Orthoptera species *Anurogryllus muticus* De Geer, 1773, and *Neocurtilla claraziana* Saussure, 1874 from pastures of La Plata, Buenos Aires, Argentina, as part of a survey work conducted to isolate entomopathogenic nematodes against these insect pests.

Insects were recovered during a survey in grasslands from La Plata city, Buenos Aires, Argentina (34°56'00" South, 57°57'00" West) during 2015-2017, with a garden shovel. They were dissected in the laboratory to determine the presence of nematodes which were transferred to a fixative of 50 % (v/v) aqueous triethanolamine formalin for 48 hs and placed in 100 % triethanolamine formalin, before transfer to glycerol for slow evaporation (Seinhorst 1959). Nematodes were identified by morphological and morphometrical features of females and males following

Adamson and van Waerebeke (1992). The prevalence as the number of hosts infected with a particular species of parasite/number of hosts examined from the same parasitized species expressed in percentage was determined.

The results of the survey reported the cricket *Anurogryllus muticus* (Gryllidae) (n = 738) and the mole cricket *Neocurtilla claraziana* (Gryllotalpidae) (n = 317). Eleven nematode species belonging to the families Thelastomatidae, Travassosinematidae, Cephalobidae, Rhabditidae, and Plectidae were isolated from the intestine of both hosts (Table 1) with the largest number of species (n = 7) in *N. claraziana*; in *A. muticus* only four individuals were reported. *Blatticola cristovata* Achinelly and Camino, 2007 was the only species found in both hosts. Males were observed only in four of the eleven species recovered (*B. cristovata*, *Cephalobium nitidum* Camino and Reboredo, 2000, *Cameronia arecoensis* Marchissio and Miralles, 1987, and *Cruznema tripartitum* (Linstow, 1906), Zullini, 1882). *Cephalobium nitidum*, *C. tripartitum* and *Plectus parietinus*, Bastian, 1865 are reported for Argentina for the first time. *Plectus parietinus* was found once in the intestine of *A. muticus*. Because this species is a free living nematode, we believe that having been found in the intestine of crickets could be due to a random event during the feeding of the insect.

According to the results expressed above, the diversity in *N. claraziana* was slightly superior to that in *A. muticus*. Regarding *A. muticus* it was not found a great diversity of

**Table 1.** Intestinal nematodes isolated from *A. muticus* and *N. claraziana*.

Family	Nematode	Number of individuals		Nematode prevalence per host	
		Females	Males	<i>N. claraziana</i>	<i>A. muticus</i>
Travassosinematidae	<i>Binema bonaerensis</i> Camino and Reboredo, 1999	72		6.62 %	
Travassosinematidae	<i>Binema klossae</i> Marchissio and Miralles, 1993	3		0.91 %	
Travassosinematidae	<i>Binema</i> sp.	53		12.93 %	
Thelastomatidae	<i>Blatticola cristovata</i> Achinelly and Camino, 2007	341	5	14.8 %	22.7%
Thelastomatidae	<i>Cameronia arecoensis</i> Marchissio and Miralles, 1993	5	1	0.63 %	
Thelastomatidae	<i>Cameronia</i> sp	3		0.31 %	
Cephalobidae	<i>Cephalobium nitidum</i> Artigas, 1929	154	84		0.63%
Thelastomatidae	<i>Cephalobellus magalhaesi</i> Schwenk, 1926	130		17.9 %	
Rhabditidae	<i>Cruznema tripartitum</i> (Linstow, 1906), Zullini, 1982	5	5		0.63%
Thelastomatidae	<i>Gryllophila skrjabini</i> Sergiev, 1923	3		0.31 %	
Plectidae	<i>Plectus parietinus</i> Bastian, 1865	1			0.31%

entomonematodes compared to another soil pest cricket of Buenos Aires Province such as *G. laplatae* (Camino and de Villalobos 2002). In *G. laplatae* there have been citing six species of *Cephalobium*, two species of the order Oxyurida, *Cameronia laplatae*, and *Neyraiella distinctus* (Camino and de Villalobos 2002) and the mermithid, *Hexameris macrostomata* (Camino and Stock 1994).

On the other hand, *N. claraziana* presents a mayor number of species respect to another mole cricket from Buenos Aires Province, *Scapteriscus borelli* Nickle, 1992, where only *Steinernema scapterisci* (Rhabditida) was found (Stock 1992). The findings of this study contribute to have a better understanding about the biodiversity status of insect parasitic nematodes of the region.

## LITERATURE CITED

- Adamson ML, van Waerebeke D. 1992. Revision of Thelastomatoidea, Oxyurida of invertebrate hosts I. Thelastomatidae, Protrelooididae and Pseudonymidae. *Syst. Parasitol.* 21(1): 21-63. doi: <https://doi.org/10.1007/BF00009911>
- Aragón J. 2006. Guía de reconocimiento y manejo de plagas tempranas relacionadas a la siembra directa. 2ª edición. Buenos Aires: Agroediciones / INTA Marcos Juárez.
- Bentancourt C, Scatoni B. 2010. Guía de insectos y ácaros de importancia agrícola y forestal en el Uruguay. 3 edición. Montevideo: Universidad de la República, Facultad de Agronomía - Editorial Hemisferio Sur.
- Camino NB, de Villalobos C. 2002. *Neyraiella distinctus* sp. n. (Oxyurida: Blattophilidae) parásita de ninfas de *Grylloides laplatae* Sauss (Orthoptera:Gryllidae) en la Argentina. *Mem. Instit. Oswaldo Cruz* 97(3):325-327. doi: <https://doi.org/10.1590/S0074-02762002000300008>
- Camino NB, Stock SP. 1994. *Hexameris macrostoma* n.sp. (Nemata: Mermithidae) parasitizing the cricket *Grylloides laplatae* (Orthoptera:Gryllidae) in Argentina. *Fundam. Appl. Nematol.* 17(5): 397-399.
- Jex AR, Schneider MA, Rose HA, Cribb TH. 2006. Thelastomatoidea (Nematoda: Oxyurida) of the Australian giant burrowing cockroach, *Macrophanestia rhinoceros* (Blaberidae: Geoscaphinae). *Nematology.* 8(3): 347-357. doi: <https://doi.org/10.1163/156854106778493501>
- Marchissio SL, Miralles DAB. 1993. *Talpicola klossae* sp. n. y nuevo registro de *Binema korsakowi* (Sergiev, 1923) (Nematoda: Thelastomatidae) parásitos de *Neocurtilla claraziana* (Orthoptera: Gryllotalpidae). *Neotrópica.* 39: 79-82.
- Seinhorst JW. 1959. A rapid method for the transfer of nematodes from fixative to anhydrous glycerin. *Nematology.* 4(1):67-69. doi: <https://doi.org/10.1163/187529259X00381>
- Stock SP. 1992. Presence of *Steinernema scapterisci* Nguyen et Smart parasitizing the mole cricket *Scapteriscus borelli* in Argentina. *Nematol. Mediterr.* 20:163-165.

## AUTHOR'S CONTRIBUTION

JMR collected the samples and identified the nematodes; JMR and MFA wrote the manuscript.

## CONFLICT OF INTEREST

The authors declare that they have not conflict of interest.

## ACKNOWLEDGEMENTS

This study was partially supported by the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) and the Universidad Nacional de La Plata (UNLP). We thank Dr. Donald F. Haggerty, a retired academic career investigator and native English speaker, for editing the final version of the manuscript.