ORIGINAL ARTICLE /ARTÍCULO ORIGINAL
FIRST REPORT OF RHABDIAS (NEMATODA: RHABDIASIDAE) IN HYPSIBOAS RANICEPS, CERRADO, BRAZIL

PRIMER REGISTRO DE RHABDIAS (NEMATODA: RHABDIASIDAE) EN HYPSIBOAS RANICEPS, CERRADO, BRASIL

Franciele Cristina de Souza¹*, Ottilie Carolina Forster¹, Murilo de Souza Queiroz¹ & Luciano Alves dos Anjos¹.

¹ Post-Graduate Program in Biological-Zoological Sciences, Universidade Estadual Paulista "Júlio de Mesquita Filho"- UNESP. Ecology and Parasitism Laboratory, Department of Biology and Zoology. Passeio Monção, 226. CEP 15385000. Ilha Solteira – SP, Brasil.
*Corresponding author: francieleingui@gmail.com

Neotropical Helminthology, 2016, 10(2), jul-dic: 295-300.

ABSTRACT

A new record of Rhabdias parasitizing Hypsiboas raniceps Stiles & Hassal 1905 in a Cerrado area is presented in this work. The genus is commonly found parasitizing the lungs of amphibians and reptiles worldwide. Seven H. raniceps specimens were analyzed, where two were parasitized with nematodes of the genus Rhabdias in the lungs. A total of six nematodes were found, and identified based on their structural morphologies, and on their measurements. This note presents the first record of Rhabdias in H. raniceps given that the species is a new Rhabdias host.

Keywords: Cerrado – Hypsiboas raniceps – Rhabdias – South America

RESUMO

Um novo registro de Rhabdias parasitando Hypsiboas raniceps Stiles & Hassal 1905 em uma área de Cerrado é apresentado neste trabalho. O gênero é comumente encontrado parasitando pulmões de anfíbios e répteis no mundo todo. Foram analisados sete espécimes de H. raniceps, onde dois estavam parasitados com nematódeos do gênero Rhabdias nos pulmões. Um total de seis nematódeos foram encontrados, e identificados com base na morfologia das estruturas, e nas medidas realizadas nos espécimes. Esta nota apresenta o primeiro registro de Rhabdias em H. raniceps, sendo assim a espécie um novo hospedeiro de Rhabdias.

Palavras chaves: America do sul – Cerrado - Hypsiboas raniceps - Rhabdias
INTRODUCTION

The *Rhabdias* Stiles & Hassal 1905, is a worldwide widely distributed genus, whose hosts include several species of amphibians and reptiles (Baker, 1987; Bursey et al., 2003; González & Hamann, 2006). They are typical lung parasites, considered specific and rarely parasite more than one host (Tkach et al., 2006). Until now 100 nematode species of the *Rhabdias* genus have been registered worldwide (Kuzmin & Tkach, 2014), in the neotropical region, 15 species parasitize amphibians: *R. alabialis* Kuzmin et al., 2007, *R. androgyna* Kloss, 1971, *R. breviensis* Nascimento et al., 2013, *R. elegans* Gutiérrez, 1945, *R. fuelleborni* Travassos, 1926, *R. hermafrodita* Kloss, 1971, *R. kuzmini* Martínez-Salazar & León-Régagnon, 2007, *R. manantlanensis* Martínez-Salazar, 2008, *R. mucronata* Schuurmans-Stekhoven, 1952, *R. paraensis* Santos et al., 2011, *R. peninsularis* Martínez-Salazar et al., 2013, *R. pseudophaeocephala* Kuzmin et al., 2007, *R. savagei* Bursey & Goldberg, 2005, *R. tobagoensis* Moravec & Kaiser, 1995, and *R. truncata* Schuurmans-Stekhoven, 1952 (Travassos, 1926; Gutiérrez, 1945; Schuurmans-Stekhoven, 1952; Kloss, 1971; Moravec & Kaiser, 1995; Bursey & Goldberg, 2005; Kuzmin et al., 2007; Martínez-Salazar & León-Régagnon, 2007; Martínez-Salazar, 2008; Santos et al., 2011; Martínez-Salazar et al., 2013; Nascimento et al., 2013; Kuzmin et al., 2015).

Kuzmin et al. (2016) has just described two new *Rhabdias* species: *Rhabdias galactonoti* and *Rhabdias stenocephala*, found parasitizing the lung of *Leptodactylus pentadactylus* and *L. paraensis* in the state of Pará, Brazil.

*Hypsiboas raniceps* Cope, 1862 is a Neotropical Hylidae commonly found in Cerrado and in Caatinga (Guimarães & Bastos, 2003). The specie is considered stable in the endangered animals list extinction of UCN, sometimes found in the international pet trade but at levels that do not currently constitute a major threat (La Marca et al., 2004). It occurs in the central and northeastern regions of Brazil, with *H. raniceps* also inhabiting the Brazilian Amazon Basin, southern Colombia, north of French Guyana, Bolivia, Paraguay and northeast Argentina (Frost, 2009). The aim of the analysis is to report of *Rhabdias* (Nematoda: *Rhabdiasidae*) in *H. raniceps*, Cerrado, Brasil.

MATERIALS AND METHOD

During a field work in search of Helminthological studies, 7 individual *Hypsiboas raniceps* were collected, in December 2015 in a marsh area in the field of Teaching, Research and Extension - FEPE/UNESP-Universidade Estadual Júlio de Mesquita Filho located in the city of Selvíria, in the state of Mato Grosso do Sul, under the SISBio 36667-2 license, the 06/2014/CEUA Ethics Committee Protocol and Animal Use. For specimen capture, a visual search method (VS) was carried out in the species habitat during the species activity period. Next, the amphibians were acclimated in 2 liter plastic bags and transported alive to the Ecology and Parasitism Laboratory, of the Ilha Solteira Campus – UNESP. The specimen was sacrificed by a lethal dose of anesthetic Benzocaine (according to Resolution No. 714/2002), weighed, measured and necropsied and their lungs removed for examination under the stereomicroscope.

The nematodes found were collected with thin brushes and stylets, and transferred to a Petri dish with saline solution of 0.65%, to carry out individual cleaning. Once clean, they were fixed in 70% alcohol heated to approximately 65-70 °C, for muscle stretch. Slides were...
mouted using Lactophenol of Amann enabling the visualization of parts of taxonomic importance of the group necessary for identification. Then, the specimen was transferred to vials containing 70% alcohol, where they remained preserved (Amato et al., 1991). Later, LEICA DM 2500 photomicrographic microscopes from the Ecology and Parasitism Laboratory – LECOP, UNESP, of the Ilha Solteira Campus, were used. All the helminths found will be deposited in the Helminthological Collection of the Institute of Biosciences (CHIBB), of the State Universidade Estadual Paulista "Júlio de Mesquita Filho" – UNESP, Botucatu campus. In the analysis carried out, all the helminths found in other organs, are part of a study to be published later.

RESULTS

The analyzed amphibians presented a mean width of 7.84±0.60 cm and mean weight of 10.24±1.97. Of the seven analyzed individuals, only two were parasitized with *Rhabdias* sp. totaling six nematode adults. The parasitism in *H. raniceps*, presented a prevalence of 28.57%, mean abundance of 0.85, mean intensity of 3 (according to Bush et al., 1997, Serra-Freire, 2002). The measurements were carried out based on all the specimen found. Based on the specimen structural morphologies analyzed, these were identified as belonging to the Rhabdiasidae family, of the *Rhabdias* genus.

Description of the *Rhabdias* Stiles & Hassal, 1905 genus (Fig. 1).

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Figure 1. A-C: A- portion anterior, B- portion posterior and tail C- eggs.
Parasitic generation with much larger life-free specimens; mouths surrounded by six very small lips, sometimes with lateral wings which are wider anteriorly and posteriorly. Small cup-shaped oral capsule; small, cylindrical esophagus, ending in a later dilatation; conical tail; vulva near the middle of the body; didelfa, anfidelfa, oviporous; thin-shell eggs containing a morula or underdeveloped larva.

**Family:** Rhabdiasidae Railliet, 1915  
**Genus:** Rhabdias Stiles & Hassall 1905  
**Host:** Hypsiboas raniceps (Cope, 1862)  
**Site infection:** Pulmão  
**Locality:** Selvíria, Mato Grosso do Sul, Brasil

**Description** (based on 6 specimen): Body size 11,099-4,567; body width 0,565-0,443; length of esophagus 0,582-0,546; width of esophagus 0,067-0,051; nervous ring at anterior far-end 0,173-0,149; egg length 0,111-0,103; egg width 0,060-0,054; posterior far-end anus 0,471-0,207.

**DISCUSSION**

Data about *H. raniceps* helminth are scarce, and the following parasitic species are recorded in literature as follows: *Aplectana hylambatis* Gonzales & Hamann, 2006, *Cosmocerca parva* Gonzales & Hamann 2011, *Oswaldocruzia proencai* Lent et al., 1946; Masi & Maciel, 1974, *Glypthelmins vitelliniphilum* Travassos et al, 1969, and *G. vitellinophilum* Travassos et al, 1969 and *Ophiotaenia* sp. La Rue, 1911 in Paraguay (La Rue, 1911; Lent et al., 1946; Lent & Freitas, 1948; Dobbin, 1958; Travassos et al, 1969; Masi & Maciel, 1974; Chambrier et al, 2006; Gonzales & Hamann, 2006, 2011).

Queiroz (2015) found in the same place, *Rhabdias* parasitizing *Leptodactylus chaquensis, L. mystacinus* and *L. podicipinus* individuals, which are completely terrestrial animals, while *H. raniceps* is an arboreal animal (Hamann et al., 2006). Therefore, field observations are necessary to understand the mode of infection of these parasites in the lungs. During the literature review, no information about *Rhabdias* sp. in *H. raniceps* was found in South America. This implies that this amphibian is a new *Rhabdias* host, therefore reinforcing the importance and need of studies related to the hosts and their parasites.

We thank the Ecology and Parasitism Laboratory team – UNESP for their contribution to this field work.

**ACKNOWLEDGEMENTS**

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Received August 1, 2016.
Accepted September 28, 2016.