Comp. Parasitol.
76(1), 2009, pp. 122–126

Research Note

First Report of Nematodes in the Common Lesser Escuerzo *Odontophrynus americanus* (Duméril and Bibron, 1841) (Amphibia: Cycloramphidae) from Corrientes, Argentina

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ABSTRACT: The common lesser escuerzo, *Odontophrynus americanus*, from Corrientes, Argentina, was found to harbor 3 species of Nematodes: *Rhabdias elegans*, *Cosmocerca podicipinus*, and *Cosmocerca parva*. *Cosmocerca podicipinus* was the most prevalent nematode species (22.7%), whereas *C. parva* had the highest mean intensity of infection (5.5 ± 2.12). These 3 nematode species are reported for the first time from *O. americanus* and members of the Cycloramphidae from Corrientes, Argentina.

KEY WORDS: *Odontophrynus americanus*, Cycloramphidae, common lesser escuerzo, Nematoda, *Rhabdias elegans*, *Cosmocerca podicipinus*, *Cosmocerca parva*, Corrientes, Argentina.

The common lesser escuerzo, *Odontophrynus americanus* (Duméril and Bibron, 1841), is found in central to northern Argentina, southern Paraguay, southern Brazil, and Uruguay. It is a fossorial species that inhabits areas of land with sandy soil and sparse, dry grass; it is an actively foraging predator with a generalist diet (Duré, 2004; unpublished thesis; Universidad Nacional de La Plata, Argentina). During breeding season, this species is found in permanent, semipermanent, and temporary ponds. Males call more intensely at night, eggs are laid on the muddy bottom, and tadpoles develop in the same site (Schaefer, 2007; unpublished thesis, Universidad Nacional de La Plata, Argentina). The parasites of *O. americanus* have not been well studied. The only reports include a myxosporean, *Myxidium immersum* Lutz, 1889, from Uruguay (Cordero, 1928) and a description of the cystacanths of *Oligacanthorhynchus* sp. from Brazil (Smales, 2007). To our knowledge, there are no reports of nematodes from *O. americanus*. In the present study, we report on the nematodes infecting *O. americanus* in Corrientes, Argentina.

Twenty-two adult specimens of *O. americanus* (13 males, mean snout–vent length [SVL] ± SD: 29.39 ± 5.58 mm, range: 21.0–38.5 mm; 9 females, SVL: 28.96 ± 6.05 mm, range: 20.0–36.0 mm) were collected near the city of Corrientes, Province of Corrientes, Argentina (27°28′S; 58°50′W), between October 2000 and March 2006. Amphibian taxonomy is in accordance with Frost et al. (2006). Hosts were transported live to the laboratory and killed in a chloroform ($CHCL_3$) solution. At necropsy, hosts were sexed, and the alimentary canal, lungs, liver, kidneys, urinary bladder, coelomic cavity, musculature, and integument were examined for parasites by dissection. Nematodes were observed in vivo, counted, then killed in hot distilled water, preserved in 70% ethyl alcohol, cleared in glycerine or lactophenol, and examined as temporary mounts. Prevalence and mean intensity were calculated according to Bush et al. (1997). Nematodes were deposited in the Colección Helmintológica of the Centro de Ecología Aplicada del Litoral, Corrientes, Argentina (CECOAL).

Eight (36.4%) of 22 *O. americanus* specimens were infected with a total of 36 nematodes representing, *Rhabdias elegans* ($N = 10$), *Cosmocerca parva* ($N = 11$), and *Cosmocerca podicipinus* ($N = 15$). *Cosmocerca podicipinus* was the most prevalent nematode species, whereas *C. parva* had the highest mean intensity of infection.

Rhabdias elegans Gutierrez, 1945

Prevalence, mean intensity, and range: 13.6% (3 of 22 amphibians infected), 3.33 ± 1.52, 2–5.

Site of infection: lung.

Type host and type locality: Rhinella arenarum (=*Bufo arenarum*) Hensel, 1867, La Plata, Buenos Aires Province, Argentina (Gutierrez, 1945; unpublished thesis, Universidad Nacional de La Plata, Argentina).

Other reported hosts: Rhinella arenarum (=*Bufo arenarum*) (Kloss, 1971, 1974; Sueldo and Ramírez, 1976), *Rhinella rubescens* (=*Bufo rufus*) (Kloss,

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1971), *Peltophryne peltocephala* (=*Bufo peltocephalus*), *Peltophryne taladai* (=*Bufo taladai*) (Barus, 1973), *Rhinella icterica* (=*Bufo ictericus*) (Luque et al., 2005), *Peltophryne peltocephala fustiger*, *P. taladai*, *Eleutherodactylus atkinsi*, *Eleutherodactylus cuneatus*, *Eleutherodactylus dimidiatus*, *Eleutherodactylus eileenae* (Coy Otero and Ventosa, 1984), *Pristimantis shrevei* (=*Eleutherodactylus shrevei*) (Goldberg et al., 1998), *Leptodactylus melanonotus* (Goldberg, Bursey, Salgado-Maldonado et al., 2002), and *Leptodactylus bufonius* (González and Hamann, 2006a).

Geographic range: Argentina (Gutierrez, 1945; unpublished thesis, Universidad Nacional de La Plata, Argentina; Sueldo and Ramírez, 1976; González and Hamann, 2006a), Brazil (Kloss, 1971, 1974; Luque et al., 2005), Cuba (Barus, 1973; Coy Otero and Ventosa, 1984), Mexico (Goldberg, Bursey, Salgado-Maldonado et al., 2002), Paraguay, Uruguay (Kloss, 1971, 1974), and St. Vincent, West Indies (Goldberg et al., 1998).

Specimens deposited: CECOAL 03064149 (1 gravid female).

Remarks: Odontophrynus is the fifth genus of Neotropical anurans to be reported as host to the species *Rhabdias elegans*.

Cosmocerca parva Travassos, 1925

Prevalence, mean intensity, and range: 9.1% (2 of 22 amphibians infected), 5.5 ± 2.12, 4–7.

Sites of infection: large intestine.

Type host and type locality: Hylodes nasus (=*Helosia nasus*) (Lichtenstein, 1823), Angra dos Reis, Brazil (Travassos, 1925).

Other reported hosts: Leptodactylus mystaceus, *Leptodactylus caliginosus*, *Leptodactylus fuscus*, *Leptodactylus ocellatus*, *Leptodactylus marmoratus* (=*Adenomera marmorata*), *Physalaemus signifer* (=*Physalaemus signiferus*), *Physalaemus soaresi* (Fabio, 1982), *Leptodactylus* sp. (Masi Pallares and Maciel, 1974), *Leptodactylus chaquensis*, *Leptodactylus elenae*, *Rhinella schneideri* (=*Bufo paracnemis*), *Scinax fuscovarius* (Baker and Vaucher, 1984), *Rhaebo glaberrimus* (=*Bufo glaberrimus*), *Rhinella marina* (=*Bufo marinus*), *Rhinella margaritifera* (=*Bufo typhonius*), *Ameerega picta* (=*Epipedobates pictus*), *Hypsiboas fasciatus* (=*Hyla fasciata*), *Phyllomedusa atelopoides*, *Scinax garbei*, *Scinax ictericus* (=*Scinax icterica*), *Edalorhina perezi*, *Leptodactylus leptodactyloides*, *L. mystaceus*, *Pristimantis fenestratus* (=*Eleutherodactylus fenestratus*), *Phrynopus peruvianus* (=*Eleutherodactylus peruvianus*), *Pristimantis toftae* (=*Eleutherodactylus toftae*), *Elachistocleis ovalis*, *Hamptophryne boliviana*, *Scarthyla goinorum* (=*Scarthyla ostinodactyla*) (Bursey et al., 2001), *Leptodactylus macrosternum*, *Leptodactylus nesiotus*, *Pristimantis turpinorum* (=*Eleutherodactylus turpinorum*) (Goldberg, Bursey, Trujillo et al., 2002), *Rhinella granulosa* (=*Chaunus granulosus major*) (Mordeglia and Digiani, 1998; González and Hamann, 2006b), *Rhinella bergi* (=*Chaunus bergi*), *Rhinella fernandezae* (=*Chaunus fernandezae*) (González and Hamann, 2007a, b), *Leptodactylus bufonius* (González and Hamann, 2006a), *Leptodactylus latinasus* (Hamann, González, and Kehr, 2006), *Leptodactylus chaquensis* (Hamann, Kehr, and González, 2006; Schaefer et al., 2006), and *Lithobates vaillanti* (=*Rana vaillanti*) (Paredes-Calderón et al., 2004).

Geographic range: Argentina (Mordeglia and Digiani, 1998; González and Hamann, 2006a, b, 2007a, b; Hamann, González, and Kehr, 2006; Hamann, Kehr, and González, 2006; Schaefer et al., 2006), Brazil (Travassos, 1925; Fabio, 1982), Mexico (Paredes-Calderón et al., 2004), Paraguay (Masi Pallares and Maciel, 1974; Baker and Vaucher, 1984), Peru (Bursey et al., 2001), and Trinidad and Tobago (Goldberg, Bursey, Trujillo et al., 2002).

Specimens deposited: CECOAL 03064148, 1 male and 1 gravid female.

Remarks: The most variable characteristic of this species is the number of pairs of plectanes in the posterior end of the males. In other hosts analyzed from Corrientes, Argentina, 5 pairs of plectanes were found in *Chaunus bergi* and *C. fernandezae* (González and Hamann, 2007b), 6 pairs were found in *Leptodactylus bufonius* and *C. g. major* (González and Hamann, 2006a, b), and 5–7 pairs were found in *Bufo g. major* (Mordeglia and Digiani, 1998). In all the cases, these authors considered these differences to be intraspecific variation. Males of *C. parva* collected in *O. americanus* had 5 pairs of plectanes.

Cosmocerca podicipinus Baker and Vaucher, 1984

Prevalence, mean intensity, and range: 22.7% (5 of 22 amphibians infected), 3 ± 2.82, 1–7.

Sites of infection: small and large intestine.

Type host and type locality: Leptodactylus podicipi-

nus, Capitan Bado (Amambay), Paraguay (Baker and Vaucher, 1984).

Other reported hosts: Leptodactylus fuscus, *L. elenae*, *L. chaquensis* (Baker and Vaucher, 1984), *Rhinella margaritifer* (=*Bufo typhonius*), *Colostethus marchesianus*, *Allobates femoralis* (=*Epipedobates femoralis*), *Eleutherodactylus imitatrix*, *Leptodactylus leptodactyloides* (Bursey et al., 2001), *L. melanonotus*, *Lithobates forreri* (=*Rana forreri*) (Goldberg and Bursey, 2002), *Atelopus spurrelli*, *Dendrobates histrionicus* (Goldberg and Bursey, 2003), *Pseudopaludicola falcipes* (González and Hamann, 2004), *Lithobates* cf. *forreri* (=*Rana* cf. *forreri*) (Bursey and Goldberg, 2005; Cabrera-Guzmán et al., 2007), *Leptodactylus bufonius* (González and Hamann, 2006a), *L. latinasus*, *L. chaquensis* (Hamann, González, and Kehr, 2006; Hamann, Kehr, and González, 2006; Schaefer et al., 2006), *Rhinella granulosa* (=*Chaunus g. major*), *Rhinella bergi* (=*C. bergi*), *Rhinella fernandezae* (=*C. fernandezae*) (González and Hamann, 2006b, 2007a, b), *Eleutherodactylus rhodopis*, *Leptodactylus melanonotus*, *Smilisca cyanosticta* (Goldberg, Bursey, Salgado-Maldonado et al., 2002), *Lithobates vibicarius* (=*Rana vibicaria*) (Bursey and Goldberg, 2006), and *Scinax fuscomarginatus* (Goldberg et al., 2007).

Geographic range: Argentina (González and Hamann, 2004, 2006a, b, 2007a, b; Hamann, González, and Kehr, 2006; Hamann, Kehr, and González, 2006; Schaefer et al., 2006), Brazil (Goldberg et al., 2007), Colombia (Goldberg and Bursey, 2003), Costa Rica (Bursey and Goldberg, 2005, 2006), Mexico (Goldberg and Bursey, 2002; Goldberg, Bursey, Salgado-Maldonado et al., 2002; Cabrera-Guzmán et al., 2007), Paraguay (Baker and Vaucher, 1984), and Peru (Bursey et al., 2001).

Specimens deposited: CECOAL 02082806, 1 male and 1 gravid female.

Remarks: This species was frequently reported in the intestine, but several authors also found it in the lungs (González and Hamann, 2004, 2007a, b; Hamann, Kehr, and González, 2006; Schaefer et al., 2006). This migration to the lungs is apparently a necessary part of the development in this genus (Anderson, 2000). In *O. americanus*, it was found in the digestive tract only.

The nematodes found in this study are generalists, they are not restricted to a single host species: *R. elegans* is a common parasite of bufonids and leptodactylids, *C. parva* is common in bufonids, leptodactylids, hylids, dendrobatids, ranids, and microhylids, and *C. podicipinus* is common in bufonids, leptodactylids, leiuperids, hylids, dendrobatids, and ranids (Baker, 1987; Bursey et al., 2001; Goldberg and Bursey, 2002).

Other reports of nematodes in cycloramphid amphibians include *Aplectana chilensis* and *Cosmocerca chilensis* in *Rhinoderma darwinii* (Lent and Freitas, 1948; Puga, 1994); *Cosmocerca* sp. in *Eupsophus roseus* (Puga and Torres, 1999); *Aplectana artigasi* in *Eupsophus calcaratus* and *E. roseus* (Puga and Torres, 1997, 1999); *Oswaldocruzia neghmei* in *E. Eupsophus migueli*, *E. roseus*, *Eupsophus vertebralis*, *Eupsophus vittatus*, and *Hylorina sylvatica* (Puga, 1980, 1981, 1994); *Rhabdias androgyna*, *Aplectana delirae*, *C. brasiliensis*, *Schulzia travassosi*, and *Physaloptera* sp. in *Proceratophrys appendiculata* (Boquimpani-Freitas et al., 2001); and *Rhabdias füelleborni*, *Rhabdias hermaphrodita*, *Cosmocerca brasiliensis*, *Aplectana travassosi*, *Aplectana vellardi*, and *S. travassosi* in *Thoropa miliaris* (Travassos, 1925, 1931; Kloss, 1974; Baker, 1980; Durette-Desset et al., 1986). This is the first report of helminths for Argentinean cycloramphids.

We are grateful to Dr. S. R. Goldberg, for improvements on an earlier draft of this manuscript.

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