RESEARCH NOTE

LARVALS OF *Terranova* SP. (NEMATODA: ANISAKIDAE) PARASITIC IN *Plagioscion squamosissimus* (PERCIFORMES: SCIAENIDAE) FROM ARAGUAIA RIVER, STATE OF TOCANTINS, BRAZIL*

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ABSTRACT:- TAVARES, L.E.R.; SAAD, C.D.R.; CEPEDA, P.B.; LUQUE, J.L. **Larvals of *Terranova* sp. (Nematoda: Anisakidae) parasitic in *Plagioscion squamosissimus* (Perciformes: Sciaenidae) from Araguaia River, State of Tocantins, Brazil.** [Larvas de *Terranova* sp. (Nematoda: Anisakidae) parasitos de *Plagioscion squamosissimus* (Perciformes: Sciaenidae) do rio Araguaia, estado do Tocantins, Brasil]. *Revista Brasileira de Parasitologia Veterinária*, v. 16, n. 2, p. 110-115, 2007. Departamento de Parasitologia Animal, Universidade Federal Rural do Rio de Janeiro, Km 07 da BR 465, Caixa Postal 74508, Seropédica, RJ 23890-000, Brasil. E-mail: lertavares@gmail.com

During the study of the metazoan parasites of fishes from Araguaia River, municipality of Araguatins (05º39'S, 48º07'W), State of Tocantins, Brazil, a third stage larvae of an undescribed species of *Terranova* were collected from the mesenteries of *Plagioscion squamosissimus*. These larvae were characterized to present large size, excretory pore situated near of the base of ventrolateral lips, presence of short intestinal caecum dorsal to oesophagus, ventriculus less than seven times as long as wide and absence of mucron. This is the first record and description of larval of species of *Terranova* parasitic in South American freshwater fishes.

KEY WORDS: Nematodes, freshwater fishes, South America, corvina.

RESUMO

Durante o estudo dos metazoários parasitos de peixes do rio Araguaia, município de Araguatins (05º39'S, 48º07'O), estado de Tocantins, Brasil, larvas de terceiro estágio de uma espécie não descrita de *Terranova* foram coletadas dos mesentérios de *Plagioscion squamosissimus*. Estas larvas foram caracterizadas pelo grande tamanho, poro excretor situado próximo à base dos lábios ventrolaterais, presença de ceco intestinal dorsal ao esôfago, ventrículo menor que sete vezes mais longo que largo e ausência de mucro. Este e o primeiro relato e descrição de larvas da espécie *Terranova* parasitando peixes de água doce na América do Sul.

PALAVRAS-CHAVE: nematóides, peixes de água doce, América do Sul, corvina.

The genus *Terranova* was erected by Leiper and Atkinson in 1914 to include anisakid specimens recovered from the intestine of an elasmobranch fish (SPRENT, 1979). Baylis (1920) considered *Terranova* as a synonym of *Porrocaecum* Railliet and Henry, 1912. According to Sprent (1979), Johnson and Mawson, in 1945, re-erected *Terranova* as genus, and Mozgovoy (1951) confirmed its generic status. Posteriorly, *Terranova* was considered synonym of *Phocanema* and *Pseudoterranova* (CHABAUD, 1965; HARTWICH, 1974). This state of taxonomic confusion was solved by Gibson and Colin (1982) and Gibson (1983), and *Terranova*, currently is considered as a valid genus.

Terranova rochalimai (Pereira, 1935) was originally described from Brazil and *T. lanceolata* (Molin, 1860), *T. serrata* (Drasche, 1884) and *T. trichiuri* Chandler, 1935 were reported parasitic in Brazilian crocodilians, teleosts and elasmobranchs (PEREIRA, 1935; VICENTE; SANTOS, 1973; VICENTE; FERNANDEZ, 1978; SANTOS et al. 1979; SPRENT, 1979). Several reports on *Terranova* larvae parasitic in teleost fishes from Brazil were known and Tavares and Luque (2006) listed 24 species of marine fishes from the coastal zone of the State of Rio de Janeiro, parasitized by these larvae.

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Table 1. Metazoan parasites of *Plagioscion squamosissimus* (Heckel, 1840).

Parasites	Parasite family	Parasite stage	Locality	Country	References
Cestoda					
Ptychobothriidae gen. sp.	Ptychobothriidae	Larval	Amazon River Basin	Brazil	Woodland (1935)
Digenea					
Diplostomum compactum	Diplostomidae	Larval	Paraná River, Itaipu reservoir and Volta Grande reservoir	Brazil	Kohn et al. (1995); Santos et al. (2002); Martins et al. (2002); Pavanelli et al. (2004); Machado et al. (2005)
Diplostomum sp.	Diplostomidae	Larval	Volta Grande reservoir	Brazil	Martins et al. (1999)
Brasicystis bennetti	Didymozoidae	Adult	Amazon River Basin	Brazil; Peru	Thatcher (1979); Iannacone and Luque (1993)
Monogenea					
Diplectanum decorum	Diplectanidae	Adult	Amazon River Basin; Iquitos	Brazil; Peru	Kritsky and Thatcher (1984) Iannacone and Luque (1993)
D. gymnopeus	Diplectanidae	Adult	Amazon River Basin	Brazil	Kritsky and Thatcher (1984)
D. hilum	Diplectanidae	Adult	Amazon River Basin	Brazil	Kritsky and Thatcher (1984)
D. pescadae	Diplectanidae	Adult	Amazon River Basin; Iquitos	Brazil; Peru	Kritsky and Thatcher (1984) Iannacone and Luque (1993)
Diplectanum piscinarius	Diplectanidae	Adult	Amazon River Basin; Volta Grande reservoir and Paraná River; Iquitos	Brazil; Peru	Kritsky and Thatcher (1984); Iannacone and Luque (1993); Martins et al. (2000a); Tavernari et al. (2005)
Euryhaliotrema chaoi	Dactylogyridae	Adult	Amazon River Basin	Brazil	Kritsky and Boeger (2002)
E. lovejoyi	Dactylogyridae	Adult	Amazon River Basin; Orinoco River	Brazil; Venezuela	Kritsky and Boeger (2002)
E.monacanthus	Dactylogyridae	Adult	Amazon River Basin; Orinoco River	Brazil; Venezuela	Kritsky and Boeger (2002)
E. potamocetes	Dactylogyridae	Adult	Amazon River Basin; Orinoco River	Brazil; Venezuela	Kritsky and Boeger (2002)
E. succedaneus	Dactylogyridae	Adult	Amazon River Basin	Brazil	Kritsky and Boeger (2002)
E. thatcheri	Dactylogyridae	Adult	Amazon River Basin; Orinoco River	Brazil; Venezuela	Kritsky and Boeger (2002)
Acanthocephala					
Rhadinorhynchus plagioscionis	Rhadinorhynchidae	Adult	Amazon River Basin	Brazil	Thatcher (1980)
Nematoda					
Nematoda fam. Gen. sp.		Larval	Paraná River	Brazil	Pavanelli et al. (2004)
Contracaecum sp.	Anisakidae	Larval	Paraná River	Brazil Martins et al. (2003)	Moravec et al. (1993);
Hysterothylacium sp.	Anisakidae	Larval	Paraná River and Volta Grande reservoir	Brazil	Moravec et al. (1993); Martins et al. (2000b)
Copepoda					
Therodamas elongatus	Ergasilidae	Adult	Amazon River Basin	Brazil	Thatcher (1986)
T. tamarae	Ergasilidae	Adult	Amazon River Basin	Brazil	Amado and Rocha (1996)

Plagioscion squamosissimus (Heckel, 1840), a sciaenid fish common named "corvina", inhabits freshwater and are endemic to South American rivers. Piscivorous species, is mainly found in large rivers and constitute an important resource for commercial and sport fishing (CASATTI, 2003). Some parasitological records in *P. squamosissimus* are known and are listed in Table 1.

The present study reports and described the third stage larva of *Terranova* sp. parasitic in *P. squamosissimus* from Araguaia River, State of Tocantins, Brazil.

In January 2006, during the study of metazoan parasites of fishes from Araguaia river, two female specimens of *P. squamosissimus*, measuring 31.35 ± 4.03 (28.5 – 34.2) cm of total length, collected at the locality of Porto do Aquiles, municipality of Araguatins (05º39'S, 48º07'W), State of Tocantins, Brazil, were examined for metazoan parasites. Nematodes were fixed in acetic acid, stored in 70% ethanol and cleared with lactophenol. Illustrations were maid with the aid of a drawing tube mounted on a Hund Wetzlar H-600 phase contrast microscope. In measurements (mm), means are followed by range within parenthesis. The terms prevalence and mean intensity of infection are according to Bush et al. (1997). Voucher specimens were deposited in Coleção Helmintológica do Instituto Oswaldo Cruz, Rio de Janeiro, Brazil (CHIOC).

Terranova sp.
(Figs. 1-3)

Third stage larva: (based on 12 specimens). Small whitish nematodes. Cuticle with delicate transverse striations. Total length 14.20 (9.93 – 20.03), maximum width 0.30 (0.22 – 0.39). Anterior end with ventral larval tooth. Lips poorly differentiated; dorsal lip bearing a pair of lateral papillae; and two ventrolateral lips, each with a single papilla. Excretory pore ventral, near base of ventrolateral lips. Nerve ring 0.21

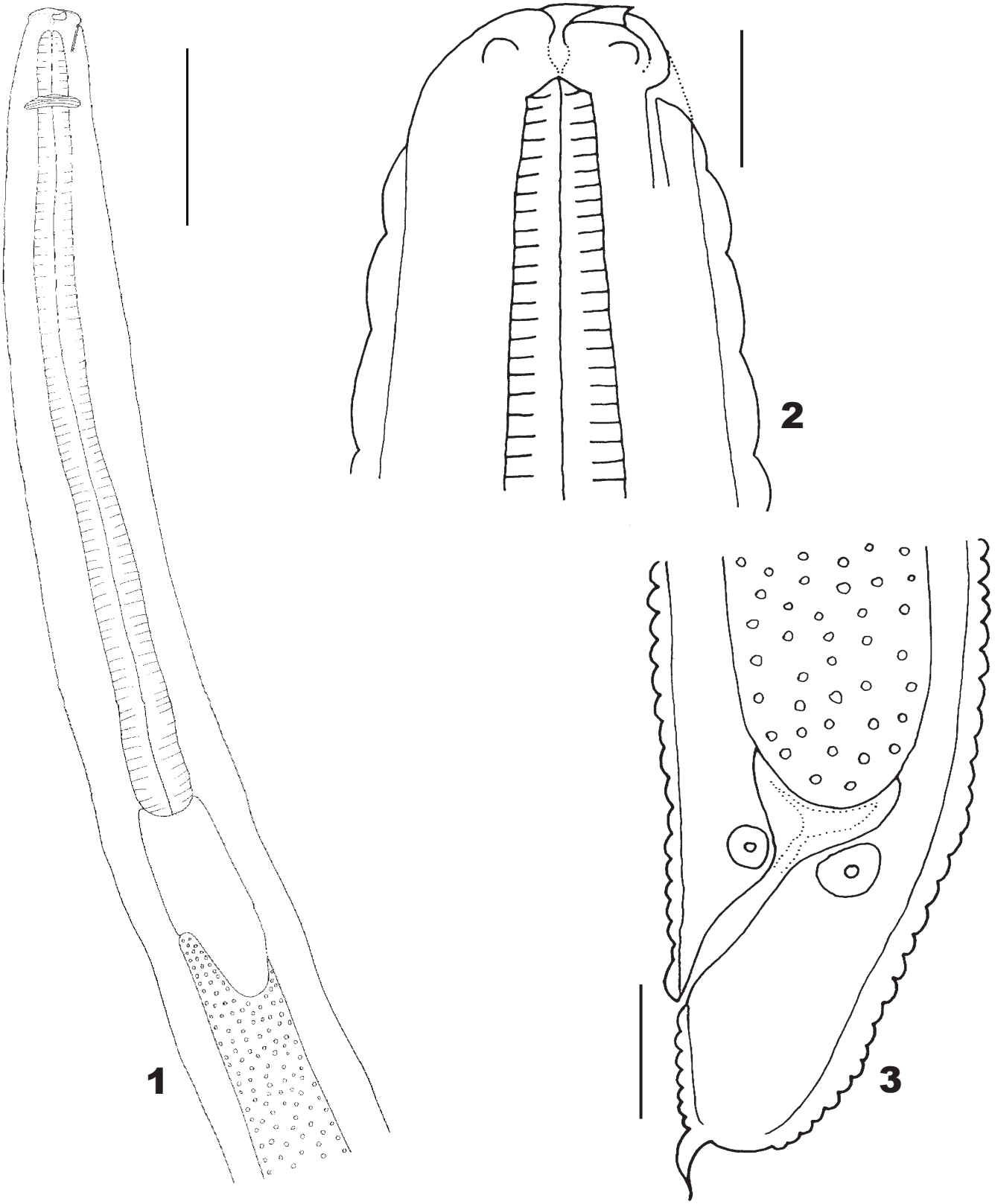

Figure 1. Third stage larval *Terranova* sp. parasitic in *Plagioscion squamosissimus* from Araguaia River, Araguatins, TO, Brazil, anterior end, lateral view.
Figure 2. Third stage larval *Terranova* sp. parasitic in *Plagioscion squamosissimus* from Araguaia River, Araguatins, TO, Brazil, detail of anterior end, lateral view.
Figure 3. Third stage larval *Terranova* sp. parasitic in *Plagioscion squamosissimus* from Araguaia River, Araguatins, TO, Brazil, posterior end showing a cuticular appendage, lateral view. Scale bars: 250 µm (1); 100 µm (2, 3).

(0.17 – 0.29) from anterior body end. Oesophagus slender 1.12 (0.86 – 1.37) long, 7.89 (6.71 – 10.14) % of body total length. Ventriculus elongate, 0.37 (0.26 – 0.49) length; 0.12 (0.09 – 0.15) width; ratio ventriculus length/width 2.99 (2.3 – 4.13); ratio oesophagus length/ventriculus length 3.05 (2.79 – 3.43). Intestinal caecum dorsal to ventriculus, 0.19 (0.12 – 0.28) length; ratio intestinal caecum length/ventriculus length 0.51 (0.43 – 0.74). Rectum 0.09 (0.07 – 0.11) length, oblique to anus and surrounded by three rectal glands (one ventral and two dorsal). Tail subconical, 0.1 (0.07 – 0.17) length, with a cuticular appendage. Genital primordium indistinct.

Host: *Plagioscion squamosissimus* (Heckel, 1840) (Perciformes: Sciaenidae).

Site of infection: mesenteries.

Locality: Araguaia River, locality of Porto do Aquiles, municipality of Araguatins (05º39'S, 48º07'W), State of Tocantins, Brazil.

Prevalence and mean intensity of infection: two fish infected/two fish examined, mean intensity 6±2.82, range of intensity (4-8).

Record of specimens: two voucher specimens, CHIOC no. 35523.

Comments: Larvae found in the present study showed the following characteristics: large size in relation to other *Terranova* spp. Larvae; excretory pore situated near of the base of ventrolateral lips; presence of short intestinal caecum dorsal to oesophagus; ventriculus less than seven times as long as wide and absence of mucron. These features correspond to those of the genus *Terranova*, although the short length of intestinal caecum. According to Moravec et al. (1997) the intestinal caecum may be poorly developed or absent in larvae of some species of *Terranova* and closely related genus.

Reports on larval anisakid from freshwater fishes of neotropical region, cited species from the genus *Contracaecum*, *Hysterothylacium*, *Pseudoterranova*, *Raphidascaris*, and an unidentified species of Anisakidae (VICENTE et al. 1985; MORAVEC et al., 1997; MORAVEC, 1998; VICENTE; PINTO, 1999; VIDAL-MARTINEZ et al., 2001). Martins et al. (2003); Martins et al. (2000b) and Moravec et al. (1993) reported and described the occurrence of species of *Contracaecum* and *Hysterothylacium* parasitic in *P. squamosissimus* from Brazil. Off these, an unidentified larval of anisakid described in Moravec et al. (1997), parasitic in *Cichla ocellaris* and *Pterophyllum altum* (Perciformes: Cichlidae) from the Atabapo River, Venezuela, is the most closely related species, although differs mainly in the body total length (smaller than the larvae described herein) and in the presence of intestinal caecum [very short or inconspicuous in specimens described in Moravec et al. (1997)]. Vidal-Martinez et al. (2001) described a third stage larval *Pseudoterranova* parasitic in *Cichlasoma urophthalmus*, *Petenia splendida*, *Vieja synspila* e *Thorichthys meeki* (Cichlidae), from Hondo River, municipalities of Chiquila and Raudales, Mexico. Although could be possible that this larvae belonging to the genus *Pseudoterranova*, once collect localities are located at coastal area near to the mouth of Hondo River in Chetumal Bay and these species of cichlids tolerate brackish and marine conditions, the brief description do not allow us to confirm if these larvae are from genus *Pseudoterranova* or *Terranova*. This is a first record and description of larval of species of *Terranova* parasitic in South American freshwater fishes.

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