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A new species of *Cardicola* Short, 1953 (Digenea: Sanguinicolidae) parasitizing the Brazilian flathead, *Percophis brasiliensis* Quoy et Gaimard 1824, from the coasts of Mar del Plata, Argentina

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Abstract

Cardicola ambrosioi n. sp. (Digenea: Sanguinicolidae) is found in the blood vessels of liver and gills of the Brazilian flathead, *Percophis brasiliensis* Quoy and Gaimard, 1824 (Pisces: Percophidae), from Mar del Plata, Argentina. Among the 13 known species within *Cardicola* Short, 1953, the new species closely resembles *Cardicola coridodacis* Manter, 1954, from which it is distinguished by having a relatively shorter oesophagus, the vitellaria extending anteriorly to the nerve commissure, rather than to the end of anterior caeca, the female pore located closer to male pore, the latter situated medially instead of laterally and by possessing a larger Mehlis gland and a smaller seminal vesicle.

Keywords: Trematoda; Fish; Argentina; Blood fluke; *Cardicola*

1. Introduction

Trematodes of the family Sanguinicolidae von Graff, 1907 are parasites of the blood system of fishes. Among them, members of the genus *Cardicola* Short, 1953 are found in the heart and blood vessels of teleost fishes belonging to nine families [1]. At present, 13 species are known within *Cardicola* [2–5], with *Cardicola brasiliensis* Knoff and Amato, 1992 as the only representative of the genus in the southwestern Atlantic Ocean [6].

As a result of parasitological surveys carried out on the Brazilian flathead, *Percophis brasiliensis* Quoy and Gaimard, 1824 (Pisces: Percophidae), landed at the Port of Mar del Plata, Argentina, blood flukes of the family Sanguinicolidae were found in blood vessels of liver and gills of fish. Examination of the material revealed that parasites belong to a new species of *Cardicola*, which is described and illustrated in the present article. This is the first record of this genus in fish of the family Percophidae and in Argentinean waters.

2. Materials and methods

A total of 120 specimens of *P. brasiliensis* (Brazilian flathead), caught between March and July 2005 at the Mar del Plata coast (38°08′S – 57°32′W), Argentina, were examined for blood flukes. Blood vessels of the liver, heart and gills were examined under a stereoscopic microscope. Parasites were removed, fixed in 5% buffered formalin and stored in 70% ethanol. Specimens were stained with Semichon's aceto carmine, cleared in methyl salicylate, mounted in Canada balsam and studied under a light microscope. Drawings were made with the aid of a drawing tube. All measurements are given in

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millimeters (mm) unless otherwise indicated; the mean followed by the range in parentheses. Fresh gill wet mounts were examined by light microscopy.

3. Results and discussion

Cardicola ambrosioi n. sp. (Figs. –3).

3.1. Description

Description and measurements based on 15 specimens. Body flat, lanceolate, 2.21 (1.90–2.72) long, 0.38 (0.30–0.48) wide, 5.05–7.56 times longer than wide. Minute tegumental spines observed in only one specimen. Spines distributed in ventrolateral transverse rows from anterior body end to approximately the level of posterior end of ovary (0.56 and 0.61 from posterior body end) on each side. Tegumental spine rows 0.026 (0.022–0.035) wide, bearing 12–19 spines each, distance between rows 0.013 (0.010–0.015), spine length approximately 2.5–3 μm. Nervous cords evident in anterior third of body, nerve ring commissure located at 0.13 (0.12–0.14) from anterior end. Oral sucker absent. Mouth opening subterminal. Pharynx lacking. Oesophagus muscular, sinuous, widening posteriorly, 0.63 (0.58–0.72) long by 0.47 (0.38–0.73) in maximum width, representing 23.9–31.0% of total body length. Esophageal gland surrounding entire oesophagus, slightly expanded at its middle region. Caeca H-shaped, caecal intersection of anterior and posterior caeca at 0.68 (0.61–0.89) of anterior end of body; anterior caeca of even length 0.23 (0.13–0.31) long, ending at 0.43 (0.21–0.54) from anterior end of body; posterior caeca of even length 0.92 (0.71–1.22) long, ending at 0.61 (0.46–0.82) from posterior end of body. Distal end of posterior caeca as subsphaerical blind sacs, 0.050 (0.038–0.058) long, 0.030 (0.025–0.045) wide, containing granular material. Testis entirely intra-caecal, 0.89 (0.68–1.18) long, 0.22 (0.17–0.31) wide. Vas deferens almost straight, 0.52 (0.40–0.65) long, 0.020 (0.012–0.030) wide, originating on the left side of testis, ventral to ovary and uterus. Seminal vesicle oblong, medial, as a slight expansion of vas deferens, 80 μm (63–100 μm) long, 26 μm (15–33 μm) wide, curving sinistrally before opening in genital pore. Cirrus-sac not observed. Male genital pore sinistral,

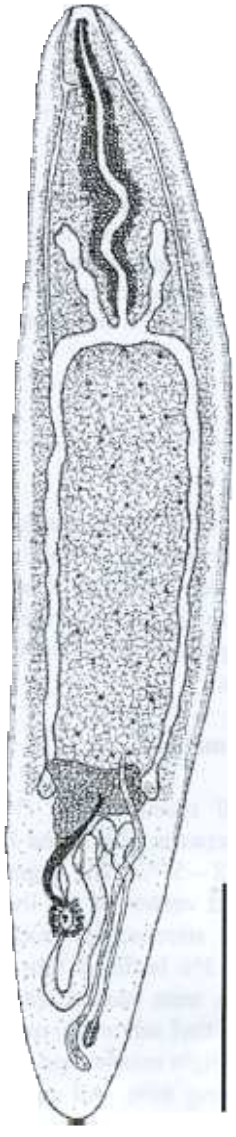

Fig. 1. *Cardicola ambrosioi* n. sp. adult, ventral view. Scale bar: 500 μm.

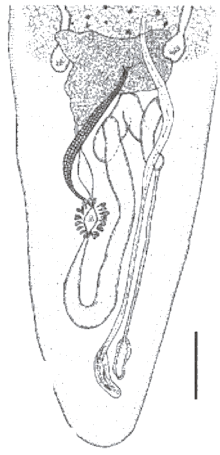

Fig. 2. *Cardicola ambrosioi* n. sp. adult with details of genitalia, ventral view. Scale bar: 125 μm.

Fig. 3. *Cardicola ambrosioi* n. sp. released eggs in gill filaments of *Percophis brasiliensis*. Scale bar: 100 μm.

located at 0.059 (0.048–0.080) from lateral body margin and 0.089 (0.076–0.113) from posterior body end. Ovary sub-triangular, 0.16 (0.11–0.21) long, 0.19 (0.13–0.24) in maximum width, occupying space immediately posterior to testis or overlapping slightly with posterior testicular margin, its widest part mostly between terminal ends of posterior caeca, tapering dextrally and giving rise to a dextral oviduct, bearing an oviductal seminal receptacle, 0.068 (0.055–0.080) long, before entering ootype. Vitellarium extending from anterior body end to the level of posterior caeca extremity. Common vitelline duct traceable from the level of mid-length of ovary and ventral to it, joining oviduct immediately anterior to ootype. Mehlis gland conspicuous, surrounding ootype. Ootype 0.050 (0.037–0.070) long, 0.028 (0.023–0.030) wide. Uterus extending posteriorly from ootype to level of proximal end of seminal vesicle, then curving anteriorly and extending medially to posterior end of ovary and becoming sinuous or coiled in short loops, before turning posteriorly as a straight tube, parallel to vas deferens, ending in metraterm. Metraterm 0.059 (0.045–0.075) long, 0.026 (0.023–0.035) wide. Female pore dorsal, sinistral, 0.064 (0.042–0.071) from lateral body margin, 0.116 (0.097–0.126) from posterior end of body, distance between pores 0.027 (0.023–0.034). Uterine eggs not seen.

Eggs (Fig. 3) in gill filaments oblong and thin shelled, 60 μm (55–68 μm) long, 40 μm (35–45 μm) wide.

3.2. Taxonomic summary

Type host: *Percophis brasiliensis* Quoy and Gaimard, 1824 (Perciformes: Percophidae).
Site: In blood vessels in the gills and liver.
Type locality: Mar del Plata, Argentina (38°08′S – 57°32′W).
Type specimens: Helminthological Collection of the Museo de La Plata, Argentina. Holotype (# 5543), Paratypes (# 5544).
Number of sanguinicolids collected: Fifty.
Prevalence and mean intensity of infection: 3.3% and 12.5, respectively.
Etymology: The new species is named in honor to the father of the senior author, Ambrosio Braicovich.

3.3. Remarks

The new species can be distinguished from most of its congeners by the combination of body length and ratios of body length to body width, of oesophagus length to body length, anterior and posterior caeca length, a completely intra-caecal testis and a sub-triangular ovary [4–11].

The new species closely resembles *Cardicola coridodacis* Manter, 1954, described by Manter (1954) from the odacid fish *Odax pullus* (Forster, 1801) (as *Coridodax pullus*) from Wellington, New Zealand. However *C. ambrosioi* n. sp. is readily distinguished from *C. coridodacis* by having a relatively shorter oesophagus (occupying approximately 34–37% of body length in the latter), the vitellaria extending beyond the nerve commissure, rather than to the end of anterior caeca, the female pore located closer to male pore, the latter situated medially instead of laterally and by possessing a larger Mehlis gland and a smaller seminal vesicle.

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