

A new trematode species parasitizing the catfish *Hoplosternum littorale* (Osteichthyes, Callichthyidae) from Paraná River, Brazil, with an emendation of the diagnosis of *Magnivitellinum* (Trematoda, Macroderoididae)

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Abstract

Magnivitellinum corvitellinum sp. nov. is a parasite from the intestine of tamboatá *Hoplosternum littorale*, a freshwater catfish from Paraná River, Brazil. This species has an elongate body, a small cirrus-sac, testes in the posterior half of the body and well-developed follicular vitellines. It differs from the only other species in the genus, *M. simplex*, in having tegumental spines along the body, ventral sucker distinctly bigger than oral sucker, oesophagus absent and vitellaria extending from posterior margin of ventral sucker to near posterior extremity of body. An emendation of the generic diagnosis is proposed in view of the presence of tegumental spines along the body, absence of oesophagus, relative size of ventral and oral suckers and uterus covering caeca from the level of ventral sucker to the end of caeca. This is the fourth trematode species recorded parasitizing *Hoplosternum littorale*.

Keywords

Trematoda, *Magnivitellinum*, new species, catfish, *Hoplosternum littorale*, Brazil

Introduction

Magnivitellinum Kloss, 1966 was proposed for *M. simplex* Kloss, 1966 from the digestive tract of the freshwater fish *Astyanax bimaculatus* (Linnaeus, 1758) in Brazil. The present study describes a new species, *Magnivitellinum corvitellinum* sp. nov., and includes an emendation of the generic diagnosis proposed.

The host, *Hoplosternum littorale* (Hancock, 1828) (Siluriformes, Callichthyidae), is a Neotropical armoured catfish known as tamboatá. The first record of trematodes parasitizing this fish species was by Bray *et al.* (1996) in Paraguay, for the parasite *Crassicutis intermedius* (Szidat, 1954), followed by Dias *et al.* (2003, 2006) who reported the parasite *Clinostomum complanatum* Rudolphi, 1814 (Clinostomidae: metacercariae). Abdallah *et al.* (2006) studied the ecology of metazoan parasites of tamboatá, mentioning several parasitological studies on *H. littorale*. According to these authors, other trematodes already registered parasitizing *H. littorale* are:

Herpetodiplostomum caimanicola (Dollfus, 1935) (Proterodiplostomidae: progenetic metacercariae) and *Kalipharynx* sp. (Fellodistomidae: adult).

Materials and methods

In March 2003, ten specimens of *H. littorale* were collected from the upper Paraná River floodplain near Porto Rico City, State of Paraná (22°43'S, 53°10'W). Digeneans were treated according to Eiras *et al.* (2000). Drawings were made with the aid of a drawing tube. Measurements are expressed in micrometers: mean, number of specimens (n) and range in parentheses. The holotype and paratypes were deposited in Helminthological Collection of Instituto Oswaldo Cruz (CHIOC), Brazil, and paratypes were deposited in United States National Parasite Collection (USNPC), USA. Studied material: CHIOC 36862.

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Results

Family Macroderoididae McMullen, 1937

Genus *Magnivitellinum* Kloss, 1966

Emended diagnosis: Body elongate, with tegumental spines in anterior half or along entire surface of body. Oral sucker subterminal, relatively small; oesophagus short or absent and pharynx well-developed; caeca not reaching posterior extremity. Ventral sucker about same size of oral sucker or bigger, in anterior half of body. Testes posterior to ventral sucker, oblique. Cirrus-sac small; genital pore anterior to ventral sucker, median. Ovary submedian, between anterior testis and ventral sucker. Uterus passing between testes and reaching posterior extremity, covering caeca; eggs small, operculate, smooth. Follicular vitellines well-developed, situated laterally along caeca. Intestinal parasites of freshwater fishes.

Type species: *Magnivitellinum simplex* Kloss, 1966.

Remarks: The emended diagnosis includes in the genus *Magnivitellinum* species having: (1) tegumental spines along the body, not only on the oral extremity; (2) oesophagus absent; (3) ventral sucker distinctly bigger than the oral sucker and (4) uterus covering caeca from the level of ventral sucker to the end of caeca.

Magnivitellinum corvitellinum sp. nov. (Figs 1 and 2)

Description: Body elongate, 3595 (n = 5, 3000–3800) long by 1004 (n = 6, 825–1375) wide, with maximum width at level of ventral sucker. Tegument thin, armed with small spines distributed along the body, decreasing in number from the anterior to the posterior extremity. Oral sucker subterminal, 250 (n = 6, 210–290) long by 320 (n = 6, 220–400) wide. Prepharynx short, 107 (n = 5, 72–144) long. Pharynx elliptical, 185 (n = 6, 170–200) long by 205 (n = 6, 160–230) wide. Oesophagus absent, intestinal bifurcation about halfway between two suckers. Intestinal caeca 103 (n = 6, 70–190) in maximum diameter, terminating blindly near the posterior end of body. Ventral sucker round, 647 (n = 6, 580–925) long by 590 (n = 5, 450–650) wide, distinctly larger than oral sucker, in anterior third of body, ratio oral/ventral sucker, 1:2.0–3.8 (2.65). Testes two, round to elliptical, post-ovarian, entire, oblique; anterior testis 273 (n = 6, 216–370) long by 177 (n = 6, 150–210) wide; posterior testis 283 (n = 6, 216–320) long by 218 (n = 6, 180–320) wide. Cirrus-sac short, 250 (n = 6, 220–310) long by 70 (n = 6, 70–80) wide, immediately anterior to ventral sucker, containing seminal vesicle divided by sphincter in two equal parts, elliptical pars prostatica, numerous prostate cells, and ejaculatory duct. Genital atrium small. Genital pore median, anterior to ventral sucker. Ovarian complex, Mehli's gland and Laurer's canal not observed. Ovary submedian, in the middle third of body, immediately posterior to ventral sucker, 393 (n = 6, 300–500) long by 283 (n = 6, 230–320) wide. Uterus convoluted, filling hindbody. Eggs numerous, small, 27 (26–28) long by 17 (12–26) wide. Vitellaria well-developed, follicular; follicles in lateral fields on

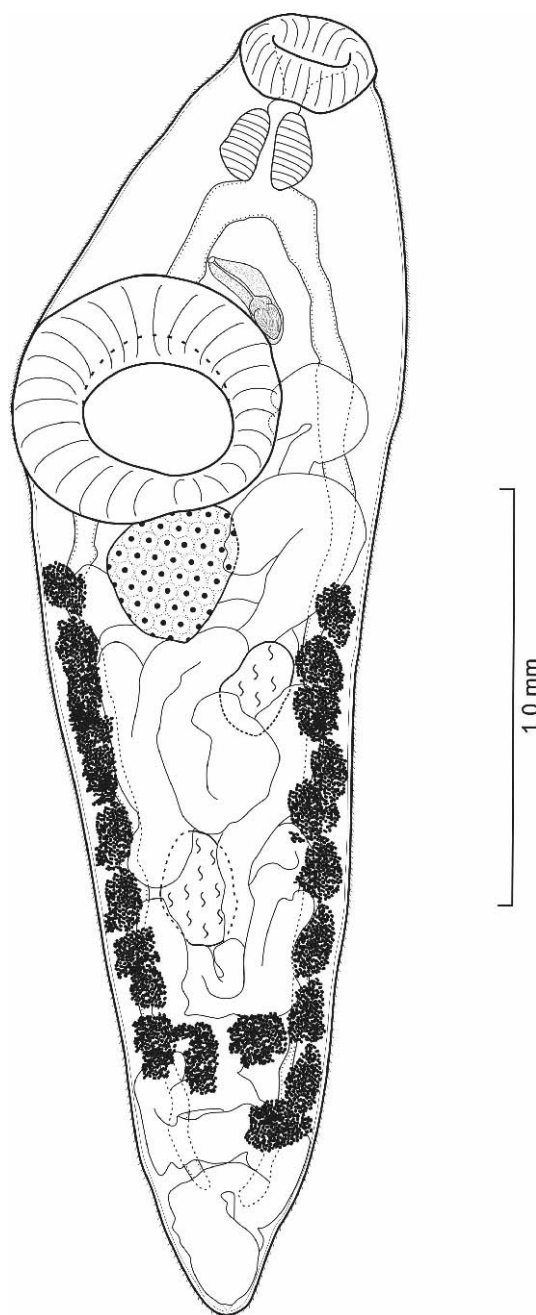


Fig. 1. *Magnivitellinum corvitellinum* sp. nov., entire specimen (ventral view)

each side of hindbody, extending from posterior margin of ventral sucker to near posterior extend of caeca; confluent posterior to testes. Excretory vesicle obscured by uterus filled with eggs.

Type host: *Hoplosternum littorale* (Callichthyidae): “tamboatá”.

Type locality: Upper Paraná River floodplain, Brazil (22°43'S, 53°10'W).

Site in host: Intestine.

Prevalence: Five of ten (50%).

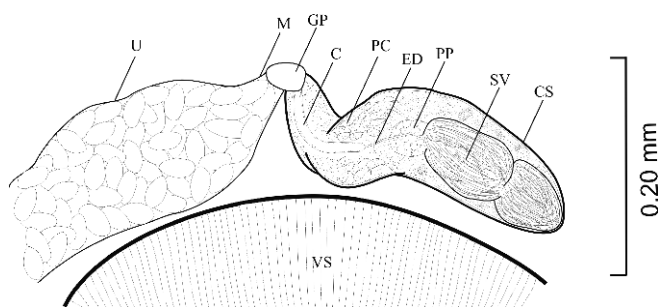


Fig. 2. *Magnivitellinum corvitellinum* sp. nov., terminal genitalia of ovigerous specimen (ventral view). Abbreviations: C – cirrus, CS – cirrus-sac, ED – ejaculatory duct, GP – genital pore, M – metraterm, PC – prostate cells, PP – pars prostatica, SV – seminal vesicle, U – uterus, VS – ventral sucker

Deposition of type material: Holotype and paratypes specimens deposited in CHIOC (37170a-b), Brazil, and paratypes deposited in USNPC (101435).

Etymology: Species name refers to its confluent vitelline fields. *Cor-* (Latin): with, together.

Remarks: This species can be distinguished by the tegumental spines along the body, ventral sucker distinctly bigger than oral sucker, oesophagus absent and vitellaria extending from posterior margin of ventral sucker to near posterior extremity of body (Fig. 1).

Discussion

According to Pérez-Ponce de León *et al.* (2007a), unspined tegument and well-developed cirrus-sac are reliable indicators of familial affinities in Allocreadiidae Stossich, 1904, characteristics that are not observed in the new species. Then, although Kloss (1966) and Thatcher (1993) placed the genus *Magnivitellinum* in Allocreadiidae, the authors decided to consider it as a member of Macrocreadiidae, according to Yamaguti (1971), since the family includes species with tegumental spines, small cirrus-sac and uterus reaching the posterior extremity.

The new species was placed in *Magnivitellinum* because it is the only genus of the family that combines body elongate, cirrus-sac small, testes in posterior half of body and follicular vitellines well-developed.

Magnivitellinum is represented by *Magnivitellinum simplex*. Considering that the new species do not fit in any of the other genera, and the description of *Magnivitellinum* by Kloss (1966) was based on only one species, we here propose emendation of the generic diagnosis to include the new species.

Magnivitellinum simplex was originally described parasitizing *Astyanax bimaculatus* in Mogi-Guaçu River, State of São Paulo, Brazil (Kloss 1966), and then parasitizing *A. bimaculatus*, *A. eigenmanniorum*, *A. fasciatus* and *Oligosarcus jenynsii* (Characiformes, Characidae), in Argentina (Lunaschi 1989). Since then, *M. simplex* was reported parasitizing *Astyanax fasciatus* from Nicaragua (Aguirre-Macedo *et al.* 2001)

and Mexico (Violante-González *et al.* 2007), as well as several other species of fish (Cyprinodontiformes: Goodeidae, Siluriformes: Ariidae) (Pérez-Ponce de León *et al.* 2007b).

Magnivitellinum corvitellinum sp. nov. was found parasitizing a catfish (Siluriformes, Callichthyidae) and differs from *M. simplex* by having (1) tegumental spines along the body; (2) ventral sucker distinctly bigger than oral sucker; (3) oesophagus and (4) vitellaria extending from posterior margin of ventral sucker to near posterior extremity of body.

The species that Abdallah *et al.* (2006) identified as *Kalipharynx* sp. parasitizing *H. littorale* in the Guandu River, state of Rio de Janeiro, Brazil, can actually be considered as *Magnivitellinum corvitellinum* sp. nov. The specimen examined presents the same characteristics of the new species, instead of large cirrus sac and pharynx with digitiform processes observed in species of *Kalipharynx*.

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