ON SOME TREMATODES PARASITES OF FISHES FROM PARANÁ RIVER

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ABSTRACT

Crassicutis cichlasomae Manter, 1936 is redescribed for the first time in South America and from a new host: *Geophagus brasiliensis* (Cichlidae). *Iheringtrema iheringi* Travassos, 1948 is redescribed for the first time since its original description from *Pseudopimelodus zungaro* (Pimelodidae); and new host records are referred to *Genarchella genarchella* Travassos *et al.*, 1928, and to *Parspina argentinensis* (Szidat, 1954). Other reported species are: *Microrchis oligovitellum* Lunaschi, 1987, *Neocladocystis intestinalis* (Vaz, 1932), *Pseudosellacotyla lutzi* (Freitas, 1941), *Thometrema overstreeti* (Brooks *et al.*, 1979) and *Zonocotyle bicaecata* Travassos, 1948. Original figures and measurements are presented.

Key words: trematodes, freshwater fish parasites, Brazil.

RESUMO

Sobre alguns trematódeos parasitas de peixes do Rio Paraná

Crassicutis cichlasomae Manter, 1936 é redescrito pela primeira vez na América do Sul e em um novo hospedeiro: *Geophagus brasiliensis* (Cichlidae). *Iheringtrema iheringi* Travassos, 1948 é redescrita pela primeira vez desde sua descrição original, de *Pseudopimelodus zungaro* (Pimelodidae); novos hospedeiros são referidos para *Genarchella genarchella* Travassos *et al.*, 1928, e para *Parspina argentinensis* (Szidat, 1954). Outras espécies estudadas são: *Microrchis oligovitellum* Lunaschi, 1987, *Neocladocystis intestinalis* (Vaz, 1932), *Pseudosellacotyla lutzi* (Freitas, 1941), *Thometrema overstreeti* (Brooks et al., 1979) e *Zonocotyle bicaecata* Travassos, 1948. Serão apresentadas figuras originais e medidas.

Palavras-chave: trematódeos, parasitas de peixes de água doce, Brasil.

INTRODUCTION

A survey of the helminth fauna of fishes from the Paraná River was carried out in 1985, in the locality of Guaíra, Paraná State, South of Brazil. The results concerning the nematodes and some trematodes were already published (Moravec *et al.*, 1992a, b, c, 1993a, b; Kohn & Fernandes, 1994; Kohn *et al.*, 1997; Kohn *et al.*, 1999). The present paper comprises the results concerning the other digeneans collected in this expedition. Redescription are presented to *Crassicutis cichlasomae* reported in new host and for the first time in South America and to *Iheringtrema iheringi*, the first report since its original description. To the other well known species, only the main measurements and comments are presented.

MATERIAL AND METHODS

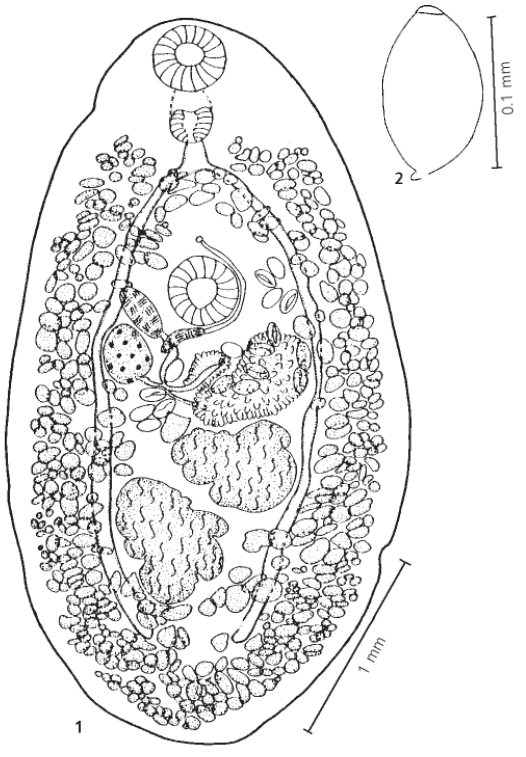
Fifty one different species of fishes of a total of 145 specimens were examined from Paraná River, in the locality of Guaíra, Paraná State, Brazil. The used methodology were described in Kohn & Fernandes (1994). Measuremensts are given in micrometres otherwise stated with means in

parentheses. Voucher specimens are deposited in the Helminthological Collection of the Oswaldo Cruz Institute (CHIOC). The fish species were classified by Dr. M. P. de Godoy and updated based on Eschmeyer *et al.* (1998).

RESULTS AND REMARKS

Crassicutis cichlasomae Manter, 1936 (Homalometridae) (Figs. 1 and 2)

Redescription and measurements based on 7 whole-mounted worms: body oval 2.11-3.89 mm (3.10) long × 1.01-2.00 mm (1.54) wide. Tegument smooth. Oral sucker subterminal, spherical, 190-330 (268) × 190-340 (276). Ventral sucker pre-equatorial, 220-360 (296) in diameter; sucker width ratio 1:1-1.2. Prepharynx short 20-90 (43) long. Pharynx 100-170 (135) × 90-210 (149). Oesophagus 30-130 (71) long. Caeca narrow, overlapping testes, not reaching the posterior extremity. Seminal vesicle sac-shaped, elongate, narrow, reaching ovarian level, measuring 140-420 (257) × 70-120 (89); distal part tubular, opening into a genital pore median, anterior to ventral sucker.



Figs. 1-2 — *Crassicutis cichlasomae*. **1 —** Total, ventral view; **2 —** Egg. Original figures.

Testes large, slightly lobated, post-equatorial, intercaecal, close together, diagonal; anterior testis 280-470 (380) × 340-660 (490); posterior testis 280-650 (510) × 340-680 (488). Ovary rounded, pre-testicular, posterolateral to ventral sucker, 130-290 (222) × 140-270 (206). Mehlis' gland well developed 90-510 (292) × 120-620 (367), opposite to ovary. Seminal receptacle pre-ovarian measuring 190-260 × 70-140. Laurer's canal well evidenciated dorsal, surrounded by glands. Vitelline follicles extracaecal, with few follicles caecal and intercaecal, extending from level of esophageal bifurcation to posterior extremity, confluent in esophageal and posterior regions. Uterus intercaecal, short, with few operculated eggs, 101-139 × 60-109 (124 × 78), provided with small knob. Excretory pore terminal. Excretory vesicle not observed.

Host: *Geophagus brasiliensis* (Quoy & Gaimard, 1824), Cichlidae.

Site: intestine.

Material deposited: CHIOC n. 33937 a-g

Intensity of infection: two out of three fish examined were parasitized by seven trematodes each.

In South America the genus *Crassicutis* Manter, 1936 is represented by *C. chuscoi* (Pearse, 1920) and *C. wallini* (Pearse, 1920) in Venezuela, and by *C. intermedius* (Szidat, 1954) in Argentina (Szidat, 1954), Brazil (Kohn & Fróes, 1986) and Paraguay (Bray *et al.*, 1996). *Crassicutis cichlasomae* was described by Manter (1936) from the stomach of *Cichlasoma mayorum* from Mexico; Scholz *et al.* (1995a) described the life cycle and, referred other hosts in Mexico and Central America. In this opportunity we report *C. cichlasomae* for the first time in South America and in a new host: *Geophagus brasiliensis*. The specimens studied are larger than those of the original description (2.11-3.89 mm × 1.01-2.00 mm instead of 0.88-1.29 mm × 0.48-0.83 mm) and are more close related to the specimens studied by Scholz *et al.* (1995) (0.94-2.04 mm × 0.54-1.20 mm).

Iheringtrema iheringi Travassos, 1948 (Cryptogonimidae) (Fig. 3)

Redescription based on 2 specimens: body elongate 2.41-2.82 mm long by 0.65-0.71 mm wide. Tegument covered by scales till the level of ovary. Oral sucker spherical, well developed, 260-280 × 290-300. Ventral sucker pre-equatorial 180-200 in diameter. Sucker wide ratio 1:0.6-0.7. Prepharynx short. Pharynx 120-150 × 120-130. Oesophagus short. Caeca reaching posterior extremity. Cirrus sac

absent. Seminal vesicle behind ventral sucker, tubular, long, convoluted. Genital pore immediately preacetabular. Testes 9, smooth, in posterior half of body, measuring 170-220 × 150-220. Ovary 290-350 × 390-470, strongly lobed, median, at level of anterior testis. Vitelline follicles lateral from the level of ventral sucker confluent from post-ovarian region to posterior extremity. Uterus median, intercaecal, from ovary to genital pore. Eggs 38-45 × 19-23.

Host: *Pseudopimelodus zungaro* (Humbold, 1833) (= *Pseudopimelodus roosevelti* Borodin, 1927) (Pimelodidae).

Site: intestine.

Material deposited: CHIOC n. 33927 a-b.

Intensity of infection: one out of two fish examined harbored two trematodes.

Travassos (1948b) erected the genus *Iheringtrema* to the species *I. iheringi* Travassos, 1948, based on two specimens collected from the intestine of *P. roosevelti* from Mogi-Guaçu River, São Paulo State, Brazil. This is the first report of this trematode since its original description, from the same host from another locality. The specimens studied are smaller (2.41-2.82 mm × 0.65-0.71 mm instead of 3.5-4 mm × 1-1.2 mm) and the vitellaria does not reach the level of the pharynx as in type material.

Microrchis oligovitellum Lunaschi,1987 (Paramphistomidae) (Fig. 4)

Main measurements based on 2 specimens: body 6.21-7.48 mm long by 2.52-2.63 mm wide; oral sucker 680-760 × 650-720; ventral sucker 1.42 mm × 1.31-1.35 mm; sucker width ratio 1:1.8-2; oesophagus 340-830 long; pseudo cirrus-sac 790 × 250; testes 160-250 × 220-280; ovary 380-470 × 350-440; eggs 60-67 × 30-37.

Host: *Parauchenipterus galeatus* (Linnaeus, 1766) (Auchenipteridae).

Site: intestine.

Material deposited: CHIOC n. 33924 a-b

Intensity of infection: one fish examined was parasitized by two trematodes.

Microrchis oligovitellum was described by Lunaschi (1987) from the intestine of *Luciopimelodus pati* and *Trachycorystes striatulus* from Argentina. In Brazil, Pavanelli *et al.* (1997a) published the histopatology of the infection of *P. galeatus* by *M. oligovitellum* without description of the parasite. Our specimens agree with the original description, although presenting larger body (6.21-7.48 mm × 2.52-2.63 mm instead of 2.33-3.89 mm × 0.86-1.05 mm).

Genarchella genarchella Travassos, Artigas & Pereira, 1928 (Derogenidae)

Main measurements: body 2.41 mm long by 0.86 mm wide; oral sucker 250 × 270; pharynx 79 × 94; ventral sucker 440 × 470; sucker width ratio 1:1.7; seminal vesicle 140 × 60; testes 270-300 × 200-290; ovary 180 × 240; eggs 40-45 × 19-21, with one long polar filament.

Host: *Pimelodus ornatus* Kner, 1858 (Pimelodidae).

Material deposited: CHIOC n. 33923.

Site: stomach.

Intensity of infection: one out of two fish examined were parasitized by one trematode.

The type-material of *Genarchella genarchella* was reestudied by Kohn & Fernandes (1988), Kohn *et al.* (1990) and Scholz *et al.* (1995b).

Hamann (1989) presented the measurements of *G. genarchella* from several hosts from Paraná River, Corrientes, Argentina.

In this opportunity a new host, *Pimelodus ornatus*, is presented for *G. genarchella*.

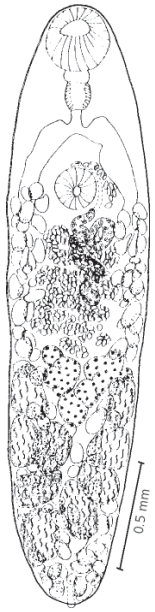


Fig. 3 — *Iheringtrema iheringi*. Total, dorsal view. Original figure.

***Parspina argentinensis* (Szidat, 1954) Sogandares-Bernal, 1959 (Cryptogonimidae)**

Main measurements based on 2 whole-mounts: body 2.11-2.22 mm long by 0.56-0.71 mm wide; oral sucker 280 × 250-260; ventral sucker 240-250 × 260-280; sucker width ratio 1:1; pharynx 9-10 × 8-10; testes 280-340 × 220-250; ovary 140-160 × 470; eggs 26-30 × 12-16.

Host: *Pimelodus lateristrigus* (Müller & Troschel, 1849) (Pimelodidae).

Site: intestine.

Material deposited: CHIOC n. 33925 a-b.

Intensity of infection: one out of two fish examined was parasitized by two trematodes.

Parspina argentinensis was described by Szidat (1954) from *Pimelodus clarias* from Argentina. In Brazil it was referred and figured by Fortes & Hoffmann (1985) from the intestine of *Pimelodus maculatus* from Guaiba estuary. Kohn & Fróes (1986) redescribed it with new morphological data and figures from the same host and locality. We recovered specimens similar to those reported by Kohn & Fróes (1986) from the intestine of *Pimelodus lateristrigus*, which represents a new host record.

***Neocladocystis intestinalis* (Vaz,1932) Manter & Pritchard, 1969 (Acanthostomidae)**

Main measurements based on 8 whole-mounts: body 0.82-2.53 mm (1.81) long by 0.20-0.57 mm (0.47) wide; oral sucker 75-112 (97) × 82-123 (113); prepharynx 15-123 (56) long; pharynx 37-75 (61) × 30-56 (46); oesophagus 37-187 (100) long; ventral sucker 49-82 (69) × 49-94 (72); sucker width ratio 1:0.6-0.8 (1:0.6); testes 191-460 (354) × 75-200 (144); ovary 86-266 (172) x 86-221 (138); seminal receptacle 180-187 × 67-90; eggs 28-37 (31) × 14-19 (16).

Fig. 4 — *Microrchis oligovitellum*. Total, ventral view. Original figure.

Host: *Salminus maxillosus* Valenciennes, 1840 (Characidae).

Site: intestine.

Material deposited: CHIOC n. 33922 a-h.

Intensity of infection: 6 out of 10 fish examined were parasitized by 1 to 120 trematodes.

Travassos *et al.* (1928) identified as *Cladocystis trifolium* (Braun, 1900) some trematodes collected from *Salminus maxillosus* from Mogi-Guaçu River. Vaz (1932) described the new species *C. intestinalis* from the same host from "Tietê" River and considered *C. trifolium* of Travassos *et al.* (1928) its synonym. *Cladocystis intestinalis* was transferred to *Neocladocystis* by Manter & Pritchard (1969). *Neocladocystis intestinalis* was also referred by Travassos & Kohn (1965) and by Kohn *et al.* (1985) from *Salminus hilarii*. Recently Pavanelli *et al.* (1997b) referred it also in *S. maxillosus* as *C. intestinalis*. We recovered specimens from the type-host, which are a little smaller than those described by Vaz (1932), and smaller and longer than specimens studied by Kohn *et al.* (1985). They are as large as the specimens presented by Travassos *et al.* (1928), with narrower eggs.

***Thometrema overstreeti* (Brooks, Mayes & Thorson, 1979) Lunaschi, 1989 (Derogenidae)**

Main measurements: body 3.71 mm long by 1.21 mm wide; oral sucker 480 × 510; ventral sucker 830 × 820; sucker width ratio 1:1.7; pharynx 190 × 180; testes 390-400 × 310-370; ovary 200 × 420; eggs 42-47 × 19-21.

Host: *Salminus maxillosus* Valenciennes, 1840 (Characidae).

Site: stomach.

Material deposited: CHIOC n. 33926.

Intensity of infection: one out of ten fish examined was parasitized by one trematode.

Thometrema overstreeti was reestudied by Kohn *et al.* (1990) from *Pimelodus maculatus* and *Rhamdia* sp. from south of Brazil. It was also reported from different hosts in Argentina (Lunaschi, 1988; Hamann, 1986), Colombia (Brooks *et al*., 1979). This is the first reference of this species in *Salminus maxillosus* in Brazil, host already reported

by Hamann (1986) in Argentina as *Genarchella genarchella* Travassos *et al*., 1928, and by Iannacone & Luque (1993) in Peru.

***Pseudosellacotyla lutzi* (Freitas, 1941) Yamaguti, 1954 (Microphallidae)**

Main measurements: body 0.66 mm × 0.45 mm; oral sucker 75 × 79; pharynx 49 × 49, ventral sucker 49 × 56; sucker width ratio 1: 0.68; ovary 75 × 86; testes 13-15 × 9-10; eggs 35-38 × 21-23.

Host: *Hoplias malabaricus* (Bloch, 1794) (Erythrinidae).

Site: intestine.

Material deposited: CHIOC n. 33929.

Intensity of infection: one out of three fish examined was parasitized by one trematode.

This species, described from *H. malabaricus* by Freitas (1941) was redescribed by Kohn *et al.* (1985) from the same host.

Our specimen is similar to those reported by these authors, having wider eggs (21-23 instead of 16-19).

***Zonocotyle bicaecata* Travassos, 1948 (Zonocotylidae)**

Main measurements: body 4.73 mm x 1.46 mm; oral sucker 37 × 46; ventral disc 2180 in diameter; oesophagus 1240; ovary 200 × 230; testis 290 in diameter; eggs 59-70 × 35.

Host: *Cyphocharax nagelii* (Steindachner, 1881) (Curimatidae).

Site: intestine.

Material deposited: CHIOC n. 33930.

Intensity of infection: one out of five fish examined was parasitized by one trematode.

Zonocotyle bicaecata was described by Travassos (1948a) from the intestine of *Steindachnerina elegans* (Steindachner, 1874) (= *Curimatus elegans* Steindachner, 1874) from Mogi-Guaçu River, São Paulo State, Brazil. It was redescribed by Padilha (1978) from *Cyphocharax nagelii* (Steindachner, 1881) (= *Curimatus nagelii*) from Rio de Janeiro State, Brazil, and by Kohn *et al.* (1985) from *Pseudocurimata plumbea* (Eigenmann & Eigenmann, 1899) from the type locality. Our specimen is similar to those studied by Kohn *et al.* (1985).

Besides those species we also collected specimens of:*Clinostomum marginatum* (Rudolphi, 1819) Braun, 1899 (immature form) from the stomach of *Pseudoplatystoma corruscans* (Agassiz, 1829) (Pimelodidae). *Plehniella* sp. from the stomach of *Hemisorubim platyrhynchos* (Valenciennes, 1840) (Hypophthalmidae) and *Leporinus obtusidens* (Valenciennes, 1847) (Anostomidae). *Rhipidocotyle* sp. from the intestine of *Salminus maxillosus* Valenciennes, 1840 (Characidae). *Saccocoelioides* sp. from the intestine of *Prochilodus scrofa* Steindachner, 1881 (Prochilodontidae), *Pterygoplichthys aculeatus* (Perugia, 1891) (Loricariidae) and *Schizodon knerii* (Steindachner, 1875) (Anostomidae). Immature forms of Strigeidae encysted in fins of *Geophagus brasiliensis* (Quoy & Gaimard, 1824) (Cichlidae).

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