



Revista Brasileira de Parasitologia
Veterinária

ISSN: 0103-846X

zacariascbpv@fcav.unesp.br

Colégio Brasileiro de Parasitologia
Veterinária
Brasil

Fernandes, Berenice M. M.; Arci, Anderson D. N.; Cohen, Simone C.
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coast of the State of Rio de Janeiro, Brazil
Revista Brasileira de Parasitologia Veterinária, vol. 18, núm. 2, abril-junio, 2009, pp. 13-18
Colégio Brasileiro de Parasitologia Veterinária
Jaboticabal, Brasil

Available in: <http://www.redalyc.org/articulo.oa?id=397841471003>

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New data on some species of Monogenea and Digenea parasites of marine fish from the coast of the State of Rio de Janeiro, Brazil

Novos dados sobre algumas espécies de Monogenea e Digenea parasitas de peixes marinhos da costa do estado do Rio de Janeiro, Brasil

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Received February 19, 2008

Accepted February 2, 2009

Abstract

Fifty four specimens of marine fish belonging to seven species collected from the coast of the State of Rio de Janeiro, Brazil were examined for helminths, and results relating to Monogenea and Digenea are presented. The monogeneans *Metamicrocotyla macracantha*, *Microcotyle pomatomi* and *Gotocotyla acanthura* are reported in new hosts. The digeneans *Parahemiurus merus*, *Lecithochirium microstomum*, *Gonocercella pacifica*, *Aponurus laguncula*, *Gonocerca trematomi* and *Lampritrema miescheri* are reported in new hosts, and the latter two species are also reported for the first time in Brazil.

Keywords: Monogenea, Digenea, Brazil, marine fish.

Resumo

Cinquenta e quatro espécimens de peixes marinhos pertencentes a sete espécies coletados do litoral do estado do Rio de Janeiro, Brasil foram examinados para helmintos, os resultados referentes a Monogenea e Digenea são apresentados. Os monogenéticos *Metamicrocotyla macracantha*, *Microcotyle pomatomi* e *Gotocotyla acanthura* são apresentados em novos hospedeiros. Os digenéticos *Parahemiurus merus*, *Lecithochirium microstomum*, *Gonocercella pacifica*, *Aponurus laguncula*, *Gonocerca trematomi* e *Lampritrema miescheri* são registrados em novos hospedeiros, as duas últimas espécies são também registradas pela primeira vez no Brasil.

Palavras-chave: Monogenea, Digenea, Brasil, peixes marinhos.

Introduction

A survey on helminths recovered from marine fish was conducted, with the aim of establishing the Monogenea and Digenea fauna of some hosts that are considered to be of commercial importance on the coast of the State of Rio de Janeiro, Brazil. Among the helminths collected, six species of Digenea are reported in new hosts, and two of them are also recorded for the first time in Brazil; and three species of Monogenea are reported in new hosts.

Material and Methods

From July 2005 to September 2006, 54 specimens of marine fish belonging to seven species were examined. The fish were obtained from the fish market of the municipality of Niterói, State of Rio de Janeiro, and had been caught in the waters surrounding this

area, located at 22° 56' 26" S and 43° 02' 41" W. The fish were identified in accordance with Szpilmam (2000). The Monogenea and Digenea were cold fixed in AFA and 5% formaldehyde, respectively, under light cover glass pressure. The specimens were stained with Langeron's alcoholic acid carmine, dehydrated by means of an ethyl alcohol series, cleared using beechwood creosote and mounted in Canada balsam as permanent slides. The main measurements and figures are presented only for the species that are reported for the first time in Brazil. The measurements are given in micrometers unless otherwise stated, and the range is presented followed by the mean in parentheses. Figures were drawn with the aid of a drawing tube. The specimens studied have been deposited in the Helminthological Collection of Instituto Oswaldo Cruz (CHIOC), in Brazil. Monogenea were identified in accordance with Yamaguti (1963) and Digenea in accordance with Yamaguti (1971), Gibson et al. (2002) and Jones et al. (2005). The scientific names of the parasitized fish are given in alphabetical order, with the family, common name, number of specimens examined/parasitized, prevalence of infection with

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Monogenea and Digenea, and parasites found in each, followed by the intensity of parasites per infected fish. New host records are represented by (NH).

Results and Remarks

1. Host-Parasite list

Genypterus brasiliensis (Regan, 1903), Ophidiidae (5/3)

Digenea (P = 60%)

Parahemiurus merus (Linton, 1910) Yamaguti, 1938 (8)

CHIOC n. 37.024 a-b

Pseudolepidapedon brasiliensis (Fernandes & Souza, 1973)

Ramadan, 1987 (5, 3) CHIOC n. 37.028 a-c

Menticirrhus americanus (Linnaeus, 1758), Sciaenidae (1/1)

Digenea (P = 100%)

Proisorhynchus sp. (1) CHIOC n. 37.034

Micropogonias furnieri (Desmarest, 1823), Sciaenidae (8/5)

Monogenea (P = 62%)

Perinotrematoides mexicanum Caballero & Bravo-Hollis, 1955 (1, 2, 4, 4, 26) CHIOC n. 37.014, 37.018

Macrovalvitrema sinaloense Caballero & Bravo-Hollis, 1955 (1,1,4) CHIOC n. 37.019a-b

Digenea (P = 12%)

Gonocerca trematomi Byrd, 1963 (1) CHIOC n. 37.020

Lecithochirium microstomum Chandler, 1935 (6) CHIOC n. 37.021 a-b

***Mycteroperca* sp.**, Serranidae (9/3)

Digenea (P = 33%)

Gonocercella pacifica Manter, 1940 (1,27) CHIOC n. 37.015a-c

Lecithochirium microstomum Chandler, 1935 (17) CHIOC n. 37.022

Lampritrema miescheri (Zschokke, 1890) Margolis, 1962 (1) CHIOC n. 37.023

Pagrus pagrus (Linnaeus, 1758), Sparidae (4/3)

Monogenea (P = 75%)

Anoplodiscus longivaginatatus Paraguassú, Luque & Alves, 2002 (1, 1) CHIOC n. 37.013, 37.016

Echinopelma brasiliensis Fábio, 1999 (1) CHIOC no. 37.017

Pseudoperca numida (Miranda & Ribeiro, 1903), Pinguipedidae (22/6)

Monogenea (P = 27%)

Microcotyle pseudoperca Amato & Cézár, 1994 (1, 1, 1, 2, 6, 11) CHIOC n. 37.029 a-c

Digenea (P = 4%)

Aponurus laguncula Looss, 1907 (1) CHIOC n. 37.031

Cynoscion leiarchus (Cuvier, 1830), Sciaenidae (7/5)

Monogenea (P = 57%)

Metamicrocotyla macracantha (Alexander, 1954) (1, 2) CHIOC n. 37.026, 37.032 a-b, 37.033

Gotocotyla acanthura (Parona & Perugia, 1891) (2, 2, 2) CHIOC n. 37.033

Microcotyle pomatomi Goto, 1899 (6) CHIOC n. 37.025

Digenea (P = 43%)

Pleorchis americanus Lühe, 1906 (1,1,4) CHIOC n. 37.027, 37.030

Digenea

Family Hemiuiridae Looss, 1899

Parahemiurus merus (Linton, 1910) Yamaguti, 1938

Host: *Genypterus brasiliensis* (NH)

Site of infection: Intestine.

Remarks: *P. merus* is a cosmopolitan species that has been reported in different host families. In South America, it has been reported from several countries: from Argentina in *Engraulis anchoita* (TIMI et al., 1999; TIMI, 2003); from Brazil in *Anchoa tricolor* (TAVARES et al., 2005), *Caranx hippos* (AMATO, 1983; LUQUE et al., 2000), *Caranx latus* (LUQUE et al. 2000; LUQUE; ALVES, 2001), *Cynoscion leiarchus* (AMATO, 1983), *Dactylopterus volitans* (CORDEIRO; LUQUE, 2005), *Haemulon sciurus* (KOHN et al. 1982), *Harengula clupeola* (WALLET; KOHN, 1987), *Harengula* sp. (TRAVASSOS et al., 1967; AMATO, 1983), *Isopisthus parvipinnis* (AMATO, 1983), *Lycengraulis grossidens* (TRAVASSOS et al., 1967), *Oligoplites palometa*, *Oligoplites saliens* (TAKEMOTO et al., 1995, 1996), *Opisthonema oglinum* (FÁBIO, 1988), *Pagrus pagrus* (PARAGUASSÚ et al., 2002), *Parona signata* (AMATO, 1983c), *Pomatomus saltatrix* (GOMES et al., 1972; AMATO, 1983; REGO et al. 1983; LUQUE; CHAVES, 1999), *Sardinella aurita* (VAZ; PEREIRA, 1930), *Sardinella* sp. (FEIJÓ et al., 1979; RODRIGUES et al., 1990), *Selene setapinnis* (CORDEIRO; LUQUE, 2004), *Tylosurus acus* (TAVARES et al., 2004) and *Urophycis brasiliensis* (ALVES et al., 2004); from Colombia in *Oligoplites saurus* (ROMERO; GALEANO, 1981); from Ecuador in *Anchovia arenicola* and *Opisthonema libertate* (MANTER, 1940); from Galapagos in *Eugralis ringens* (BRAY, 1990); from Uruguay in *Eugralis anchoita* (TIMI et al., 1999); and from Venezuela in *Calamus bajonado* (FISCHTHAL; NASIR, 1974) and *Orthopristis ruber* (CENTENO et al., 2002).

Lecithochirium microstomum Chandler, 1935

Host: *Mycteroperca* sp. (NH)

Site of infection: Intestine.

Remarks: This species has been already reported from Argentina in *Engraulis anchoita* (TIMI et al., 1999, TIMI, 2003), *Micropogonias furnieri* (SARDELLA et al., 1995) and *Parona signata* (SZIDAT, 1969; TIMI et al., 1999). From Brazil, it has been reported in several hosts: *Caranx hippos*, *Caranx latus* (LUQUE et al., 2000; LUQUE; ALVES, 2001), *Cephalopholis fulva* (FÁBIO, 2001), *Eucinostomus argenteus* (WALLET; KOHN, 1987), *Menticirrhus americanus* (CHAVES; LUQUE, 1998), *Micropogonias furnieri* (FÁBIO, 1988; ALVES;

LUQUE, 2000, 2001a, b), *Oligoplites palometa*, *Oligoplites saliens* (TAKEMOTO et al., 1995, 1996), *Paralonchurus brasiliensis* (RIBEIRO et al., 2002, LUQUE et al., 2003), *Parona signata* (AMATO, 1983), *Scombroides occidentalis* (VICENTE; SANTOS, 1973), *Selene setapinnis* (CORDEIRO; LUQUE, 2004), *Trichiurus lepturus* (FREITAS; KOHN, 1965, WALLET; KOHN, 1987, SILVA et al., 2000a, SILVA et al., 2000b) and *Trysityps lepidopoides* (VICENTE; SANTOS, 1973). From Galapagos, it has been reported in *Calamus brachysomus*, *Caulolatilus* sp., *Euthynnus alletteratus*, *Paralabrax humeralis* and *Paranthias furcifer* (MANTER, 1940). From Uruguay, it has been reported in *Engraulis anchoita* (TIMI et al., 1999). It has also been reported outside South America: from the United States in *Lolliguncula brevis*, by Overstreet and Hochberg (1975); from Ghana in *Trichirus lepturus* and *Euthynnus alletteratus*, by Fischthal and Thomas (1972); from Costa Rica in *Fistularia commersoni*, by Ponce de Leon et al. (1998); and from Mexico in *Euthynnus lineatus*, by Castillo-Sanchez et al. (1997).

Family Bucephalidae Poche, 1907

Prosorhynchus sp.

Host: *Menticirrhus americanus*

Site of infection: Intestine.

Remarks: We collected only an immature specimen. From Brazil, in this genus, the species *Prosorhynchus ozakii* Manter, 1934, had been already reported in *Menticirrhus americanus* by Chaves and Luque (1998).

Family Derogenidae Nicoll, 1910

Gonocerca trematomi Byrd, 1963 (Figure 1a)

Host: *Micropogonias furnieri* (NH)

Site of infection: Intestine.

Measurements based on one wholmount: body 5.00 × 1.54 mm; oral sucker 550 × 625; ventral sucker 1,175 × 1,225; sucker width ratio 1:2; pharynx 240 × 250; seminal vesicle 710 × 240; anterior testis 525 × 700; posterior testis 625 × 500; ovary 275 × 475; eggs 37 to 40 × 17 to 25.

Remarks: In South America, this species has been reported in *Stromateus stellatus* (= *Stromateus maculatus*) from Argentina by Gaevskaya and Kovaleva (1978). The finding in *Micropogonias furnieri* on the coast of the State of Rio de Janeiro represents the first report of this species from Brazil.

Gonocercella pacifica Manter, 1940

Host: *Mycteroperca* sp. (NH)

Site of infection: Intestine.

Remarks: This species was originally described in *Trachinotus rhodopus* by Manter (1940), from Colombia. It has been recorded from Brazil in *Menticirrhus americanus* by Chaves and Luque (1998), in *Trachinotus ovatus* (= *Trachinotus glaucus*) by Gomes et al. (1978) and in *Trachinotus paitensis* from Chile and Peru by Luque and Oliva (1993). We recovered young specimens from *Mycteroperca* sp.

Family Hirudinellidae Dollfus, 1932

Lampritrema miescheri (Zschokke, 1890) Margolis, 1962

(Figure. 1b)

Host: *Mycteroperca* sp. (NH)

Site of infection: Intestine.

Measurements based on one wholmount: body 21.41 × 2.00 mm; oral sucker 740 × 690; ventral sucker 1,425 × 1,150; sucker ratio 1:1.7; pharynx 570 × 490; cirrus sac 2,400 × 475; anterior testis 460 × 340; posterior testis 460 × 350 wide; ovary 270 × 310 wide, eggs 35 to 45 × 20 to 22.

Remarks: This species was originally described from the northeast Atlantic in *Salmo salar* and has been reported in its type host and locality by several authors (see GIBSON; BRAY, 1977). From Argentina, it has been reported in *Argentina silus* as *Lampritrema nipponicum* Yamaguti, 1940 by Scott (1969) and in *Thysites atun* as *Hirudinelloides elongatus* by Gaevskaya and Kovaleva (1977); and from the southwest Atlantic in *Trachipterus atlivelis* from Chile by Oliva (1984). On this occasion, *L. miescheri* is reported for the first time from Brazil.

Family Lecithasteridae Odhner, 1905

Aponurus laguncula Looss, 1907

Host: *Pseudoperca numida* (NH)

Site of infection: Intestine.

Remarks: In South America, this species has been reported from Argentina in *Paralichthys patagonicus* (SZIDAT, 1961) and from Brazil in *Chaetodipterus faber* (FERNANDES et al., 1985), *Dactylopterus volitans* (CORDEIRO; LUQUE, 2005), *Micropogonias furnieri* (PEREIRA et al., 2000), *Mullus argentinae* (LUQUE et al., 2002), *Paralonchurus brasiliensis* (PEREIRA et al., 2000; LUQUE et al., 2003), *Rhomboplites*

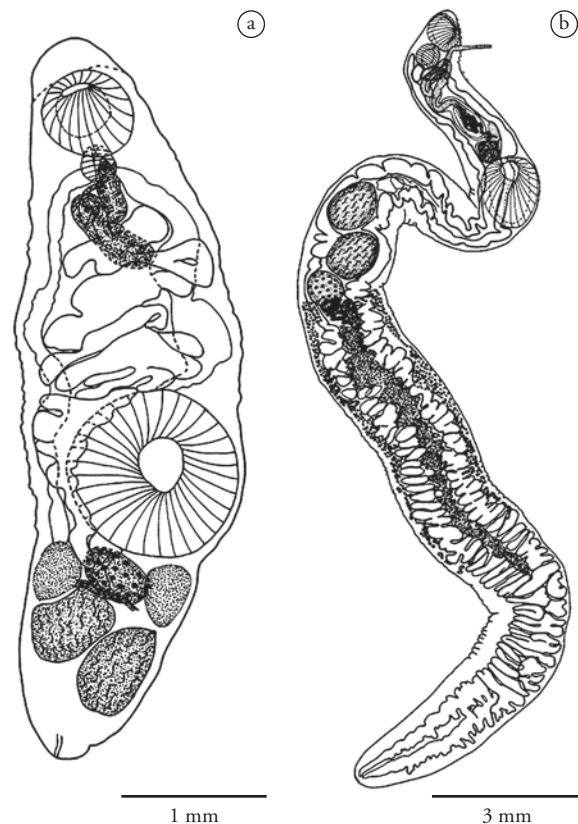


Figure 1. a) *Gonocerca trematomi*, total, ventral view. b) *Lampritrema miescheri*, total, dorsal view.

aurorubens (JUSTO et al., 2003), *Scomber japonicus*, *Trachurus lathami*, *Umbrina coroides* (FERNANDES et al., 1985) and *Urophycis brasiliensis* (ALVES et al., 2004). It has also been reported in *Boops boops* from the Spanish coast of the northeast Atlantic by Perez del Olmo et al. (2006); in *Siganus oramin* from the coast of Kuwait, Arabian Gulf, by Nahhas and Sey (2002); and in *Clupea harengus* from the eastern English Channel by Bray and MacKenzie (1990).

Monogenea

Family Microcotylidae Taschenberg, 1879

Metamicrocotyla macracantha (Alexander, 1954) Koratha, 1955

Host: *Cynoscion leiarchus* (NH)

Site of infection: gills.

Remarks: The measurements on the present material are in agreement with previous data, while differing from other Brazilian material in the size of body and clamps. A specimen measuring 2.6 cm was found, possible due to compression during fixation of the worm. Tantaleán (1974) and Oliva and Muñoz (1985) found specimens measuring up to 22.5 and 23 mm, respectively. This species has been reported in *Mugil cephalus* and *M. curema* from several localities: Mexico and Porto Rico (see KOHN et al., 2006); Chile, Peru and Venezuela (see KOHN; COHEN, 1998); USA and Australia (BAKER et al., 2005a, BAKER et al., 2005b); and in *Mugil liza* and *M. platanus* from Brazil by Kohn et al. (1994) and Knoff et al. (1997).

Microcotyle pomatomi Goto, 1899

Host: *Cynoscion leiarchus* (NH)

Site of infection: gills.

Remarks: *Microcotyle pomatomi* was originally described in *Pomatomus saltator* from Brazil and has been reported from this host in the type locality (KOHN; COHEN, 1998).

Gotocotyla acanthura (Parona & Perugia, 1891)

Host: *Cynoscion leiarchus* (NH)

Site of infection: gills.

Remarks: Kohn et al. (1971) described *Gotocotyla travassosi* in *Pomatomus saltator*, from Brazil. Subsequently, Lebedev (1984) placed this species in the genus *Swakopella*. Hayward and Rohde (1999) restudied the paratypes of *G. travassosi* and considered it to be a synonym of *Gotocotyla acanthura*.

The digeneans *Pseudolepidapedon brasiliensis* and *Pleorchis americanus* and the monogeneans *Pterinotrematoides mexicanum*, *Macroalvitrema sinaloense*, *Anoplodiscus longivaginat* and *Microcotyle pseudopercis* had already been reported from Brazil in the hosts reported here (KOHN et al., 2007; KOHN; COHEN, 1998).

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