

A new species of *Sciadicleithrum* (Monogenea, Dactylogyridae) parasitic on *Geophagus brasiliensis* (Perciformes, Cichlidae) from Guandu River, Southeastern Brazil

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Abstract

Sciadicleithrum guanduensis sp. nov. is described from the gills of the cichlid fish *Geophagus brasiliensis* (Quoy et Gaimard, 1824) from Guandu River, Seropédica, Rio de Janeiro, Brazil. The new species differs from all congeners by the accessory piece of the male copulatory organ, which comprises a small, delicate sheath with articulated appearance, and by the presence of a large unique umbelliform membrane on the ventral bar.

Keywords

Monogenea, Ancyrocephalinae, *Sciadicleithrum*, Cichlidae, *Geophagus brasiliensis*, Brazil

Introduction

Three genera of Ancyrocephalinae Bychowsky, 1937 are parasites on the gills of Neotropical cichlid fish species, namely *Gussevia* Kohn et Paperna, 1964, *Trindactylus* Hanek, Molnar et Fernando, 1974, and *Sciadicleithrum* Kritsky, Thatcher et Boeger, 1989 (Mendoza-Franco and Vidal-Martinez 2005). *Sciadicleithrum* comprises species possessing overlapping gonads, a coiled male copulatory organ with a clockwise ring, unmodified anchors, and the ventral bar with umbelliform membrane or cavity (Kritsky *et al.* 1989, Mendoza-Franco *et al.* 1997). To date, a total of 18 *Sciadicleithrum* species have been described from Neotropical cichlids (Bellay *et al.* 2008).

During a parasitological survey of *Geophagus brasiliensis* (Quoy et Gaimard, 1824) from Guandu River, southeastern Brazil, numerous specimens of an undescribed species of *Sciadicleithrum* were recovered from the gills. In this paper, this new monogenean is described and compared with closely related species of the genus.

Materials and methods

Between October and December of 2006, 50 specimens of *G. brasiliensis* were acquired from local fishermen in Guandu River (22°48'32"S, 43°37'35"W), Municipality of Seropédi-

ca, State of Rio de Janeiro, Brazil. Gills were removed and placed in vials containing 1:4000 formalin solution. Collected parasites were fixed and stored in 5% formalin. Some specimens were stained with Gomori's trichrome and others were mounted in Gray and Wess medium as described in Thatcher (2006). Illustrations were prepared with the aid of a drawing tube mounted on an Olympus BX-51 phase contrast microscope. Measurements are in micrometres, means are followed by the range and number of specimens measured (n) in parentheses. Nomenclature of sclerotised haptor structures and the description of the coiled tube of the male copulatory organ follow that of Kritsky *et al.* (1985). The terms prevalence and mean abundance are according to Bush *et al.* (1997). Type specimens are deposited in the Instituto Oswaldo Cruz Helminthological Collection (CHIOC), Rio de Janeiro, Brazil.

Results

Dactylogyridae Bychowsky, 1933
Ancyrocephalinae Bychowsky, 1937

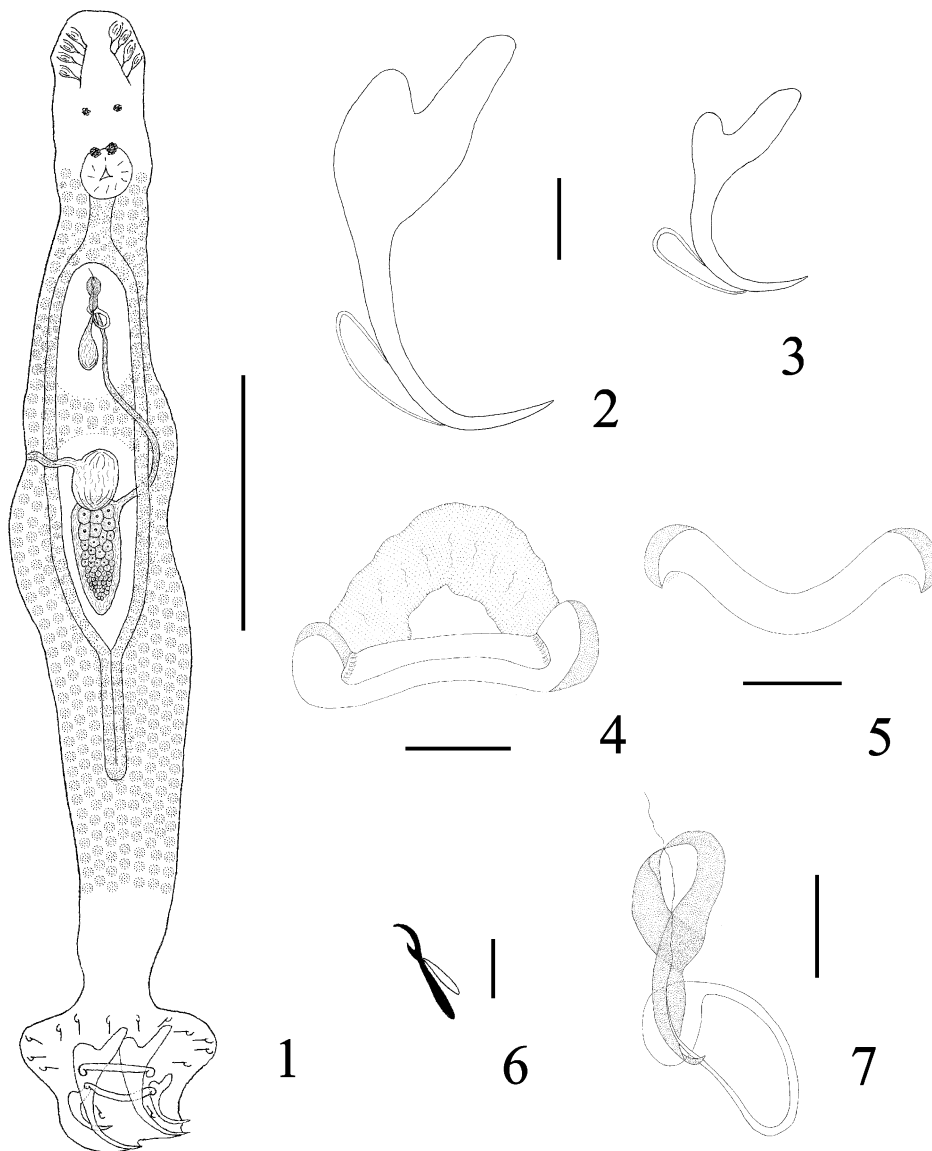
Sciadicleithrum guanduensis sp. nov. (Figs 1–7)

Description (based on 20 adult specimens): Body fusiform, 287 (205–470; n = 18) long; greatest width 36 (20–50; n = 18)

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near midbody (Fig. 1). Mouth ventral to pharynx, cephalic lobes moderately developed; eyes 4; eyes of posterior pair large, with conspicuous lenses, closer together than eyes of anterior pair; eye granules variable in size, elongate ovate; accessory pigment granules of the eyes sparse in cephalic region. Pharynx spherical, 17 (15–20; $n = 8$) in diameter; oesophagus short. Peduncle broad, haptor subhexagonal 75 (70–80; $n = 5$) wide, 63.5 (53–72.5; $n = 5$) long. Anchors without longitudinal grooves, with short deep root, tapering superficial root, curved shaft and point; ventral anchor (Fig. 2) 49 (43–63; $n = 15$) long, base width 23 (15–32; $n = 11$), larger than dorsal anchors; dorsal anchor (Fig. 3) 23 (19–25; $n = 10$) long, base width 9 (5–12; $n = 10$). Ventral bar (Fig. 4) 22 (20–24; $n = 8$) long, robust, enlarged ends, umbelliform mem-

brane large and unique; dorsal bar (Fig. 5) 20 (17–23; $n = 10$) long, broadly U-shaped rod, enlarged ends. Hooks (Fig. 6) 12 (11–14; $n = 11$) long, upright thumb, delicate point, similar in shape and size. FH loop 2/3 shank length. Gonads overlapping, testis elongate, ovate, 24 (20–26; $n = 5$) long, 17 (14–19; $n = 5$) wide; seminal vesicle as inconspicuous dilation of vas deferens; prostatic reservoir pyriform. Male copulatory organ (MCO) a clockwise coil of about 1½ rings, 38 (36–42; $n = 5$) long, ring diameter 5 (4–6; $n = 5$); shaft of copulatory organ tapering in the distal portion. Accessory piece (Fig. 7) 13 (11–15; $n = 12$) long, articulating to MCO base, comprising a small, delicate sheath with articulated appearance. Germa-rium 23 (20–26; $n = 5$) long, 16 (15–17; $n = 5$) wide; vagina nonsclerotised, dextral, opening into irregular seminal recep-



Figs 1–7. *Sciadicleithrum guanduensis* sp. nov.: 1 – composite drawing of whole-mount (ventral view); 2 – ventral anchor; 3 – dorsal anchor; 4 – ventral bar; 5 – dorsal bar; 6 – hook; 7 – copulatory complex, ventral view. Scale bars = 70 μm (1), 6 μm (2–7)

tacle; vitellarium absent in region of reproductive organs distributed as shown (Fig. 1). Oviduct, ootype, uterus and eggs not observed.

Type-host: *Geophagus brasiliensis* (Quoy et Gaimard, 1824), Cichlidae.

Site of infection: Gills.

Type-locality: Guandu River (22°48'32"S, 43°37'35"W), Seropédica, RJ, Brazil.

Prevalence: 36% (18 of 50 fishes examined).

Mean intensity: 12.1 ± 8.6.

Type-specimens: Holotype CHIOC no. 36989a; five paratypes CHIOC no. 36989b-f.

Other specimens examined: *Sciadicleithrum frequens* Bellay, Takemoto, Yamada et Pavanelli, 2008; holotype CHIOC no. 36921a.

Etymology: The specific name refers to the type-locality.

Remarks: *Sciadicleithrum guanduensis* sp. nov. differs from all congeners by the presence of a distally articulated accessory piece associated with the MCO, and by the presence of a large unique umbelliform membrane on the ventral bar.

Recently, Bellay *et al.* (2008) described *S. frequens* Bellay, Takemoto, Yamada et Pavanelli, 2008, another *Sciadicleithrum* species parasitic on *G. brasiliensis* collected from southern Brazil reservoirs. This species resembles other species from South American cichlids by having a copulatory organ with fewer than 2 rings but is also similar to species from Central America and Southeastern Mexico due to lateral longitudinal grooves on the shafts and points of the anchors. We studied the holotype of *S. frequens* for comparison with *Sciadicleithrum guanduensis* sp. nov. and the new species can be easily distinguished from *S. frequens* by the absence of longitudinal lateral grooves on the anchors and by the size of the haptor hooks (hook pair 5 smaller in *S. frequens*, all pairs of similar size in the new species).

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