

# Neotropical Monogenoidea. 25. *Anacanthorus penilabiatus* n. sp. (Dactylogyridae, Anacanthorinae) from *Piaractus mesopotamicus* (Osteichthyes, Serrasalminidae), Cultivated in the State of São Paulo, Brazil

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*Anacanthorus penilabiatus* n. sp. is described from the serrasalminid fish, *Piaractus mesopotamicus* (Holmberg, 1887), cultivated in the Centro de Aqüicultura, Universidade Estadual Paulista. The new species is characterized by having a relatively straight copulatory organ with a long "lip" on the distal margin and a median longitudinal flap, and a copulatory ligament. The large size of the infrapopulations of this species of parasite indicates that it should be considered a potential agent causing losses in aquaculture of the fish host.

Key words: *Anacanthorus penilabiatus* n. sp. - *Piaractus mesopotamicus* - aquaculture

*Anacanthorus* is a diverse taxon of monogenoidean parasites from the gill filaments of Characiformes fishes. A list of all presently known species of *Anacanthorus* is presented by Van Every and Kritsky (1992). While most of these species are abundant in fish collected in their natural habitat, some have been collected from several species of fish cultivated in experimental and private piscicultures. In these artificial settings, *Anacanthorus* spp. frequently reach large population numbers, suggesting that they may represent a potential hazard to productivity.

During a study of parasites of *Piaractus mesopotamicus* (Holmberg 1887) by the third author, large numbers of an undescribed species of *Anacanthorus* were collected from the gills. This species is described and illustrated herein.

## MATERIALS AND METHODS

Twelve pacus (*P. mesopotamicus*), measuring  $20 \pm 2$  cm of standard length, were collected by MLM from experimental tanks (49 m<sup>3</sup>) of the Centro de Aqüicultura, Universidade Estadual Paulista, Jaboticabal, State of São Paulo, Brazil, in 18/XII/1992. Methods of parasite collection, preparation, measurement, and illustration are as

described by Kritsky et al. (1986). Measurements are in micrometers; average is followed by ranges in parentheses. Type specimens are deposited in helminthological collections of the Instituto Oswaldo Cruz (IOC), Rio de Janeiro, Brazil; U.S. National Museum (USNM), Beltsville, Maryland; and the University of Nebraska State Museum (HWML), Lincoln, Nebraska.

## DESCRIPTION

*Anacanthorus penilabiatus* n. sp.

Figs 1-4

Type host: *Piaractus mesopotamicus* (Holmberg, 1887)

Type locality: Centro de Aqüicultura, Universidade Estadual Paulista, Jaboticabal, State of São Paulo, Brazil, 18/XII/92

Type specimens: Holotype: IOC 33268 a. Paratypes, IOC 33268 b-j (9 specimens), USNM 84480 (10 specimens), HWML 38024

Intensity of infestation: up to 1713 specimens/fish.

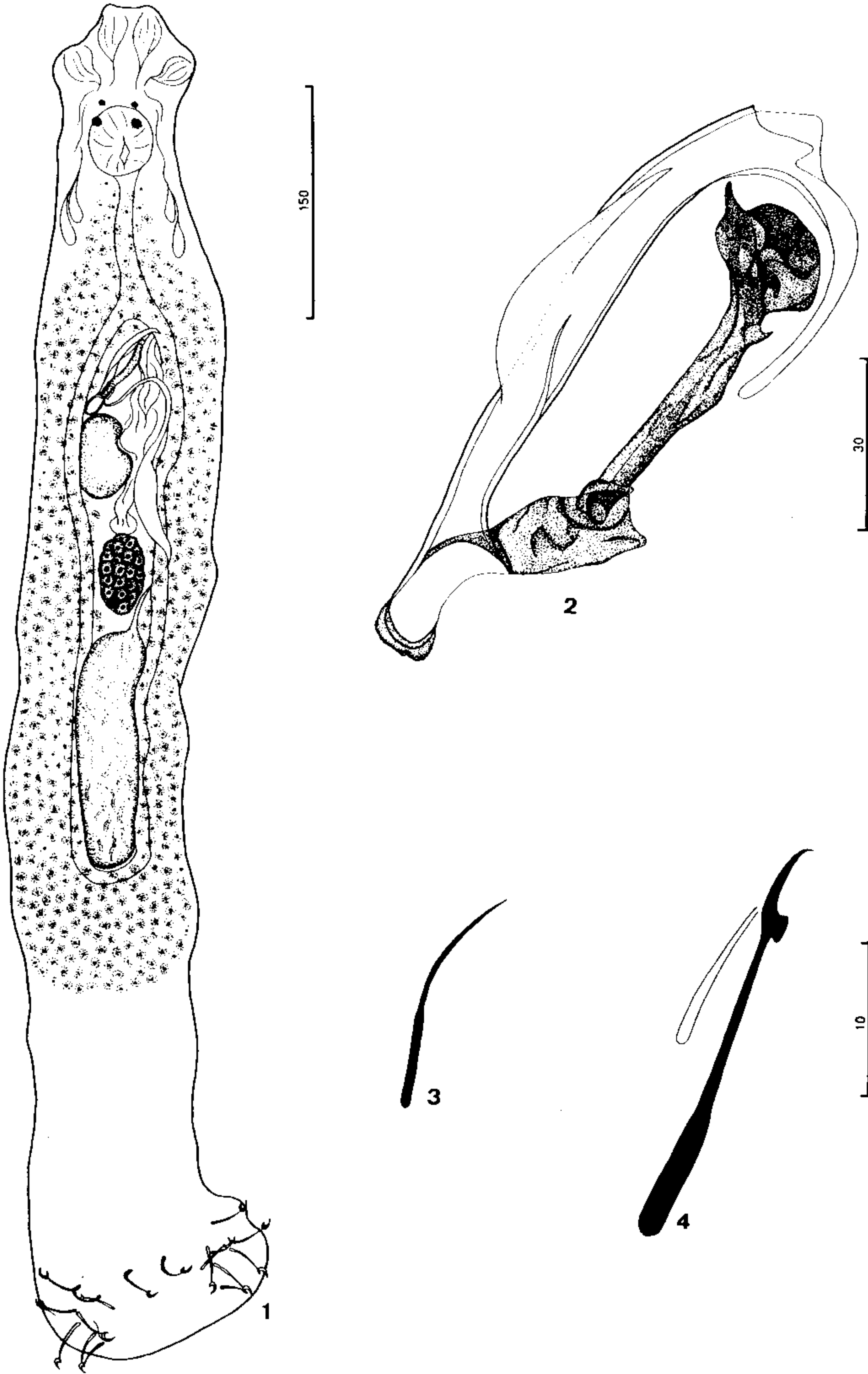
Description (based on 46 specimens): body 732 (560-894; n=20) long; greatest width 112 (91-136; n=20). Cephalic lobes well developed. Two pairs of eyes, anterior pair smaller, slightly closer together than posterior pair, eye granules subovate; accessory granules absent. Pharynx sub-spherical, 38 (34-43; n=20) in diameter. Haptor 68 (45-90; n=20) long, 121 (91-167; n=20) wide, slightly bilobed. Hooks similar, each with truncate slightly depressed thumb, shank with variable enlargement on proximal end; hooks 31 (27-40; n=20) long, FH loop about 0.5 shank length; 4A's similar, each

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*Anacanthorus penilabiatus* n. sp. Fig. 1: composite (ventral). Fig. 2: copulatory complex. Fig. 3: hook 4A. Fig. 4: haptor hook. Figs 3, 4 are drawn to the 10-micrometer scale; all the remaining figures are to their respective scales.

17 (16-19; n=20) long, proximally expanded about 2/3 length. Gonads tandem; testis postovarian, 124 (97-198; n=20) long, 38 (31-62; n=20) wide; germarium 49 (36-62; n=20) long, 29 (16-41; n=20) wide. Prostatic reservoir large, subovate. Copulatory organ, accessory piece articulated by copulatory ligament. Copulatory organ 98 (87-119; n=20) long, oblique base, longitudinal flap near midlength, subterminal aperture with long, posteriorly recurved lip. Accessory piece 54 (47-62; n=20) long, rod shaped, distally spatulated with subterminal pointed projection, proximal end slightly expanded articulated to copulatory ligament. Copulatory ligament thin, flexible, wider than accessory piece.

#### REMARKS

*Anacanthorus penilabiatus* n. sp. is apparently related to the species depicting a copulatory ligament, which articulates the male copulatory organ and accessory piece, and a straight copulatory organ. Among these species, the new species depicts greater similarity to *A. spatulatus* Kritsky and Thatcher, 1979, from *Colossoma macropomum* (Cuvier) and *C. bidens* (Spix), and *A. paraspatulatus* Kritsky, Boeger and Van Every, 1992, from *Mylossoma duriventris* (Cuvier), as indicated by the general morphology of the copulatory complex and hooks. However, *A. penilabiatus* can be easily differentiated from these species by having: 1. a longer "lip" on the distal aperture of the copulatory organ; 2. a median, longitudinal flap on the copulatory organ; 3. a strongly flattened, spatulated distal portion of the accessory piece - in *A. spatulatus* this portion is much less flattened and closely resembles an "ice-cream scoop" and in *A. paraspatulatus* it is pointed and rod shaped.

The specific epithet is derived from Latin and refers to the morphology of the aperture of the cirrus, with long, recurved lip ("peni"=a penis; "labi"=a lip).

Although Van Every and Kritsky (1992) predicted that the species of *Anacanthorus* from *Piaractus* would likely depict an articulated copulatory complex (with copulatory ligament) and a copulatory organ with the tendency to curl, this is

not what has been observed for *A. penilabiatus*. The new species, thus, do not fall into the ingroup analyzed by these authors in their phylogenetic analysis of the *Anacanthorus* from species of three serrasalmid genera. Copulatory complexes with the same general morphology as *A. penilabiatus* are found in many species of *Anacanthorus* parasitizing not only members of Myleinae but also members of several other families of Characiformes (see Kritsky et al. 1992). Thus, an articulated accessory piece with a somewhat straight copulatory organ is symplesiomorphic for the group of *Anacanthorus* of Serrasalminae fishes. Although we expect all *Anacanthorus* spp. from Serrasalminae to represent a monophyletic group, the determination of supporting synapomorphies must wait phylogenetic analysis.

There have been unpublished reports of large mortalities of "pacus", *P. mesopotamicus*, in Brazilian fish farms. Although the hosts of the specimens utilized in this study did not show any conspicuous sign of compromised health, the large infrapopulation numbers of this parasite species encountered suggests that it should be seriously considered in any scrutiny for agents causing these mortalities or other economical losses in aquaculture of this fish species.

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