

**NEOTROPICAL MONOGENOIDEA. 44. MYMAROTHECIUM  
VIATORUM SP. N. (ANCYROCEPHALINAE) FROM THE GILLS  
OF PIARACTUS BRACHYPOMUS (SERRASALMIDAE, TELEOSTEI)  
CAPTURED IN A WARM-WATER CANAL OF A POWER PLANT  
IN SZCZECIN, POLAND**

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*Mymarothecium viatorum* sp. n. (Dactylogyridae, Ancyrocephalinae) is described from the gills of *Piaractus brachypomus* (Teleostei, Serrasalmidae) captured in the warm water canal of a power plant of the city of Szczecin, Poland. The new species is differentiated from other species in the genus by presenting a copulatory ligament that articulates to the accessory piece subterminally (not terminally), posteromedial projection on the ventral and dorsal bars; further, the superficial root of the dorsal anchor bends and articulates to the dorsal bar and the vagina is slightly sclerotized. This is apparently the first species of an introduced Neotropical Monogenoidea collected from the environs of Central Europe.

**Key words:** pirapitinga, *Piaractus brachypomus*, Serrasalmidae, parasite, Monogenoidea, Ancyrocephalinae, *Mymarothecium*, new species

## INTRODUCTION

On June 20<sup>th</sup>, 2002, recreational anglers caught two specimens of what they thought were piranhas in a warm water canal of the “Pomorzany” power plant in the city of Szczecin (Poland). This was the first record of a Serrasalmidae in central Europe, heavily publicized by the local media, especially TV. The fish was later identified as *Piaractus brachypomus*, a species of the group known as “pacus” in Brazil, thus not real piranha, although a member of the same family. Two of us (WP and ES) necropsied these fish for parasites and collected several specimens of a new

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species of Dactylogyridae belonging to *Mymarothecium* Kritsky, Boeger et Jégu, 1996, a genus with species parasitizing piranhas and their relatives in South America. It appears that this is the first record of a South American monogenoid collected in the environs of Europe. This species is described herein.

#### MATERIAL AND METHODS

Two specimens of pirapitinga, *Piaractus brachypomus* were collected by hook and line from the warm water canal of the "Pomorzany" power plant that discharges into the Odra River, in the city of Szczecin (Poland). Gill arches were removed and placed in vials containing 1 : 4000 formalin for 1 h, after which, sufficient formaldehyde was added to obtain a 5% solution. In the laboratory, the contents of each vial were examined under a dissecting microscope and helminths were collected with the aid of probes. Some specimens were stained with Gomori's trichrome for study of internal morphology; others were mounted unstained in Hoyer's mounting medium or in Gray and Wess' medium for study of the sclerotized parts, as described in Kritsky et al. (1986). Measurements, in micrometers, were obtained with an ocular micrometer and follow Kritsky et al. (1986); the average is followed by the range and number of measured structures (n) in parentheses. Illustrations were prepared with the aid of a camera lucida attached to a DIC microscope. Type specimens and vouchers are deposited in the parasite collections of Coleção Helmintológica Fundação Instituto Oswaldo Cruz (CHIOC), Rio de Janeiro, RJ, Brazil; Instituto de Pesquisas da Amazônia (INPA), Manaus, AM, Brazil; United States National Parasite Collection (USNPC), Beltsville, Maryland, USA; Harold W. Manter Laboratory (HWML) as indicated in the description.

#### DESCRIPTION

*Mymarothecium viatorum* sp. n. (Figs. 1–7) (measurements in  $\mu\text{m}$ )

With the characters of the genus (see Kritsky et al. 1996). Body elongate, 431 (382–518; n = 12) long, greatest width 78 (69–89; n = 13), immediately posterior to level of vaginal aperture. Tegument smooth. Cephalic lobes well developed, head organs present. Eyes 4, posterior pair slightly larger than anterior pair; accessory granules few or absent. Pharynx bulbous, 22 (18–25; n = 9) in diameter. Peduncle conspicuous, narrower than posterior trunk, haptor. Ventral anchor 37 (32–40; n = 6) long, with elongate superficial root, evenly curved shaft, point; base 21 (19–24; n = 6) wide. Dorsal anchor 36 (35–40; n = 4) long, with comparatively shorter superficial root often bent, articulates to respective extremities of dorsal bar, curved shaft, elongate point; base 17 (n = 1) wide. Ventral bar (42–71; n = 7) long, broadly V-shaped, with expanded ends, posteromedial process. Dorsal bar 48 (42–64; n = 6) long, broadly V-shaped with slightly expanded ends, short posteromedian process. Hooks 14, similar in shape; each with delicate point, protruding thumb, expanded shank comprising 2 subunits; proximal subunit variable in length between hook pairs;

hook pairs 1–4, 6–7 21 (18–26; n = 19) long; hook pair 5 18 (17–19; n = 3) long. Male copulatory organ 41 (38–51; n = 12) long, a sinuous tube, tapering distally, base skirt like. Accessory piece 43 (40–50; n = 9) long, articulate to MCO by short copulatory ligament, sinuous, with subterminal flap, 1 hook-shaped process. Testis ovate, 33 (n = 1) long, 18 (n = 1) wide; single prostatic reservoir, seminal vesicle fusiform. Germarium ovate, elongate, 93 (70–115; n = 5) long, 23 (22–25; n = 4) wide; oviduct short; ootype not observed. Vaginal aperture dextralateral, often with plug-like structure on the opening; vaginal duct wide, slightly sclerotized; seminal receptacle midventral, ovate. Vitellaria in bilateral fields of trunk.

Type host and locality: *Piaractus brachypomus* (Cuvier, 1818) from the warm water canal of the “Pomorzany” power plant by the Odra River, in Szczecin, Poland (20 June 2002)

Type specimens: Holotype—CHIOC 35041; Paratypes—CHIOC 35042 a–i (n = 9); INPA 418 a–g (n = 7); USNPC 92744 (n = 5); HWML 17610 (n = 5).

#### DISCUSSION

The new species is tentatively allocated to *Mymarothecium* Kritsky, Boeger et Jégu, 1996, based on the presence of a dorso-latero-dextral vaginal aperture, an articulated accessory piece and a non-coiled male copulatory organ, and a medial projection in the ventral bar. While *M. viatorum* resembles most closely *M. whittingtoni* Kritsky, Boeger et Jégu, 1996 as indicated by the more lateral position of the vagina (the other 3 species depict dorsomedial vaginal opening), other features of the new species suggest that it may, in fact, be a member of a new generic taxon. Among these are the accessory piece, dorsal bar, dorsal anchor, and the vagina in *M. viatorum*. Contrary to other species in the genus, the copulatory ligament articulates to the accessory piece subterminally (not terminally); the medial projection on the ventral bar is posterior (not anterior); there is a short posteromedial projection on the dorsal bar; the superficial root of the dorsal anchor bends around and articulates to the dorsal bar; and the vagina is slightly sclerotized. Further, *M. viatorum* is the only species of *Mymarothecium* that parasitizes a non-piranha serrasalmid, a “pirapitinga”, (the regional name for *P. brachypomus* in the Brazilian Amazon).

It is not unusual to find new species of Neotropical Monogenoidea from Neotropical fishes kept in aquaria in other regions of the world (e.g. Mizelle and Price 1965, Harris 1983, 1986). However, as far as we know, this is the first report of a Neotropical monogenoid in a Neotropical fish captured outside of an aquarium in Europe. Hence the Latin name of the species, *M. viatorum* (= voyager).

The fish hosts and their parasites are apparently capable of surviving environmental conditions unusual in their natural geographic distribution (the Amazon). Temperature of the water of the power plant canal varies throughout the year from 7.5°C in the winter to 29°C during the summer. The hosts were also capable of utilizing whatever food resources were available in the canal. While *P.*

*brachypomus* is mostly a fruit feeder and is adapted to the environs and the water dynamics of the Amazon Region, it is capable of surviving on a wide spectrum of food items including leaves, feces, insects, fishes, and bivalves (Goulding 1980). This ability has, most likely, allowed survival of the species in Poland.

While a single species of Monogenoidea has been detected on this fish species in this study, it is unlikely that the same occurs in its native range. Very often, introduced fish species depict a reduced number of species of Monogenoidea. Mizelle and Kritsky (1969) observed only a single species of *Gussevia* (*G. longihaptor*) on specimens of *Cichla ocellaris* (Cichlidae) held in aquaria in California, but when the host was examined from its natural environment in the Amazon Basin, 7 species were found infesting this host (4 species of *Gussevia*, and 3 species of *Sciadicleithrum*) (Kritsky et al. 1986, 1989). *Gussevia longihaptor* comprised the smallest proportion of the population infesting *C. ocellaris* from the natural environment. Kritsky and Boeger (2002) suggest that extinction may explain the absence of species of *Eryhaliotrema* (Dactylogyridae) in *Plagioscion squamosissimus* (Sciaenidae) in river basins in the Neotropics where it was introduced by man. It is possible, also, that sorting of parasite species occurred by “inadequate” sampling of the original community of parasites of the fish when it captured in the wild, in a process analogous to genetic drift.

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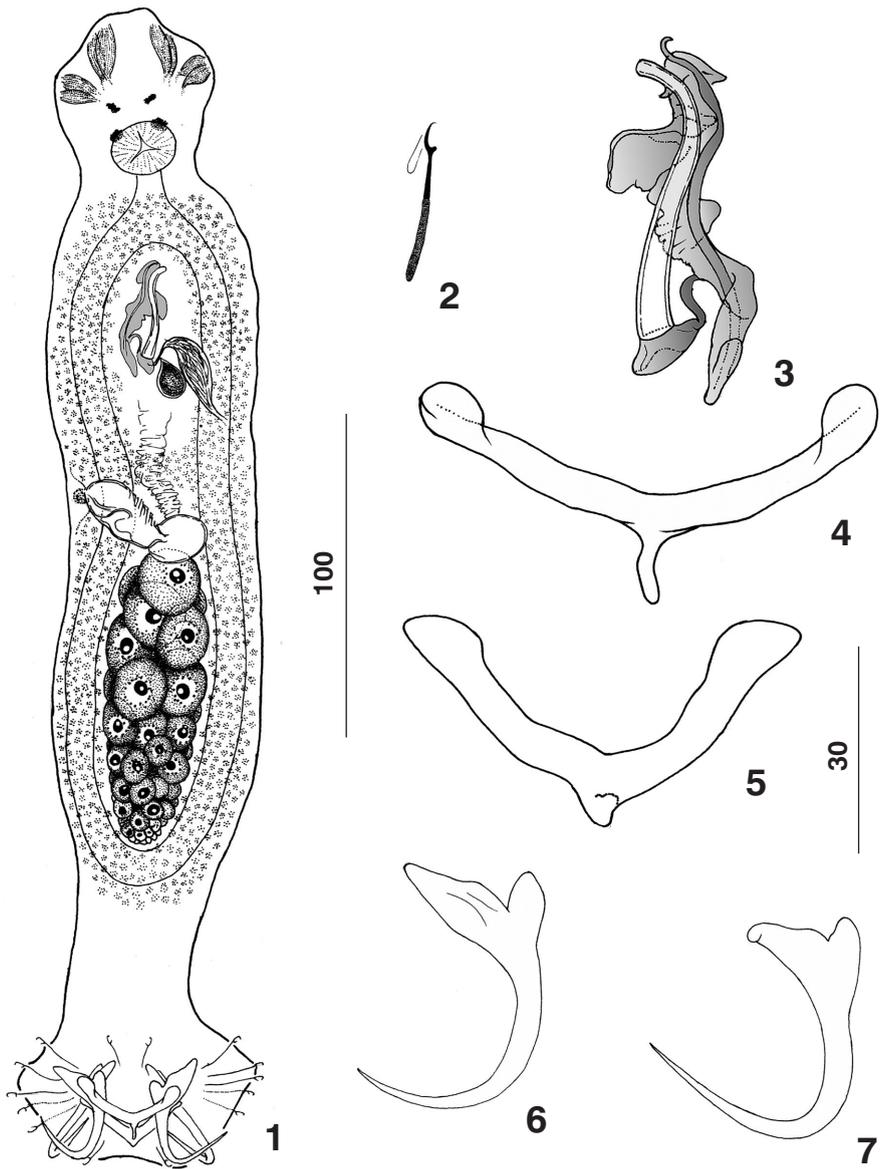


Fig. 1-7. *Mymarothecium viatorum* sp. n. Fig. 1. Holotype (ventral). Fig. 2. Hook. Fig. 3. Copulatory complex. Fig. 4. Ventral bar. Fig. 5. Dorsal bar. Fig. 6. Ventral anchor. Fig. 7. Dorsal anchor. Figures 2-7 are drawn to the 30  $\mu$ m scale.