

First record of *Unibarra paranoplatensis* Suriano & Incorvaia, 1995 (Dactylogyridae: Monogenea) on *Sorubim lima* (Siluriformes: Pimelodidae) from Brazil

Primeiro registro de *Unibarra paranoplatensis* Suriano & Incorvaia, 1995 (Dactylogyridae: Monogenea) em *Sorubim lima* (Siluriformes: Pimelodidae) do Brasil

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Abstract

The aim of this study was to report the first occurrence of *Unibarra paranoplatensis* Suriano & Incorvaia, 1995 on *Sorubim lima* Bloch & Schneider, 1801 from Brazil. On the gills of *S. lima*, *U. paranoplatensis* presented similar morphological and morphometric features to those described for conspecifics infesting *Zungaro zungaro* Humboldt, 1921 except the length, which was higher in the present study, as well as ventral bar shape that was V-shaped open, and with the upper and lower end of the rod relatively sinuous. This study expands the geographic distribution of *U. paranoplatensis* to Brazil, a parasite that has a wide occurrence across South America.

Keywords: Amazon, freshwater fish, helminth, Monogenea, parasite.

Resumo

O objetivo deste estudo foi relatar a primeira ocorrência de *Unibarra paranoplatensis* Suriano & Incorvaia, 1995 em *Sorubim lima* Bloch & Schneider, 1801 do Brasil. Nas brânquias de *S. lima* do Rio Acre, estado do Acre (Brasil), *U. paranoplatensis* apresentou características morfológicas e morfométricas similares às aquelas descritas para *Zungaro zungaro* Humboldt, 1921; com exceção do comprimento que foi maior no presente estudo e formato da barra ventral que foi em forma de V aberto, com a extremidade superior e inferior da barra relativamente sinuosa. Este estudo amplia a distribuição geográfica de *U. paranoplatensis* para o Brasil, um parasito com distribuição na América do Sul.

Palavras-chave: Amazônia, peixe de água doce, helminto, Monogenea, parasito.

Monogenea Van Beneden, 1858 is a taxon strictly parasitic with monoxenic life cycle that occur mainly on gills or body surface of fish hosts. In fishes from South America Monogenea is the most specious group of ectoparasites, with 835 species and of these 471 were described in fishes from Brazil. Dactylogyridae species are the most abundant family in continental waters of South America (LUQUE et al., 2017). The genus *Unibarra* Suriano & Incorvaia, 1995 is monoespecific *Unibarra paranoplatensis* Suriano & Incorvaia, 1995, which was described in the gills from *Zugaro zungaro* Humboldt, 1821 is found in *Pimelodus maculatus* (Argentina); *Aguarunichthys torosus* (Peru), with geographic distribution in three countries of South America (Figure 1), in Amazon, Orinoco, Paraná and Parnaíba river basins (SURIANO & INCORVAIA, 1995; COHEN et al., 2013; MENDOZA-PALMERO et al., 2015). However, this monogenean species has not been reported

in *Sorubim lima* Bloch & Schneider, 1801. This study is the first record of *U. paranoplatensis* in *S. lima* from Brazil.

Thirteen specimens of *S. lima* were collected in June 2017 in the Acre River basin (10°1'59.53"S 67°52'4.93"O), municipality of Rio Branco, State of Acre, Brazil (Figure 1). Live hosts were taken from field to the Laboratory of Aquiculture of the Federal Institute of Education, Science and Technology of Acre, in Rio Branco city, where the fish were euthanized and the gills immediately removed and placed in vials containing heated water 60 °C, for collection of monogeneans. Later, the gills were fixed in 5% formalin during 24 h, preserved in 70% ethyl alcohol and analyzed. For the study of haptor and reproductive hard parts, three specimens were mounted in Hoyer medium for the study of their structures (EIRAS et al., 2006). Ecological terminology follows Bush et al. (1997).

All procedures involving animals were authorized by the Instituto Chico Mendes para Conservação da Biodiversidade (SISBIO, Nº 60899-1) and were strictly according to the protocols and

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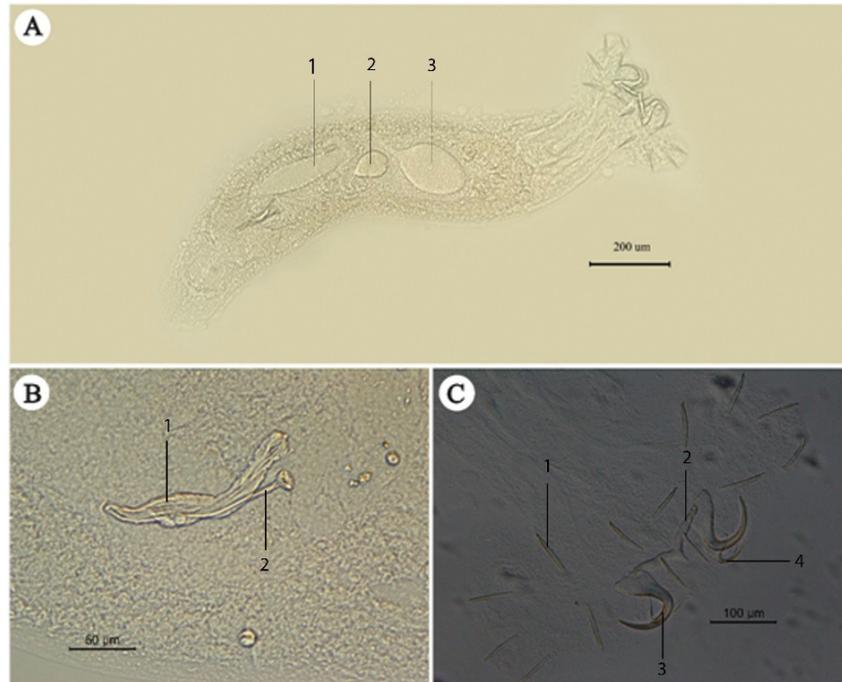


Figure 1. *Unibarra paranoplatensis* in *Sorubim lima* from the Acre River, in Brazil with Receptacle seminal (1), Seminal vesicle (2), Ovary (3) (A); Male Copulatory Organ (2), with Accessory piece (1) (B) and Haptor with hooks similar (1), transverse ventral bar (2), Anchor ventral (3), Anchor dorsal (4) (C).

rules of the Committee on Ethics of Animal Use of the Embrapa Amapá (Protocol: N° 002-CEUA-CPAFAP). Voucher specimen was deposited in the Coleção Científica de Fauna do Amapá (CCFA) do Instituto de Pesquisas Científicas e Tecnológicas do Estado do Amapá (IEPA), Macapá, Amapá State (Brazil).

Morphological and morphometric analyses were performed using a computerized image analysis system with differential interference contrast (LAS 3.8, LEICATM). Measurements, all in micrometers, represent straight-line distances between extreme points of the structures measured and are expressed as mean and range (in parentheses) (Table 1). The terminology specific to *Unibarra* follows Suriano & Incorvaia (1995).

Unibarra paranoplatensis Suriano & Incorvaia, 1995 (Figure 2)

Taxonomic summary

Host: *Sorubim lima* Bloch & Schneider, 1801

Locality: Acre River, Acre State, Brazil (09° 59'05.53" S, 67° 49'16.54" O)

Voucher number: 155 (CCFA)

Prevalence: 23% (3 infected fish 13 examined fish), mean intensity of infection: 1 parasite per infected host.

Remarks

Unibarra paranoplatensis is known to infect *Z. zungaro*; *Pimelodus maculatus* Lacépède, 1803 (SURIANO & INCORVAIA, 1995); *Pimelodus albicans* Valenciennes, 1840 (GUTIÉRREZ, 2001) and *Aguarunichthys torosus* Stewart, 1986

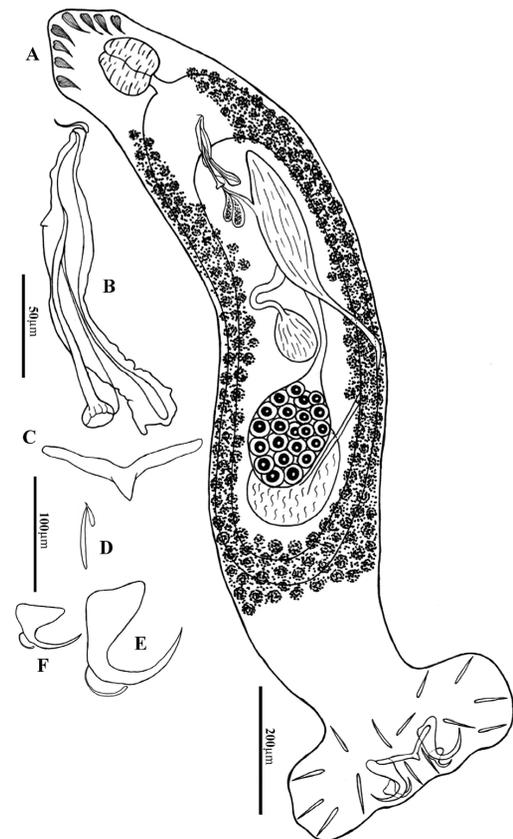


Figure 2. *Unibarra paranoplatensis*, parasite of gills of *Sorubim lima* from the Acre River, Brazil. A - composite drawing, ventral view; B - male copulatory organ, dorsal view; C - ventral bar; D - hook pairs 1 to 7; E - ventral anchor; F - dorsal anchor.

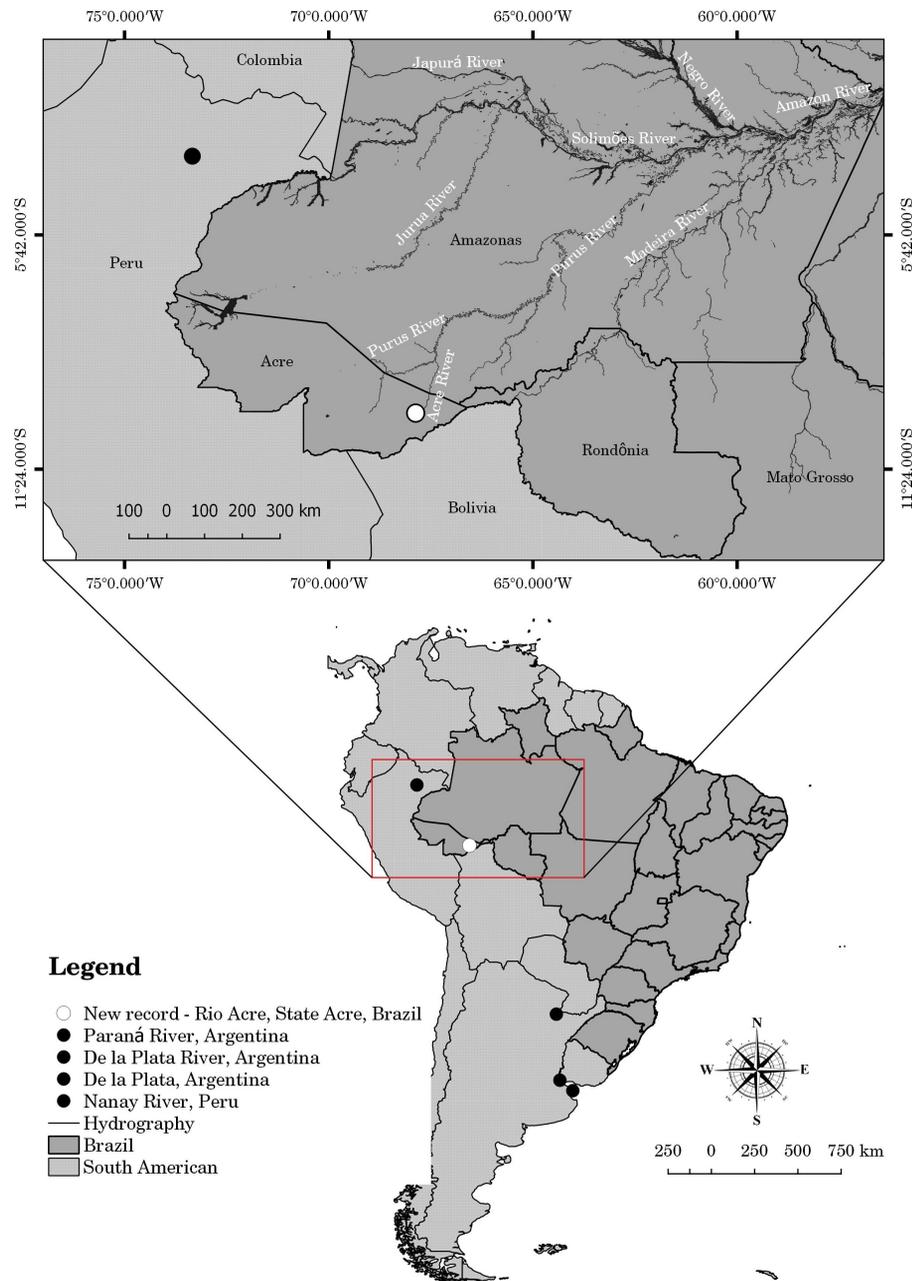


Figure 3. Geographic distribution of *Unibarra paranoplatensis* in South America.

(MENDOZA-PALMERO et al., 2015), and have distribution in pimelodid fish from the South America (Figure 1).

Unibarra paranoplatensis of *S. lima* presented similar morphology to described for conspecific infesting *Z. zungaro*. Presence of a single haptor transverse bar (ventral), the hooklets similar in size and shaped (Figure 3C), absence of eyespot, conspicuous filament which connects the base of the male copulatory organ sclerotized, tubular with variable accessory piece, seminal vesicle dilatation of the vas deferens; two prostatic reservoirs (Figure 3A) and similar male copulatory organ (Figure 3B) and two pairs of anchors (Figure 3C). However, the ventral bar was longer in the specimens of the present study, as well as the higher vaginal canal

(Table 1). In addition, the morphology of the ventral bar has an open V shape with the superior and inferior extremity relatively (Figure 3C), while for *U. paranoplatensis* from *Z. zungaro* there is the presence of a transverse ventral bar and vaginal canal longer to be less, which are not a characters that supports the description of a new species, since it can be caused by intraspecific variation of this structure, possibly due to changes associated with the host biology or parasite features. This is the only species described for the *Unibarra* genus and its main characteristic is the haptor with one transverse haptor bar and two pairs of hamuli (anchors) (SURIANO & INCORVAIA, 1995), confirming that the species of the present study is similar to *U. paranoplatensis*.

Although *S. lima* have distribution in Amazon, Paraná and Parnaíba river basins (Brazil), this is first report of *U. paranoplatensis* for host from the Brazil, more specifically from Acre River, the Amazon basin.

Table 1. Morphometric comparison of *Unibarra paranoplatensis* (N = 3), from *Zungaro zungaro* and *Sorubim lima* (n = 13).

Measurements	<i>Zungaro zungaro</i> (Type host)	<i>Sorubim lima</i> (Present study)
Body long	2500 (1250-2900)	2095 (2070-2120)
Greatest width	560 (320-578)	370 (307-371)
Pharynx width	175 (70-183)	134 (124-144)
Male copulatory organ	215 (153-230)	149 (146-151)
Accessory piece length	208 (135-210)	167 (165-168)
Vaginal canal long	75 (70-77)	159 (140-178)
Posteromedial process	33 (23-35)	25 (23- 25)
Ventral bar	110 (108-113)	165 (164-167)
Ventral anchor		
A	80 (78-105)	71 (70-73)
B	88 (35-90)	52 (49-53)
C	20 (14-25)	26 (25-28)
D	55 (34-57)	63 (61-64)
Dorsal anchor		
A	32 (30-35)	32 (30-34)
B	35 (32-36)	32 (30-34)
C	12 (11-13)	13 (11-14)
D	34 (30-37)	34 (33-34)
Hook 1-7	65 (61-70)	68 (60-74)

A: distance from tip of superficial root to curve of de blade; B: distance from superficial root – deep notch to curve of the blade; C: length of superficial root; D: distance from tip of blade to curve of blade.

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