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Metazoan parasites of *Pseudoplatystoma punctifer* (Linnaeus, 1766) and *Pseudoplatystoma tigrinum* (Spix & Agassiz, 1829) (Siluriformes: Pimelodidae) of the Central Amazon Basin, Brazil

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RESUMO

Foi estudada em bagres a fauna parasitária de 21 espécimes de *Pseudoplatystoma punctifer* e 9 espécimes de *Pseudoplatystoma tigrinum* (Pisces: Siluriformes: Pimelodidae) da Amazônia Central. Em *P. punctifer* foram encontrados 12.371 parasitas: 2 Monogenoidea, *Vancleavius fungulus* e *Pavanelliella pavanellii*; 2 Nematoda, *Goezia spinulosa*, *Spirocamallanus inopinatus* e larvas; 2 Cestoda, *Spatulifer rugosa* e *Nomimoscolex* sp.; 3 Copepoda, *Ergasilus* sp., *Gamidactylus* sp. e *Vaigamus* sp.; 3 Branchiura, *Argulus multicolor*, *A. pestifer e Dolops geayi*, além de 1 Digenea, metacercária ordem Strigeoidea, e 1 Isopoda da familia Cymonthoidae. Em *P. tigrinus* foram encontrados 4.227 parasitas: 2 Monogenoidea, *Vancleavius fungulus* e *Pavanelliella pavanellii*; 2 Copepoda, *Ergasilus* sp. e *Vaigamus* sp.; 2 Branchiura, *Argulus multicolor* e *A. pestifer,* além de larvas não identificadas de Nematoda. Em cada peixe ocorreu pelo menos 2 taxons, o Monogenoidea *Vancleavius fungulus* foi prevalente. Com exceção de *Ergasilus* sp., os parasitas apresentaram distribuição agregada. Não foi observada correlação significante entre o comprimento do hospedeiro e a abundância de parasitas para ambas as espécies de peixes estudadas.

Palavras-chave: ecologia parasitária, ictioparasitologia, bagres, Amazônia Central.

ABSTRACT

It was studied in catfish the parasitic fauna of 21 specimens of *Pseudoplatystoma punctife*r and 9 specimens of *Pseudoplatystoma tigrinum* (Pisces: Siluriformes: Pimelodidae), from the Central Amazon Basin. In *P. punctife*r were found 12,371 parasites: 2 Monogenoidea, *Vancleavius fungulus* and *Pavanelliella pavanellii*; 3 Nematoda larvae, *Goezia spinulosa*, *Spirocamallanus inopinatus*; 2 Cestoda, *Spatulifer rugosa* and *Nomimoscolex sp*.; 3 Copepoda, *Ergasilus sp*. *Gamidactylus* sp. and *Vaigamus* sp.; 3 Branchiura, *Argulus multicolor*, *A. pestifer* and *Dolops geayi*; plus 1 Digenea, metacercariae order Strigeoidea, and 1 Isopoda of the family Cymonthoidae. In *P. tigrinum* were found 4,227 parasites: 2 Monogenoidea, *Vancleavius fungulus* and *Pavanelliella pavanelli*; 2 Copepoda, *Ergasilus sp*. and *Vaigamus* sp., 2 Branchiura, *Argulus multicolor* and *A. pestifer;* plus unidentified larvae of Nematoda. In a single fish occurred at least 2 taxa, the prevalent was the Monogenoidea *Vancleavius fungulus*. Except for *Ergasilus* sp., the parasites showed contagious distribution. No significant correlation was verified between the host length and parasite abundance for both species of the studied fishes.

Keywords: parasitic ecology, ichthyoparasitology, catfish, Central Amazon Basin.

INTRODUCTION

The catfish genus *Pseudoplatystoma* Bleeker, 1862 was until recently represented in South America by three species: *P. fasciatum* (Linnaeus, 1766), *P. corruscans* (Spix & Agassiz, 1829) and *P. tigrinum* (Valenciennes, 1840). Recent revision of this genus (Buitrago-Suarez & Burr, 2007) described five more species; *P. fasciatum* of the Amazon River was synonymized with *P. punctifer*, and *P*. *fasciatum* of the Paraná and Paraguay Rivers is *P. reticulatum.*

From the viewpoint of food consuption by the reverine inhabitants, the catfish have widespread importance in the Amazonas state, because the local people traditionally do not have the habit of consuming "smooth fish". From the commercial viewpoint, during the rainy season these fish reach the best prices among the Siluriformes in the Manaus market (Zuanon, 1990; Ferreira *et al*., 1998).

Catfish are piscivorous, but there is a large number of food items in their diets, indicating opportunistic habits (Resende *et al*., 1995; Ferreira *et al.*, 1998). This behavior opens a large door to parasitism and the development of many pathologies in these fish, while the aquatic environment promotes the parasites lifecycle and propagation (Malta, 1984).

Studies on fish parasitology and pathology are a growing field of research, considering that these organisms may cause extensive damage to their hosts and most parasites are still undescribed. Due to the economic importance that fish represent to theAmazon region and to aquiculture, this study evaluated the parasitic fauna and aspects of the community structure of the catfish *Pseudoplatystoma punctifer* and *P. tigrinum* from the Central Amazon Basin, Brazil.

MATERIAL AND METHODS

During May-September 2005 were autopsied 21 specimens of *Pseudoplatystoma punctife*r and 9 specimens of *Pseudoplatystoma tigrinum* looking for parasites. The fish, acquired from fishermen of the market fair (Ceasa) in Manaus, were captured in the Negro and Solimões Rivers, near the town of Careiro da Várzea, region of Manaus.

Weight, length and gender of the collected fish were recorded. Parasites were collected, fixed and prepared according to specific methods for each group (Eiras *et al.*, 2006). Voucher specimens of *P. punctifer* and *P. tigrinum* are deposited in the Fish Collection of Inpa, numbers 25499 and 25500.

Parasite analysis were focused on prevalence, intensity, mean intensity and abundance indices (Bush *et al*., 1997), applied to the species whose prevalence was > 10%. The importance value was applied to verify the importance of each parasite species in the community (Hanski, 1982). Based on prevalence, the parasite species were considered as central, secondary or satellite.

The quotient between variance and average parasite abundance (dispersion index) was verified for each parasite species, in order to determine the distribution pattern. The level of aggregation was obtained through the Green's index (Ludwig & Reynolds, 1998). Student's *t* test was applied to verify the significance of the differences between weigth of the sex of the fish samples.

Sperman's rank correlation was applied to verify the relationship between the length of the host and parasite abundance. Pearson's *r* coefficient was utilized to verify the correlation between length classes and parasite prevalence (Zar, 1996).

Similarity between two sampled fish communities was verified through Sorensen's similarity coefficient (Serra-Freire, 2002). All analyses were carried out with Bioestat ® 4.0 (Ayres *et al*., 2005), and considered significant at $p<0.05$.

RESULTS

In *P. punctifer*, the females (13) average length was 56.18 cm, weight 1,300 g; males (8) length was 55.65 cm, weigth 1,200 g. In *P. tigrinum*, the females (5) average length was 51.92 cm, weight 1,380 g; males (4) length was 44.33 cm, weigth 670.0 g.

At least 2 parasite species ocurred in a single *P. punctifer* individual, among 12,371 parasites observed in this fish: 2 Monogenoidea, 1 Digenea, 2 Nematoda, 2 Cestoda, 3 Copepoda, 3 Branchiura and 1 isopod (Table 1). For *P. tigrinum* at least 3 species of parasites ocurred in a single individual, among 4,227 parasites: 2 Monogenoidea, Nematoda larvae, 2 Copepoda and 2 Branchiura (Table 2).

Among the parasites of *P. punctifer*, 92% (11,542) were adults and 8% (829) were larvae. The Nematoda larvae showed 63.3% of prevalence (525), in the Strigeoidea (Digenea) metacercariae the prevalence was 36.3% (301). Of the 7 groups parasitizing *P. punctifer*, 3 were endoparasites and 4 ectoparasites.

The most prevalent parasites were *Vancleavius fungulus* Kritsky, Thatcher & Boeger, 1986 (100%), and *Nomimoscolex* sp. (76%). The less prevalent parasites were the Nematoda *Goezia spinulosa* (Diesing, 1839) (0.38%) and *Procamallanus inopinatus* Travassos, 1929 (0.04%). The most abundant parasites were *V. fungulus* (397.7) and

Nomimoscolex sp. (82.9). The less abundant (0.04) were *Argulus pestifer* Ringuelet, 1948, *Dolops geayi* (Bouvier, 1897) and the Isopod family Cymonthoidae (Table 1).

Except for Nematoda larvae and a single *A. multicolor* Stekhoven, 1937, all other parasites observed in *P. tigrinum* were adults (53.5%). Like in the other fish, the most prevalent parasite observed in *P. tigrinum* was *V. fungulus* (100%); the less prevalent was *A. multicolor* (11%). The less abundant parasite were the copepodes *Ergasilus* sp. (1.5) and *Vaigamus* sp. (4.3).

The Nematoda larvae (not identified, probably all the same species) was 251.1 parasites per fish. For *P. punctifer* 10 parasite species had prevalence greater than 10%; for *P. tigrinum* all the parasite species had prevalence greater than 10%.

The dominance coefficient applied to the infracommunities of *P. punctifer* indicated that 68.2% of the community was dominated by the Monogenoidea species *V. fungulus*, followed by the cestode *Nomimoscolex* sp. (14.29%); these two species accounted for 82.49% of the community (Table 3).

The dominance coefficient for *P. tigrinum* indicated two prevailing groups: Nematoda larvae (53.44%) and the Monogenoidea *V. fungulus* (43.41%), accounted for 96.85% of the community (Table 4).

The value of importance for the parasite community of *P. punctifer* indicated that the infracommunity is structured by 5 central, 3 secondary and 7 satellite species (Table 5). The value of importance for the parasite species of *P. tigrinum* indicated a single central species; most of the community was represented by 4 secondary and 2 satellite species (Table 6).

Most of the parasite taxa showed clumped distribution, for both studied fish. Only 1 parasite species in *P. punctifer* (*A. multicolor*) and 2 in *P. tigrinum* (*A. multicolor* and *A. pestifer*) showed regular distribution (Tables 7-8).

No significant differences were observed in the males and females length and weight of *P. punctifer* and *P. tigrinum* (length: t=0.153, p=0.879; t=0.651, p=0.535 respectively), (weight: t=0.680, p=0.504; t=0.916, p=0.389 respectively). Thus, the correlation analysis were applied taking the length and weight of all fish.

In *P. punctifer*, only *Ergasilus* sp. had positive correlation between the length and abundance (p=0.01); no parasite species had positive correlation between length and prevalence. In *P. tigrinum*, the parasite *Ergasilus* sp. also had positive correlation between length and abundance ($p<0.05$). The correlation between prevalence and length was positive for one parasite, the copepode *Vaigamus* gen.n. (p=0.02). The Soerensen's similarity index in both studied fish communities was 63.0%.

DISCUSSION

The fact that most of the collected fish were *Pseudoplatystoma punctifer* may be related to the greater abundance of this species in the rivers of the Amazon Basin. Fishing data in the Manaus port during 1994-1996 showed that *P. punctifer* was 4.8 times more captured than *P. tigrinum* (Batista, 2004). In this present study, *P. punctifer* was 2.3 times greater than *P. tigrinum*.

Both studied fish are mainly piscivorous, feeding on a great variety of fish species belonging to many families (Resende *et al.*, 1995; Zuanon, 1990; Reid, 1983). Thus, the feeding habit of the examined species possibly explains the fact that they have high parasitological indices and high number of collected parasites. Carnivorous fish feed on a large number of fishes, acquiring great diversity of parasites from their preys.

Machado *et al.* (1996), reported 10 species of helminthes (5 Nematoda, 5 Cestoda) in the intestines *of Pseudoplatystoma corruscans*

Table 1. Parasite indexes of *Pseudoplatystoma. punctifer* obtained in the Ceasa market fair, in Manaus, central Amazon, in the period between May and September 2005.

Parasite species	TN	P%	MI	MA
Monogenoidea				
Vancleavius fungulus	8,352	100	397.7	397.7
Pavanelliella pavanellii	294	76.0	18.3	14
Digenea				
Strigeoidea (metacercariae)	301	61.9	23.1	14.3
Nematoda				
Goezia spinulosa	33	0.38	4.25	1.6
Spirocamallanus inopinatus	6	0.04	6	0.28
Larvae	525	76.1	32.8	25
Cestoda				
Spatulifer rugosa	899	71.4	59.9	42.8
Nomimoscolex sp.	1,341	85.7	96.7	82.9
Copepoda				
Ergasilus sp.	83	57.1	6.8	3.95
Vaigamus sp.	22	28.7	18	5.14
Branchiura				
Argulus multicolor	4	19.0	1	0.19
Argulus pestifer	1	4.7	1	0.04
Dolops geayi	1	4.7	1	0.04
Isopoda				
Cymonthoidae	1	4.7	1	0.04

TN - Total number of specimens; P% - Prevalence; MI - Mean intensity; MA - Mean abundance.

Table 2. Parasite indexes of *Pseudoplatystoma tigrinum* obtained in the Ceasa market fair, in Manaus, Central Amazon, in the period between May and September 2005.

Parasite species	NT	P%	MI	MA
Monogenoidea				
Vancleavius fungulus	1,839	100	204.3	204.3
Pavanielliella pavanellii	68	44	17	7.5
Nematoda				
Larvae	2.264	44	566	251.5
Copepoda				
Ergasilus sp.	14	44	3.5	1.5
Vaigamus sp.	39	33	13	4.3
Branchiura				
Argulus multicolor	1	11	1	11
Argulus pestifer	2	22	1	22

TN - Total number of specimens; P% - Prevalence; MI - Mean intensity; MA - Mean abundance.

Table 3. Classification of the parasite species according to the degree importance for the parasite infracommunity of *Pseudoplatystoma. punctifer* captured in the Negro and Solimões rivers, Central Amazon.

Parasite species	**P (%)**	**Classification**
Vancleavius fungulus	100	Central
Nomimoscolex sp.	85.7	Central
Pavanelliella pavanellii	76.0	Central
Larvae of Nematoda	76.1	Central
Spatulifer rugosa	71.4	Central
Strigeoidea (metacercariae)	61.9	Secondary
Ergasilus sp.	57.1	Secondary
Gamidactylus sp.	33.3	Secondary
Vaigamus sp.	28.7	Satellite species
Argulus multicolor	19.0	Satellite species
Argulus pestifer	4.7	Satellite species
Isopod	4.7	Satellite species
Dolops geayi	4.7	Satellite species
Goezia spinulosa	0.8	Satellite species
Spirocamallanus inopinatus	0.04	Satellite species

Table 4. Classification of the parasite species according to the degree importance for the parasite infracommunity of *Pseudoplatystoma. tigrinum* captured in the Negro and Solimões rivers, Central Amazon.

Parasite species	**P (%)**	**Classification**
Vancleaveus fungulus	100	Central
Pavanelliella pavanellii	44	Secondary
Larvae of Nematoda	44	Secondary
Ergasilus sp.	44	Secondary
Vaigamus sp.	33	Secondary
Argulus multicolor	11	Satellite species
Argulus pestifer	22	Satellite species

Table 5. Dispersion index (DI) values and Green´s aggregation index (GI) of *P. punctifer* collected in the Negro and Solimões rivers, Central Amazon.

Parasite species	**ID**	**IG**	**Dispersion type**
Vancleavius fungulus	1,953.17	0.3	Clumped
Pavanelliella pavanellii	14	0.04	Clumped
Strigeoidea (metacercariae)	35.79	0.11	Clumped
Larvae of Nematoda	58.2	0.10	Clumped
Spatulifer rugosa	88.97	0.09	Clumped
Nomimoscolex sp.	125.11	0.07	Clumped
Ergasilus sp.	11.5	0.20	Clumped
Gamidactylus sp.	5.49	0.21	Clumped
Vaigamus sp.	41.09	0.37	Clumped
Argulus multicolor	0.85	-0.05	Uniform

Table 6. Dispersion index (DI) values and Green's aggregation index (GI) of *P. tigrinum* collected in the Negro and Solimões rivers, Central Amazon.

Parasite species	**ID**	**IG**	**Dispersion type**
Vancleavius fungulus	54.64	0.02	Clumped
Pavanelliella pavanellii	25.42	0.36	Clumped
Vaigamus sp.	34.67	0.88	Clumped
Ergasilus sp.	3.23	0.17	Clumped
Argulus multicolor	1	0.00	Uniform
Argulus pestifer	0.875	-0.12	Uniform
Larvae of Nematoda	2.171	0.96	Clumped

(=*P. reticulatum*) from the Paraná River Basin. Santos *et al*. (2003) reported five helminthes in the intestines of *P. corruscans* (=*P. reticulatum*) and *P. fasciatum* (=*P. punctifer*) in the Pantanal of the Mato Grosso do Sul state. Campos *et al*. (2008) reported 13 helminthes in the intestines of *P. fasciatum* from Aquidauana River, Pantanal of the Mato Grosso do Sul state. In this present study, for *P. punctifer* 6 taxa were endoparasites, 8 were ectoparasites; for *P. tigrinum* 1 species was endoparasite, 6 were ectoparasites.

Kohn *et al*. (1997) reported *Prosthenhystera obesa* (Diesing, 1850) (Callodistomidae, Digenea) parasitizing the gallbladder of 19 fish species, including *P. corruscans* (=*P. reticulatum*). The pathogenicity of digenetic metacercariae may vary in function of the number of larvae present in the hosts. The metacercariae can be encysted in a single

Table 7. Values of Spermam's correlation coefficient by posts (rs) and Pearson's coefficient (*r*) for the evaluation of the relation between total length of *P. punctifer* and its abundance and prevalence.

Parasite species	**rs**	**P**	***r***	**p**
Vancleavius fungulus	-0.332	0.886	-0.548	0.451
Pavaneliella pavanellii	0.136	0.555	-0.604	0.396
Ergasilus sp.	-0.419*	0.058	-0.848	0.151
Vaigamus sp.	-0.164	0.475	-0.971*	0.028
Gamidactylus sp.	0.042	0.855	0.797	0.202
Strigeoidea	-0.025	0.911	0.900	0.099
Larvae of Nematoda	-0.062	0.788	0.701	0.298
Nomimoscolex sp.	0.154	0.504	-0.794	0.205
Spatulifer rugosa	0.211	0.357	-0.78	0.203
Argulus multicolor	-0.010	0.965	0.061	0.938

p = significance level; * Significant values.

Table 8. Values of Spermam's correlation coefficient by posts (rs) and Pearson's coefficient (r) for the evaluation of the relation between total length of *P. tigrinum* and its abundance and prevalence.

Parasite species	**rs**	**p**	***r***	**p**
Vancleavius fungulus	0.085	0.827	-0.637	0.362
Pavaneliella pavanellii	0.447	0.226	0.108	0.891
Vaigamus sp.	0.549	0.125	0.108	0.891
Ergasilus sp.	-0.774*	0.014	-0.871	0.128
Argulus multicolor	-0.105	0.786	-0.00	0.991
Argulus pestifer	0.317	0.405	0.557	0.442
Larvae of Nematoda	-0.130	0.737	-0.186	0.813

p = significance level; * Significant values.

place in the host organism, but if migrates may cause damage to the host (Thatcher, 2006).

Thatcher (1981) observed the occurrence of metacercariae in various fish species from the Amazon region, such as *Diplostomum* sp. in the eyes of *Odhneriotrema microcephala* (Travassos, 1922) and in the gonads of *Pterygoplichthys pardalis* (Castelnau, 1855), *Clinostomum marginatus* (Rudolphi, 1819) in the body surface of *Cichla ocellaris* (Bloch & Schneider, 1801) and *Crenicichla* sp. In this preset study it was observed the occurrence of Strigeoidea metacercariae in the mesentery of *P. punctifer*.

In the last years the literature reported 13 cestodes parasites for *Pseudoplatystoma* (Rego, 1989, 1990, 2002; Pavanelli & Rego, 1992; Zehnder & Chambrier, 2000). In this present study 2 cestodes were observed. This small number is probably because the exemplars were not properly fixed, resulting in a pool of species placed into a single genus, *Nomimoscolex*, and a single species, *Spatulifer rugosa* Woodland, 1935.

The 2 most prevalent parasite in the infracommunity of *P. tigrinum* was the Nematoda larvae (53.44%) and the Monogenoidea *V. fungulus* (43.41%). According to Eiras (1994), Monogenoidea have a very simple life cycle (monoxenic), not depending on intermediate hosts, so the number of new infecting parasites is easier to obtain.

The dominance of Nematoda in *P. tigrinum* was because the larvae were concentraded (2229) in the mesentery of a single fish. This corroborates the idea that many hosts carry few parasites and few hosts carry many parasites (Anderson & Gordon, 1982).

Branchiurans had the lowest dominance coefficient, probably because they are ectoparasites, going out while handling and fish transport. Malta (1984) reported 6 branchiurans species parasitizing *P. punctifer* and *P. tigrinum* from the Lake Janauacá, region of Manaus. Mamani *et al*. (2004) reported 7 branchiurans for *Pseudoplatystoma tigrinum* and *P. fasciatum* from Bolivia, with prevalence of 35%. In this present study, these values were low, prevalence was 0.02%-0.08%. However, for the first time it is describe *Argulus multicolor* parasitizing the two studied fish species, and it is the first record of *Dolops geayi* infecting *Pseudoplatystoma punctifer*.

Central, secondary and satellite species are components of the parasite infracommunity (Bush *et al*., 1997): i) the central species are present in more than 2/3 of the hosts, ii) the secondary species are present in 1/3 to 2/3 of the hosts, iii) the satellite species are present in less than 1/3 of the hosts. In this present study, the Monogenoidea, Nematoda larvae and the Cestoda were central in the parasitic infracommunity of *P. punctifer*. In *P. tigrinum*, the central and secondary taxa were composed by Monogenoidea, Nematoda larvae and Copepoda. The Monogenoidea *V. fungulus* was the species with the highest dominance coefficient, an interesting fact to be explored in future studies.

Nematoda larvae had the central position in *P. punctifer* and the secondary one in *P. tigrinum*. These facts may be related to the feeding habits of the hosts, that would receive the parasites from their preys.

Rego (2002) recorded 12 cestodes species parasitizing *P. punctifer* and *P. tigrinum*. The cestodes, considered central species, spend part of its life cicle parasitising zooplanktophagic fish, which are the main food resource for both studied fish. So, in this present report, the high cestode infestation in *P. punctifer* can be explaning by its feeding behavior. It was not observed cestode parasitizing *P. tigrinum*, probably because of the low number of autopsied specimens, since both *Pseudoplatystoma* studied have similar feeding habits.

It is expected low transmission rate with which satellite species colonize their hosts, related to a lower availability of intermediate hosts and infecting forms (Souza, 1994). In this present study, the species considered satellite species were the Branchiura crustaceans, ectoparasites that can leave the host when handled and transported.

One of the characteristics of parasites infestation is the clumped distribution in vertebrates hosts (von Zuben, 1997), reflecting that most hosts tend to shelter few parasites, while few hosts carry most of the parasite population (Poulin, 1993). It is in these few hosts with many parasites that density-dependent processes exert their influence (Anderson & Gordon, 1982).

The majority of the parasites found in the present studied had clumped distribution, as reported by Machado *et al*. (1996) for *P. corruscans* and *Schizodon borelli* Boulenger, 1990, and also reported by Luque *et al*. (1996), Luque & Alves (2001), Guidelli *et al*. (2003), Alves *et al*. (2004) and Isaac *et al*. (2004) for other parasite groups. The clumped dispersion may have originated by: i) the behavior heterogeneity of the host, ii) spatial aggregation in the distribution of infecting stages, iii) differences of susceptibility and capacity of the immunological response of the hosts (Anderson & Gordon, 1982; von Zuben, 1997).

According to Kennedy (1997) *(apud* Luque *et al*.,1996), homogeneous distribution is rare in fish parasites. Factors that may generate uniform distribution are the parasite mortality, processes dependent of the density and host mortality induced by the parasite (von Zuben, 1997). In this present study, the species with homogenous distribution were *Argulus multicolor* in *P. punctifer*, and *A. pestifer* in *P. tigrinum*.

The length of the fish may be considered reflex of the age, one of the most important factors in the variation of the parasite infrapopulations and in the accumulation of parasites throughout the life (Shotter, 1973, *apud* Alves, 2001). In the present study, were not significant the differences between total length and prevalence, and total length and abundance.

Machado *et al*. (1996) studied the influence of the *Pseudoplatystoma corruscans* length related to the endoparasite communities. They reported positive correlation between host length and prevalence for 2 parasite species, and positive correlation between length and infestation intensity for 5 species, in 10 parasite species. In this present study were not significant the correlation between total length x prevalence, and total length x abundance, maybe because of the size selectivity of the fish (collected by professional fishermen), in accordance to the commercial size.

The similarity observed in this study may reflect the equality of the host behavior in the trophic level, suggesting the existence of ecological interactions between the two studied species (Serra-Freire, 2002). The community showed a high level of similarity coefficient (63.3). In a certain way this was expected, considering that the two studied fish species have similar feeding habitats and were captured in the same environment.

The differences of the parasite fauna composition in this study were caused by the occurrence of cestodes and metacercariae in *P. punctifer*, and the absence of these parasites in *P. tigrinum*. This fact may be explained by the low number of sampled *P. tigrinum* specimens bearing no parasites, since there are records of cestodes parasitizing *P. tigrinum* in the Amazon Basin (Rego, 2002; Thatcher, 2006).

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