

## **INVENTÁRIO DA COMUNIDADE DE MACROINVERTEBRADOS BENTÔNICOS EM RIOS E RIACHOS DO PARQUE NACIONAL DO IGUAÇU, BRASIL**

### **INVENTARIO DE LA COMUNIDAD DE MACROINVERTEBRADOS BENTÓNICOS EN RÍOS Y ARROYOS DEL PARQUE NACIONAL DO IGUAÇU, BRASIL**

### **CHECKLIST OF THE BENTHIC MACROINVERTEBRATES COMMUNITY IN RIVERS AND STREAMS FROM THE PARQUE NACIONAL DO IGUAÇU, BRAZIL**

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#### **Resumo**

Este estudo apresenta o primeiro inventário faunístico de macroinvertebrados bentônicos, amostrados em alguns rios e riachos do Parque Nacional do Iguaçu. Do ponto de vista da conservação, tais ambientes são importantíssimos, pois compõem e mantêm a complexa diversidade biológica em Unidades de Conservação de Mata Atlântica, em região subtropical. Isso demonstra a necessidade de especial atenção para que estas áreas mantenham a sua integridade mesmo frente às ações antrópicas.

**Palavras-chave:** invertebrados, riqueza, vegetação ripária

#### **Resumen**

En este estudio se presenta el primer inventario taxonómico de macroinvertebrados bentonicos de algunos sistemas lóticos en el Parque Nacional de Iguazú, Brasil. Desde el punto de vista de la Biología de la conservación estos ambientes son de importancia excepcional porque constituyen y mantienen la compleja y original diversidad biológica en unidades de paisaje del bosque atlántico en la region subtropical. Nuestros datos de diversidad alfa revelan la necesidad de enfocar esfuerzos y atención a estas areas para mantener su integridad incluso haciendo frente a las acciones antropogenicas.

**Palabras clave:** invertebrados, riqueza, vegetación ripária

## Abstract

This study presents the first checklist of benthic macroinvertebrates sampled in some rivers and streams of the Parque Nacional do Iguaçu. From the point of view of conservation, such environments are extremely important because comprise and keeps the complexity of the biological diversity in Atlantic Forest Conservation Units in subtropical region. This demonstrates the necessity of special attention to protect the areas integrity even in the face of anthropic actions.

**Keywords:** invertebrates, richness, riparian vegetation

## Introduction

The continental aquatic environments have been intensely impacted by anthropogenic activities in their surroundings, since the last four decades of increase in the agricultural activities, which can cause irreversible losses in the biological diversity of these ecosystems, especially in Atlantic Forest areas, where the habitat fragmentation due to agricultural activities is intense. Although the extensive hydrographic network in Brazil has its riparian forests protected by law, as priority areas for conservation (Loch et al., 2013), several impacts are attributed to water resources, such as pollution, eutrophication, sedimentation, predatory fishing, introduction of invasive species, construction of dams (Simberloff, 2011) and, mainly, loss of the native vegetation.

The constant increase of anthropic pressures on vegetation areas and, consequently, on aquatic ecosystems reveals the necessity of knowledge of biological diversity, in places where the impacting activities have not yet arrived, as is the case of Conservation Units (CU). In addition, the importance of native vegetation to aquatic environments is widely recognized in the literature (Bonnet et al., 2011); due to the buffer effect they provide against impacts related to sediment, nutrient and pollutant inputs, among others.

The Parque Nacional do Iguaçu (25°05' a 25°41' South e 53°40' a 54°38' West) is the CU that constitutes the most important, continuous and conserved area of the Atlantic Forest in the interior of southern Brazil; is considered one of the biodiversity hotspots (Rylands & Brandow, 2005) worldwide. The rivers, protected totally or partially by the boundaries of this CU, are references regarding the structure of the aquatic ecosystem in this biome (IBAMA, 1999). Thus, researches that would invent biological communities and would monitor the quality of the water resources, inserted in the Conservation Units, are of fundamental importance in quantifying and mapping the biological diversity in these sites (ICMBIO, 2016).

The benthic macroinvertebrates are among the communities that inhabit the freshwater ecosystems. These organisms has been a tool frequently highlighted (Silveira & Queiroz 2006; Poikane et al. 2016), due to the biological and ecological attributes of these organisms in relation to the local where they live (Buss et al., 2003; Hepp et al., 2010).

The word *benthos* comes from Greek and means "bottom", that is, organisms that inhabit the bottom

substrates of aquatic environments, in at least one phase of their life cycle (Rosenberg & Resh, 1993). They have a body size greater than 0.2-0.5mm, including insect larvae (Insecta), snails (Mollusca), crustaceans (Crustacea), water worms (Annelida) and free-living worms (Nematoda, Platyhelminthes). They feed on the suspended material in the water column or from marginal vegetation, as well as provide food for other invertebrates, for fish, amphibians and birds (Silveira, 2004). The benthic fauna, therefore, participates in the nutrient cycling and in the several levels of the aquatic webs (Hauer & Lamberti, 2007; Ansaloni et al., 2016).

In this way, the knowledge of this community through faunal checklists can provide basic information on the richness and occurrence of native and exotic species, as well as contributing to comparative studies of biodiversity, assessing the complexity of biological communities, estimating the availability of resources and recognizing areas which need protection against possible anthropic activities (Lozano-Cortés et al., 2012). So, the present study represents the first faunistic checklists of benthic macroinvertebrates sampled in rivers and streams in the interior of the Parque Nacional do Iguaçu (PN Iguaçu). We believe that such information will be useful to increase the knowledge about subtropical biological diversity in Atlantic Forest Conservation Units.

## MATERIAL AND METHODS

### Study Area

The Parque Nacional do Iguaçu (PN Iguaçu) is located in the municipality of Foz do Iguaçu, Paraná and has 185,262 hectares of area. Created on January 10, 1939, it is the largest Atlantic Forest Conservation Unit in Paraná (IBAMA, 1999), whose predominant vegetation is the Semidecidual Seasonal Forest. The region covers the Hydrographic Basins of Paraná 3 and Baixo Iguaçu, with streams that are born and/or discharged into another rivers within the own CU.

The streams Macuco, Poço Preto 1 and Poço Preto 2 (source and mouth) and the São João (fz) and Iguaçu rivers (two points downstream of the Falls) were sampled at points totally inserted inside PN Iguaçu (Figure 1). These environments belong to the Iguaçu River Basin. The Macuco, Poço Preto 1 and Poço Preto 2 streams are fully inserted within the boundaries of the Unit, while the São João river has its headspring located in a rural area, in the municipality of Santa Terezinha do Itaipu and its mouth (sampled) shortly before the right bank of the Iguaçu River. This last river, in turn, has its headspring in the urban area of the municipality of Curitiba and flows into the west of the state, to the interior of the PN Iguaçu, in Foz do Iguaçu.

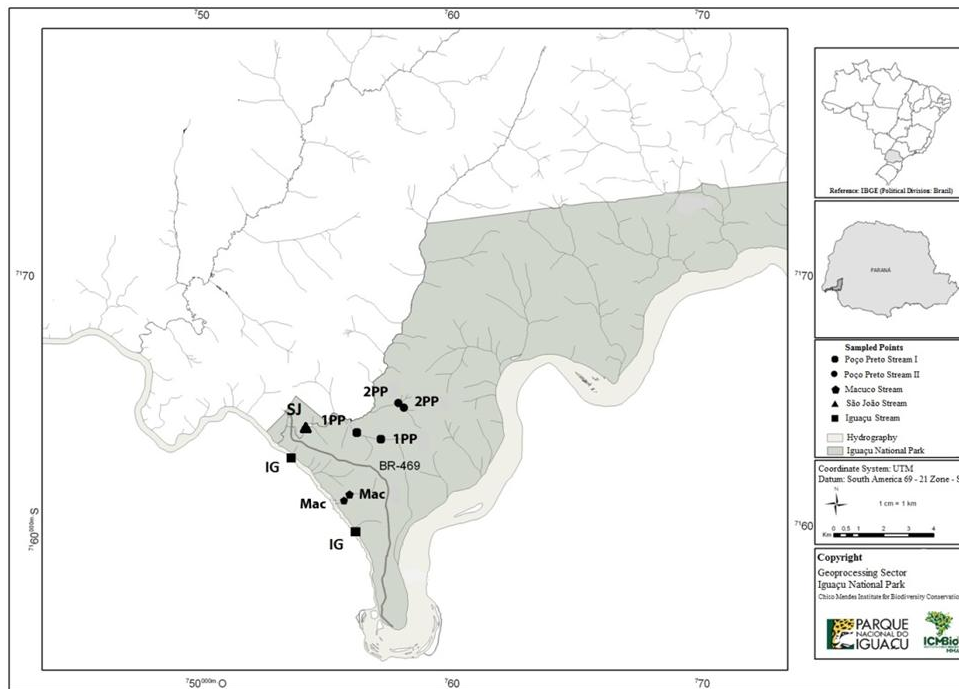


Figure 1. Location of sampling points in the rivers and streams of the PN Iguçu

## Sampling data and taxonomy

The checklist includes samples taken in the Macuco, Poço Preto 1 and Poço Preto 2 streams among 2010 to 2012, while the São João and Iguçu rivers were sampled in 2011, as part of larger projects. These data comprised three articles already published (2010 - Gurski et al., 2014; 2012 - Ruaro et al., 2016; 2010 - Pujarra et al., 2017) and one master's these (2011 - Fruet, 2012).

In the samples were used the Surber samplers (30 cm opening, 200  $\mu\text{m}$  mesh, 0.09  $\text{m}^2$  area) and the Petersen dredge (0.018  $\text{m}^2$  area). Each sample, regardless of the type of sampler used, was placed in a plastic pot, carried to the Laboratory of Benthic Aquatic Invertebrates (LIAB) of the Universidade Federal do Paraná (UFPR - Setor Palotina), washed through a sieving system, with different mesh openings (2.0, 1.0, e 0.2 mm) and fixed in 70% alcohol. It was then screened under stereomicroscopic and the taxa identified at the lowest possible taxonomic level with the aid of identification guides (Pérez, 1988; Merritt & Cummins, 1996; Fernández & Domínguez, 2001; Costa et al., 2004; Mugnai et al., 2010, Trivinho-Strixino, 2011<sup>a</sup>). To the checklist the data were compiled and grouped to order the composition, richness and occurrence of the benthic macroinvertebrates in the aquatic environments of the PN Iguçu.

## RESULTS AND DISCUSSION

Were identified 193 taxa of benthic macroinvertebrates in the rivers and streams of the PN Iguaçú, from 2010 to 2012. These organisms were distributed in five phyla, 11 classes, 25 orders, 65 families/subfamilies/tribes 131 genus/species (Table 1).

**Table 1** - Checklist and presence and absence of benthic macroinvertebrates recorded in the rivers and streams of the PN Iguaçú, from 2010 to 2012. \* MAC: stream Macuco, PP1: stream Poço Preto 1, PP2: stream Poço Preto 2; SJ: river São João, IG: river Iguaçú.

Phylum	Class/Subclass	Order	Family/Subfamily/Tribe	Genus/Specie	MAC	PP1	PP2	SJ	IG
Platyhelminthes	Neophora	Temnocephalida	Temnocephalidae	<i>Themnocephala</i> <sup>3,4</sup>	X	x	x	-	-
Nematoda				_ 3,4	X	x	x	x	x
Mollusca	Gastropoda	Basommatophora	Planorbiidae	_ 3,4	X	x	x	x	x
Mollusca	Gastropoda	Mesogastropoda	Ampullariidae	_ 3,4	X	x	x	x	-
Mollusca	Gastropoda	Sorbeoconcha	Hydrobiidae	_ 3,4	-	x	x	x	x
Mollusca	Gastropoda	Neritopsina	Neritidae	_ 3	-	-	-	x	-
Mollusca	Gastropoda	Stylommatophora	Ancylidae	_ 3	-	-	-	x	x
Mollusca	Bivalvia			_ 3	-	-	-	x	x
Mollusca	Bivalvia	Veneroidea	Corbiculidae	<i>Corbicula</i> <sup>3</sup>	-	-	-	x	x
Anellida	Clitellata	Oligochaeta		_ 3,4	X	x	x	x	x
Anellida	Clitellata	Hirudinea		_ 3,4	X	x	x	x	x
Arthropoda	Arachnida	Trombidiformes	Hydracnidae	_ 3,4	-	x	x	x	x
Arthropoda	Ostracoda			_ 3,4	X	x	-	x	x
Arthropoda	Maxillopoda	Harpacticoida		_ 3,4	X	x	x	-	-
Arthropoda	Branchiopoda	Diplostraca		_ 3,4	X	x	-	-	-
Arthropoda	Malacostraca	Amphipoda	Hyalellidae	_ 3,4	X	x	-	-	-
Arthropoda	Malacostraca	Amphipoda	Talitridae	_ 3,4	X	x	x	-	-
Arthropoda	Malacostraca	Decapoda	Trichodactylidae	_ 3,4	X	x	x	-	-
Arthropoda	Ellipura	Collembola		_ 3,4	x	x	x	-	-
Arthropoda	Insecta	Lepidoptera	Pyralidae	_ 3,4	x	x	x	-	-
Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Corydalus</i> <sup>3</sup>	-	x	x	-	-
Arthropoda	Insecta	Plecoptera	Gripopterygidae	_ 2, 3,4	-	x	x	-	-
Arthropoda	Insecta	Plecoptera	Gripopterygidae	<i>Paragripopteryx</i> <sup>2</sup>	x	x	x	-	-
Arthropoda	Insecta	Plecoptera	Gripopterygidae	<i>Tupiperla</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Plecoptera	Perlidae	_ 2,3,4	x	x	x	x	-
Arthropoda	Insecta	Plecoptera	Perlidae	<i>Anacroneuria</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Plecoptera	Perlidae	<i>Kempnyia</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Ephemeroptera	Leptohiphidae	_ 2,3,4	x	-	x	x	-
Arthropoda	Insecta	Ephemeroptera	Leptohiphidae	<i>Leptohiphes</i> <sup>2</sup>	x	-	-	-	-
Arthropoda	Insecta	Ephemeroptera	Leptohiphidae	<i>Traverypes</i> <sup>2</sup>	x	x	x	-	-
Arthropoda	Insecta	Ephemeroptera	Leptohiphidae	<i>Tricorythodes</i> <sup>2</sup>	x	-	x	-	-

Arthropoda	Insecta	Ephemeroptera	Leptohiphidae	<i>Tricorythopsis</i> <sup>2</sup>	x	x	x	-	-
Arthropoda	Insecta	Ephemeroptera	Oligoneuridae	_ 2,4	-	x	x	-	-
Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	<i>Hagenulopsis</i> <sup>2,3</sup>	-	-	x	x	-
Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	<i>Farrododes</i> <sup>2</sup>	x	x	-	-	-
Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	<i>Massartela</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	<i>Thraulodes</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Ephemeroptera	Caenidae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Ephemeroptera	Caenidae	<i>Caenis</i> <sup>2,3</sup>	x	x	x	x	-
Arthropoda	Insecta	Ephemeroptera	Baetidae	_ 2,3	x	-	x	x	-
Arthropoda	Insecta	Ephemeroptera	Baetidae	<i>Baetis</i> <sup>2</sup>	-	x	x	-	-
Arthropoda	Insecta	Trichoptera	Calamoceratidae	_ 2,4	-	x	-	-	-
Arthropoda	Insecta	Trichoptera	Calamoceratidae	<i>Phylloicus</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Trichoptera	Helicopsycheidae	<i>Helicopsyche</i> <sup>2</sup>	-	-	x	-	-
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Alistorichia</i> <sup>2</sup>	-	-	x	-	-
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Macronema</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Leptonema</i> <sup>2</sup>	-	x	x	-	-
Arthropoda	Insecta	Trichoptera	Hydropsychidae	<i>Smicridea</i> <sup>2</sup>	-	x	x	-	-
Arthropoda	Insecta	Trichoptera	Hydroptilidae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Trichoptera	Hydroptilidae	<i>Hydroptila</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Trichoptera	Hydroptilidae	<i>Neotrichia</i> <sup>3</sup>	-	-	-	x	-
Arthropoda	Insecta	Trichoptera	Leptoceridae	_ 2,4	x	x	-	-	-
Arthropoda	Insecta	Trichoptera	Leptoceridae	<i>Nectopsyche</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Trichoptera	Leptoceridae	<i>Notalina</i> <sup>2</sup>	x	x	-	-	-
Arthropoda	Insecta	Trichoptera	Leptoceridae	<i>Oecetis</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Trichoptera	Leptoceridae	<i>Triplectides</i> <sup>2</sup>	x	x	-	-	-
Arthropoda	Insecta	Trichoptera	Polycentropodidae	_ 2,3	-	-	x	x	-
Arthropoda	Insecta	Trichoptera	Polycentropodidae	<i>Cyrnellus</i> <sup>2</sup>	x	-	-	-	-
Arthropoda	Insecta	Trichoptera	Philopotamidae	_ 2	-	x	x	-	-
Arthropoda	Insecta	Trichoptera	Philopotamidae	<i>Chimarra</i> <sup>2</sup>	x	-	-	-	-
Arthropoda	Insecta	Trichoptera	Sericostomatidae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Trichoptera	Odontoceridae	_ 2,4	-	x	x	-	-
Arthropoda	Insecta	Trichoptera	Odontoceridae	<i>Marilia</i> <sup>2</sup>	x	-	x	-	-
Arthropoda	Insecta	Trichoptera	Xephocentropodidae	_ 2,4	-	x	-	-	-
Arthropoda	Insecta	Odonata	Gomphidae	_ 2,4	-	x	x	x	x
Arthropoda	Insecta	Odonata	Calopterygidae	_ 2,4	-	x	x	x	-
Arthropoda	Insecta	Odonata	Libellulidae	_ 2,4	-	x	-	-	x
Arthropoda	Insecta	Odonata	Megapodagrionidae	_ 2	x	-	x	-	-
Arthropoda	Insecta	Odonata	Coenagrionidae	_ 2	x	-	x	-	-
Arthropoda	Insecta	Odonata	Dictyodidae	_ 2	x	-	-	-	-
Arthropoda	Insecta	Odonata	Aeshnidae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Odonata	Corduliidae	_ 2,4	-	x	x	-	-
Arthropoda	Insecta	Coleoptera	Elmidae	_ 2,4	x	x	x	x	x
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Macrelmis</i> <sup>3</sup>	-	-	-	x	-
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Phanocerus</i> <sup>3</sup>	-	-	-	x	-
Arthropoda	Insecta	Coleoptera	Elmidae	<i>Xenelmis</i> <sup>3</sup>	-	-	-	x	-

Arthropoda	Insecta	Coleoptera	Staphilinidae	_ 2	-	-	-	x	-
Arthropoda	Insecta	Coleoptera	Dryopidae	_ 2,4	-	x	x	-	-
Arthropoda	Insecta	Coleoptera	Dytiscidae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Coleoptera	Hydrophilidae	_ 2	-	-	x	-	-
Arthropoda	Insecta	Coleoptera	Lutrochidae	_ 2,4	-	x	x	-	-
Arthropoda	Insecta	Coleoptera	Psephenidae	_ 2	-	-	x	-	-
Arthropoda	Insecta	Hemiptera	Hydrometridae	_ 2,4	-	x	x	-	-
Arthropoda	Insecta	Hemiptera	Pleidae	_ 2,3	x	-	-	x	-
Arthropoda	Insecta	Hemiptera	Helotrephidae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Hemiptera	Veliidae	_ 2	x	-	x	-	-
Arthropoda	Insecta	Hemiptera	Mesoveliidae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Hemiptera	Naucoridae	_ 2,4	x	x	x	-	-
Arthropoda	Insecta	Hemiptera	Belostomatidae	_ 2,4	-	x	x	-	-
Arthropoda	Insecta	Diptera	Empididae	_ 2,3,4	-	x	x	-	x
Arthropoda	Insecta	Diptera	Tipulidae	_ 2,4	-	x	x	-	-
Arthropoda	Insecta	Diptera	Simuliidae	_ 2	x	-	-	-	-
Arthropoda	Insecta	Diptera	Syrphidae	_ 2	-	-	x	-	-
Arthropoda	Insecta	Diptera	Ceratopogonidae	_ 2,3,4	x	x	x	x	x
Arthropoda	Insecta	Diptera	Ephydriidae	_ 2	-	x	x	-	-
Arthropoda	Insecta	Diptera	Chironomidae	_ 2,3,4	-	x	x	x	x
Arthropoda	Insecta	Diptera	Chironominae	<i>Beardius</i> sp.1 <sup>1</sup>	-	x	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Beardius</i> sp.2 <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Caladomyia</i> sp.1. <sup>3</sup>	-	-	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Caladomyia</i> sp.2 <sup>3</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Caladomyia</i> sp.3 <sup>3</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Caladomyia</i> sp.4 <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Caladomyia</i> sp.5 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Caladomyia</i> sp.8 <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Caladomyia</i> sp. 9 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Caladomyia</i> sp.10 <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Chironomus fittkaui</i> <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Chironomus strenzkei</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Cryptochironomus</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Cryptochironomus</i> sp.2 <sup>1</sup>	-	x	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Dicrotendipes</i> sp.1 <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Dicrotendipes</i> sp.3 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Endotribelos</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Endotribelos</i> sp.2 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Endotribelos</i> sp.3 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Endotribelos</i> sp.4 <sup>1</sup>	-	x	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Endotribelos</i> sp.5 <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Endotribelos</i> sp.6 <sup>1</sup>	-	-	x	-	-

Arthropoda	Insecta	Diptera	Chironominae	<i>Lauterborniella</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Nilothauma</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Nilothauma</i> sp.2 <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Oukuriella</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Paralauterborniella</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Paratendipes</i> <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Polypedilum</i> sp.1 <sup>1</sup>	x	x	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Polypedilum</i> ( <i>Polypedilum</i> ) sp.2 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Polypedilum</i> ( <i>Tripodura</i> ) 1	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Polypedilum</i> gr. <i>fallax</i> <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Pseudochironomus</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Rheotanytarsus</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Stempellina</i> <sup>1</sup>	-	x	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Stempellinella</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Stempellinella</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Stempellinella</i> sp.2 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Stenochironomus</i> <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Chironominae/Tanytarsini	Gênero 1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae/Tanytarsini	Gênero A <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Chironominae/Tanytarsini	Gênero B <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Tanytarsus</i> sp.1 <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Tanytarsus caipira</i> <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Tanytarsus</i> <i>rhabdomanthis</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Xestochironomus</i> <sup>1</sup>	-	-	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Zavreliella</i> sp.1 <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Chironominae	<i>Zavreliella</i> sp.2 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Antillocladius</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Antillocladius</i> sp.2 <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Cardiocladius</i> <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Corynoneura</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Corynoneura</i> sp.2 <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Corynoneura</i> sp.3 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Cricotopus</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Cricotopus</i> sp.2 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Cricotopus</i> sp.3 <sup>1</sup>	x	x	-	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Gymnometriocnemus</i> <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Lopescladius</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Lopescladius</i> sp.1 <sup>1</sup>	-	x	x	-	-



Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Metriocnemus</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Nanocladius</i> <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Onconeura</i> <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	Orthoclaadiinae A <sup>1*</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Parametriocnemus</i> sp.1 <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Parametriocnemus</i> sp.2 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Rheocricotopus</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Riethia</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Thienemanniella</i> sp.1 <sup>4</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Orthoclaadiinae	<i>Thienemanniella</i> sp.2 <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Ablabesmyia</i> <sup>1</sup>	x	x	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Clinotanypus</i> <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Coelotanypus</i> sp.1 <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Denopelopia</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Djalmabatista</i> sp.2 <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Djalmabatista pulchra</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Fittkauimyia</i> <sup>1</sup>	-	x	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Fittkauimyia</i> sp.1 <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Hudsonimyia</i> <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.1 <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.2 <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.3 <sup>1</sup>	x	x	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.4 <sup>1</sup>	x	x	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.5 <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.7 <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.8 <sup>1</sup>	-	x	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.10 <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Labrundinia</i> sp.11 <sup>1</sup>	-	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Larsia</i> <sup>1</sup>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Nilotanypus</i> <sup>1</sup>	x	-	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Parapentaneura</i> sp.1 <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Parapentaneura</i> sp.2 <sup>1</sup>	-	x	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Paraphaenocladus</i>	x	x	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Pentaneura</i> <sup>1</sup>	-	-	x	-	-
Arthropoda	Insecta	Diptera	Tanypodinae/Pentaneurini	- <sup>1</sup>	x	-	-	-	-
Arthropoda	Insecta	Diptera	Tanypodinae	<i>Procladius</i> sp.1 <sup>1</sup>	x	-	x	-	-

The identified larvae and morphospecies belong to the following articles: <sup>1</sup>GURSKI et al. 2014; <sup>2</sup>FRUET, 2012; <sup>3</sup>PUJARRA et al. 2016 (prelo); <sup>4</sup>RUARO et al. 2016; Taxons where was not possible to get to morphospecies were marked with a hífen (-); \* as described in the guide of TRIVINHO-STRIXINO, 2011.

The class Insecta was represented especially by the orders Ephemeroptera, Plecoptera and Trichoptera (EPT group) and by the family Chironomidae, which had higher occurrence and richness in the streams MAC, PP1 and PP2 (Table 1). The environmental characteristics of the three streams certainly favored the occurrence of these organisms, since EPT has more restricted ecological needs than the other invertebrates, such as well oxygenated waters, current velocity, habitat heterogeneity and sediment composed of coarser particles (Brown & Swan, 2010), while Chironomidae family occurs in virtually all freshwater environments (Sanseverino & Nessimian, 2008).

It should be noted that for immature insects there are many difficulties in relation to taxonomy at the species level, since it is necessary to know and analyze the various instars by which the insect will pass until become adult, because in each phase there may be own adaptive characters (Costa, 2006). In this context, Trivinho-Strixino (2011<sup>b</sup>) also reported that the lack of association between immatures and adults is the main obstacle to the knowledge of the Chironomidae family.

## CONCLUSION

The present study represents the first faunistic checklist of the benthic macroinvertebrates community from aquatic environments located inside the PN Iguaçu. This Conservation Unit is a very important place from the point of view of conservation, especially since it is one of the last remnants of preserved Atlantic Forest, in the interior of Paraná State.

This checklist can also contribute as a database for future research on regional biological diversity and comparative studies among subtropical aquatic environments. In addition, these results reinforce the need for taxonomic knowledge for the Paraná state and to the Atlantic Forest biome as well, in the search for new records, since there is still much to be explored regarding the richness and diversity of benthic aquatic macroinvertebrates in pristine environments.

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