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Scientific Note

Ichthyofauna of the Bento Gomes River in the Pantanal Matogrossense, Brazil

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Abstract. The present paper describes the fish fauna collected in the main channel and one bay in the Bento Gomes River, situated in the Pantanal Matogrossense, in Poconé (Mato Grosso State), during the periods of drought and flood.

Key words: wetlands, freshwater fishes, South America, Neotropical region, sazonality

Resumo. Ictiofauna do rio Bento Gomes no Pantanal Matogrossense, Brasil. O trabalho descreve a ictiofauna do Rio Bento Gomes, Pantanal Matogrossense, Brasil, durante o período de seca e cheia

Palavras chave: áreas úmidas, peixes de água doce, América do Sul, região neotropical, sazonalidade

The Pantanal Matogrossense (PMG) is a seasonally flooded plain, inserted in one of the largest wetlands in the world. According to Junk & Cunha (2005) the main ecological factor which determines the characteristics of PMG is the flood pulse, promoting marked changes in the biotic and abiotic structures. The PMG was classified in 11 sub-regions, according to heterogeneity of landscape and types of floods. For example, Cáceres, Barão de Melgaço and Pantanal of Poconé. The study area is inserted in the Pantanal of Poconé, which covers 11% of Brazilian Pantanal, and is characterized by flood periods between December and May, drought periods between June and November, and rainy season between October to April (Fernandes *et al.* 2010). This variation can influence the availability of aquatic habitats, the variations in the abundance of communities, the intraspecific competition, as well as the food availability (Pains-Silva *et al.* 2009, Corrêa *et al.* 2012).

It is worth noting that the flood pulse follows a mono-modal cycle which lasts from three to six months and may vary from 3 to 5 m in amplitude. Water variations, of flood and drought cycles, ensure one of the most important ecological phenomena in PMG floodplain, controlling this system's structure and operation. In fact, the flood pulse plays an important role in nutrient cycling, which provides different habitats and highly productive environments (Bayley 1989). In the ecological systems comprised in PMG, floodable rivers are characterized by two different components: the riverbed, which is characteristic in drought, and the floodable plain, typical of flood periods (Resende 1999).

The Neotropical Region has a great diversity of fish, consisting of 7.000 species with different feeding habits, morphology and reproductive strategies (Albert & Reis 2011). Among Neotropical regions PMG is noteworthy because it presents a diversity of 269 species (Britski *et al.* 2007). However, to understand the environmental structural dynamics, the accomplishment of ichthyofauna inventories and systematic studies are extremely important. Besides, they constitute the basis for better understanding the dynamics of species

distribution (Vilar *et al*. 2011), providing data on the species composition, management and conservation. Furthermore, Callisto *et al*. (2001) report that knowing and monitoring the ichthyological community structure can point both environmental quality and small variations the ecological environment can present.

The present study describes the fish assemblage that occurs in the Bento Gomes River, PMG, in two different periods (drought and flood), in order to generate baseline information for future studies about the ichthyofauna from this important Brazilian region. The Bento Gomes River (16° 19' 22 "S and 56° 32' 41" W) is located about 12 km away from the city of Poconé and Transpantaneira road (MT, 060) in the Mato Grosso State (Fig. 1), being the direct tributary of Paraguay River. Fish samplings were carried out in a stretch of the river near Instituto Federal do Mato Grosso – Poconé. The fish were sampled at two points with different characteristics: the first located in the river's main channel with lotic flowing water and the other in a bay with characteristics of lentic waters. It is worth noting the occurrence of mixed banks of aquatic macrophyte at the sampling points, with, for instance, *Eicchornia azurea*, *Eicchornia crassipes*, *Salvinia auriculata*, *Pistia stratiotes* and *Azolla caroliniana*, *Ludwigia helmintorriza*.

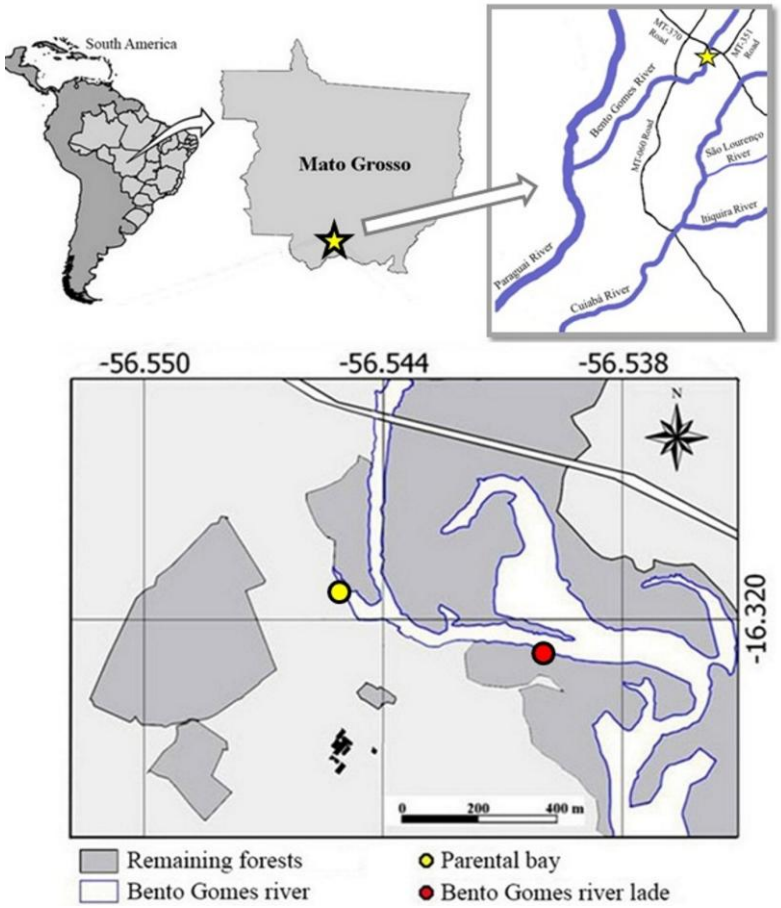

Figure 1. Location of sampling points, South America, Mato Grosso state and Bento Gomes River. The dot yellow represents of the Parental bay and red dot channel the Bento Gomes river.

Fish were collected in September/2009, which represents the dry season and January/2010, representing the rainy season. For capturing the specimens we used the following fishing gear: fishing net with 30 m in length and 2 m in height, with a mesh of 3 mm between adjacent knots, and fishing sieve with mesh of 1.5 m² and 3 mm between adjacent nodes. The collections were standardized through rejoinders (N: 3) performed at each point. After collection, the specimens were anesthetized (Benzocaine hydrochloride dissolved in water, 100ml/15L), killed, fixed in 10% formalin and then preserved in 70% alcohol. The species identification was based on Britski *et al*. (2007), and literature aid when required. The classification of taxonomic categories for the species list was performed

according to Reis *et al*. (2003), Buckup (2007) and Eschmeyer (2011). Specimens were stored in Laboratorio de Zoologia, Universidade Estadual do Mato Grosso - UNEMAT, campus of Caceres city. For each sampling site, there were calculated the following ecological indexes: number of species (Taxa S), Shannon's diversity (Shannon's H) and evenness *Pielou* (Equitability's J), with the PAST 3.0 free software (Hammer *et al*. 2013).

A total of 1.789 individuals were sampled, belonging to four orders, 16 families and 53 species. The most representative orders were Characiformes (59.20%) and Siluriformes (37.51%) (Table I). Regarding abundance, the drought period was more important (78.65%), when compared to the rainy season (21.35%), both in the bay and in the riverbed. Regarding the most abundant species, we can highlight the *Otocinclus vittatus* (Regan, 1904), with 29%, and *Serrapinnus calliurus* (Boulenger, 1900) with 27% in both locations (bay and channel), as well as in different sampling periods. The remaining species showed relatively low values, from 7.54 to 0.05% in abundance, *Corydoras hastatus* (Eigenmann & Eigenman, 1888) and *Curimatella dorsalis* (Eigenmann & Eigenmann, 1889) (Table I). The variation in abundance may be related to seasonality, as the flood season provided a greater similarity of species among the studied points. This was also associated with a decrease in physical and ecological barriers. The variations found during the study confirm the influence the hydrological dynamics has over fish species which occur in the Bento Gomes River. Indeed, hydrodynamic factors cause structural changes in the composition of fish assemblages which had been recorded by other authors (Araújo & Tejerina-Garro 2009, Neiff *et al*. 2009). As for the species number, Veríssimo *et al*. (2005), studying the fish assemblage of the Manso Reservoir region of influence, Paraguay river basin, Mato Grosso State, identified a total of 250 fish species, number above that found in the sampling sites of the Bento Gomes river. Indeed**,** the highest number of species found is strongly related to time sampling and types of fishing gear. However, is worth mentioning that two fish species were not collected by Verissimo *et al*. (2005): *Curimatopsis myersi* Vari, 1982 and *Mesonauta festivus* (Heckel, 1840). We also highlight other aspects that may be influenced by water dynamics, e.g., the ecosystem trophic structure, where species with greater food plasticity may be more successful in colonization, in relation to species with narrow niches, as well as environmental factors like the variation in oxygen concentration in the water. Nevertheless, factors such as these ones do not report a new ecological paradigm (Suzuki *et al*. 2009), but leads to conclude that the conservation of watersheds is extremely important because the existing ecological communities are dynamic and can be controlled by environmental factors.

Table I. List of species the Bento Gomes River, with abundance and distribution: drought bay region (EB), flood bay region (CB), drouth channel region (EC) and flood channel region (CC), to according classe, ordem, family and species.

Espécies	**EB**	**CB**	**EC**	**CC**
OSTEICHTHYES				
CHARACIFORMES				
PARODONTIDAE				
Apareiodon affinis (Steindachner, 1879)	1		1	1
CURIMATIDAE				
Curimatella dorsalis (Eigenmann & Eigenmann, 1889*)*			1	
Curimatopsis myersi Vari, 1982	3			
Cyphocharax gillii (Eigenmann & Kennedy, 1903)	14			
ANOSTOMIDAE				
Leporinus friderici (Bloch, 1794)				2
Leporinus striatus Kner, 1858				1
Schizodon borellii (Boulenger, 1900)			5	
CRENUCHIDAE				
Characidium zebra Eigenmann 1909	19			
HEMIODONTIDAE				
Hemiodus orthonops Eigenmann & Kennedy, 1903			1	

Follow Table I

CHARACIDAE				
Aphyocharacidium sp.	55			1
Astyanax asuncionensis Géry, 1972		1	10	1
Bryconops melanurus (Bloch, 1794)			11	
Gymnocorymbus ternetzi (Boulenger, 1895)	10			
Hemigrammus ulreyi (Boulenger, 1895)	4			
Hyphessobrycon eques (Steindachner, 1882)	79	1	8	3
Moenkhausia dichroura (Kner, 1858)	5	1	23	29
Moenkhausia sanctaefilomenae (Steindachner, 1907)	3		1	9
Psellogrammus kennedyi (Eigenmann, 1903)	11			
Triportheus nematurus (Kner, 1858)		1		2
Triportheus pantanensis (Günther, 1874)	4			
IGUANODECTINAE				
Piabucus melanostoma Holmberg 1891	3			67
SERRASALMINAE				
Metynnis mola Eigenmann & Kennedy, 1903			16	
Mylossoma duriventre (Cuvier 1818)				4
APHYOCHARACINAE				
Aphyocharax anisitsi Eigenmann & Kennedy, 1903	44			
Aphyocharax dentatus Eigenmann & Kennedy, 1903			8	
Aphyocharax nattereri (Steindachner 1882)	2			1
CHARACINAE				
Phenacogaster tegatus (Eigenmann, 1911)	1			
Roeboides microlepis (Reinhardt, 1851)	12			
STETHAPRIONINAE				
Poptella paraguayensis (Eigenmann 1907)				15
CHEIRODONTINAE				
Odontostilbe paraguayensis Eigenmann & Kennedy, 1903			30	1
Odontostilbe pequira (Steindachner, 1882)		4	12	19
Serrapinnus calliurus (Boulenger, 1900)	238	75	72	93
ERYTHRINIDAE				
Hoplias aff. *malabaricus* (Bloch, 1794)	1	2		
LEBIASINIDAE				
Pyrrhulina australis Eigenmann & Kennedy 1903	17			
SILURIFORMES				
CALLICHTHYIDAE				
Corydoras hastatus Eigenmann & Eigenmann, 1888	135			
Corydoras polystictus Regan, 1912			6	
LORICARIIDAE				
HYPOPTOPOMATINAE				
Hypoptopoma inexspectatum (Holmberg, 1893)	1			3
Otocinclus vittatus Regan, 1904	84	1	399	37
HYPOSTOMINAE				
Hypostomus boulengeri (Eigenmann & Kennedy, 1903)				1
DORADIDAE				
Platydoras armatulus (Valenciennes, 1840)	1			
AUCHENIPTERIDAE				
Tatia neivai (Ihering, 1930)	1			

Follow Table I

Trachelyopterus galeatus (Linnaeus 1766)	1	1		
GYMNOTIFORMES				
GYMNOTIDAE				
Gymnotus inaequilabiatus (Valenciennes, 1839)		1		
STERNOPYGIDAE				
Eigenmannia trilineata López & Castello, 1966	7			
HYPOPOMIDAE				
Brachyhypopomus sp. A	3			
Brachyhypopomus sp. B	1			
PERCIFORMES				
CICHLIDAE				
Apistogramma borellii (Regan, 1906)	1			
Apistogramma commbrae (Regan, 1906)		1		
Bujurquina vittata (Heckel, 1840)	9		4	
Crenicichla lepidota Heckel, 1840	9	2		1
Crenicichla vittata Heckel, 1840	1		14	
Mesonauta festivus (Heckel, 1840)	4			
Satanoperca pappaterra (Heckel, 1840)			1	
Taxa_S	34	12	19	20
Shannon_H	2.35	0.86	1.48	2.01
Equitability_J	0.67	0.35	0.50	0.67

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