

## LISTS OF SPECIES

### **Fish, State Park of Jalapão, State of Tocantins, Brazil**

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#### **Abstract**

A Fast Environmental Diagnosis of fish was carried out in the State Park of Jalapão to support the implementation of its Management Plan. The survey of the fish community revealed the occurrence of 44 species distributed in three main rivers: Soninho, Novo and Sono and their tributaries.

#### **Introduction**

A complete survey of the fauna and flora is required in areas where conservation units (parks, reserves, botanical gardens, etc.) are going to be established. The assessment of species is an important step in order to understand the distribution range of the species and to support environmental management plans, especially in remote areas.

The objective of this study is to present information about the fish community structure of the State Park of Jalapão, an important conservation area, containing preserved portions of savannah and a large number of streams of high importance for Brazil's main basins (Central, North and Northeast).

#### **Material and Methods**

The State Park of Jalapão occupies an area of 1,588,855 ha, and is located in the municipal district of Mateiros, Tocantins State. The park's boundaries are the rivers Soninho and Novo, whose confluence generates the Sono River, one of

the main tributaries of the Tocantins River on the right margin of its medium course.

In the study area, the rivers Sono, Soninho and Novo are the largest, with crystalline waters and many waterfalls. There are no gallery forests in the area, since the savannah formation (Cerradão), reaches the river margins.

Figure 1 shows the sampling stations. In points A, B, C, D, E and F (rivers Sono, Soninho and Novo) the surveys were carried out using gillnets (12, 15, 20, 25mm mesh with 5m of length and 1.20m of width and 30, 40, 50, 60mm mesh with 10m of length and 1.40m of width). Fishing gears were set up for 24 hours with early morning and late evening inspections. Fishing effort was the same at all the sampling points and we calculated the similarity coefficient of Jaccard (Magurran 1988) to compare these rivers for presence and absence data.

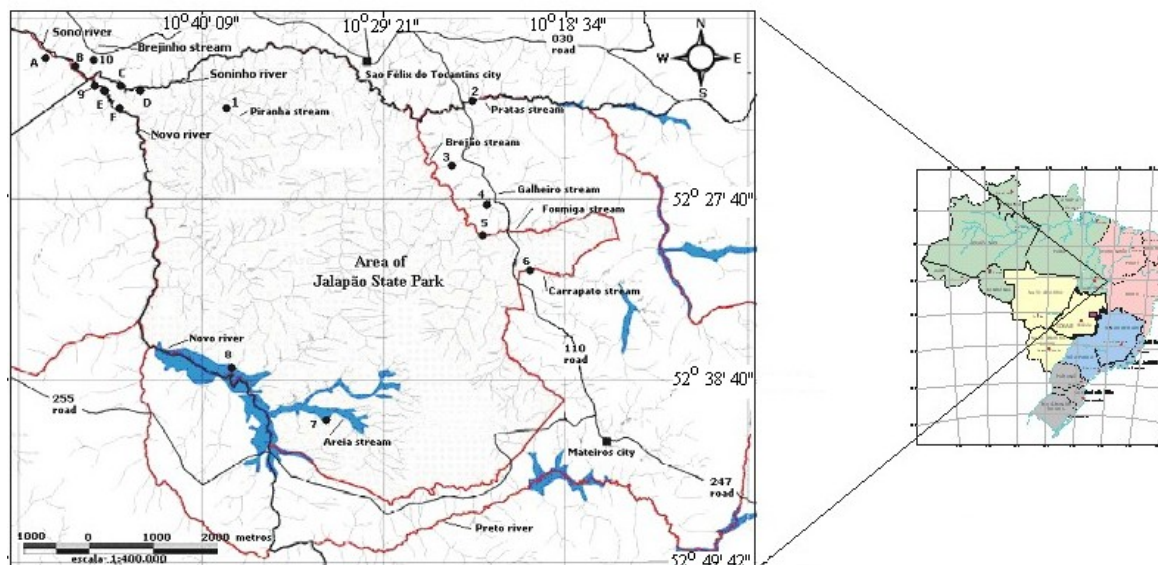
At the other collection stations (Figure 1 – points 1 to 10), several capture methods were used: a) castnets (meshes of 7 - 25mm with diameter of 5m); the castnets were thrown at each point for one hour in 300m sections of the stream; b) beach seines (12 mm with 5 m of length and 1.20 of width) with dragging in two places at each point; c) sieves (5mm with diameter of 40 cm) used to catch fishes visualized at the edges.

Fishing at point 9 was done by two expert fishermen using long lines and/or bait cast reels, during three hours in the morning and evening for a period of three days. Also, six fishhooks were used along the border, at every 10m, during three nights. During two nights harpoons were used in a 500m stretch for a period of two hours. These sampling methods were adjusted to fit the local characteristics, especially when taking into consideration the transparency of the water and the river depth.

#### **Results and Discussion**

Captured fish were fixed and conserved in 10% formaldehyde and 70% ethanol. Taxonomic classifications were initiated at the site according to Reis et al. (2001) and some specimens were sent to the Ichthyology Laboratory at the Universidade

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**Figure 1.** Map of the region showing the boundaries of the State Park of Jalapão, the localization of the rivers and the position of the sampling sites.

de São Paulo (USP). Tables 1 and 2 show the 44 captured species in the Park area.

At sampling stations A to F, where we used only one type of gear (gillnet), the total fishing effort was of 3,456 hours and 130 individuals, belonging to 27 species, were captured (Table 1). During the capture period a high water transparency was registered.

Captured species at sampling points 5 to 8 and at point 10 (Table 2), were small in length (e.g. *Hemigrammus* sp., *Moenkhausia* sp. and *Astyanax* sp) because these points were located in shallow streams (20-90cm deep). Points A to F and point 9 were positioned in large rivers (Sono, Soninho, Novo) and captured species were, in general, larger (e.g. *Myleus* sp., *Eletrophorus electricus*, *Boulengerella cuvieri*). However, small species of *Tetragonopterinae* sp. and *Bryconops* sp. were also caught in these sites, most likely as a result of the more diverse habitats of these sites that enable the growth, protection and reproduction of many different species.

The fish fauna similarity in these large rivers is low. Jaccard coefficient values are: 0.22 for Sono and Novo rivers, 0.32 for Sono and Soninho rivers, and 0.46 for Novo and Soninho. Sono River is formed by the confluence of the Soninho and Novo rivers, nonetheless, fewer species were sampled here when compared to the other two,

due to the water velocity which probably reduces the efficiency of the gillnets.

We believe that these results could be useful for studies about the distribution of fish species of the *cerradão*, mainly in these areas where access is very difficult. Future samplings should consider periods of trophic and reproductive migrations which will certainly add other species to the presented list.

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**Table 1.** Species and respective abundances captured in the rivers using gill nets in the State Park of Jalapão (TO, Brazil) and presence in other sites using different types of fishing gear.

<i>Family / Sub-family</i>	<i>Species</i>	<i>Novo (E-F)</i>	<i>Sono (A-B)</i>	<i>Soninho (C-D)</i>	<i>Total</i>	<i>Sites</i>
Acestrorhynchinae	<i>Acestrorhynchus falcatus</i>			2	2	
	<i>Acestrorhynchus microlepis</i>		1		1	
	<i>Acnodon normani</i>		1		1	
	<i>Knodus breviceps</i>	1			1	
Anostomidae	<i>Leporinus</i> sp.	3		2	5	
Characidae / Tetragonopterinae	<i>Tetragonopterinae</i> sp.	12	1	1	14	
	<i>Tetragonopterus chalceus</i>		1		1	
	<i>Bryconops</i> sp.	2			2	5-6-10
Characidae / Characinae	<i>Acestrocephalus sardina</i>	1			1	
Ctenoluciidae	<i>Boulengerella cuvieri</i>	2	2	7	11	
Curimatidae	<i>Cyphocharax</i> aff. <i>Spilurus</i>			15	15	
Briconinae	<i>Brycon</i> sp.	1			1	
Hemiodontidae / Hemiodontinae	<i>Hemiodus ternetzi</i>	3		2	5	9
	<i>Hemiodus unimaculatus</i>	2			2	
Myleinae	<i>Mylesinus schomburgki</i>	3	1	6	10	
	<i>Myleus torquatus</i>		2	1	3	
	<i>Myleus setiger</i>	2			2	9
Loricaridae / Hypostominae	<i>Hypostomus emarginatus</i>	1		5	6	
	<i>Hypostomus</i> sp.1	1			1	
	<i>Hypostomus</i> sp.2	3	1	1	5	
Loricariinae	<i>Loricaria</i> sp.			1	1	
Ancistrinae	<i>Hemiancistrus</i> sp.	1		3	4	
Pimelodidae	<i>Aguarunichthys tocantinensis</i>	1			1	
Sternopygidae	<i>Eigenmannia</i> cf. <i>trilineata</i>	1		2	3	
Cichlidae	<i>Geophagus surinamensis</i>	5		14	19	9
	<i>Retroculus lapidifer</i>	1	1	9	11	
	<i>Crenicichla lugubris</i>			2	2	
<b>Total n. Individuals</b>		<b>46</b>	<b>11</b>	<b>73</b>	<b>130</b>	
<b>Total n. Species</b>		<b>19</b>	<b>9</b>	<b>16</b>		

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**Table 2.** Species captured with different fishing gears in the sampling sites in the Jalapão State Park.

<i>Family / Sub-Family</i>	<i>Species</i>	<i>sites</i>
Potamostrigoniidae	<i>Potamostrigona</i> cf. <i>histris</i>	9
Characidae / Tetragonopterinae	<i>Astyanax bimaculatus novae</i>	1-7
	<i>Astyanax</i> sp.	5
	<i>Hemigrammus</i> sp. (aff. <i>Levis</i> )	5-7
	<i>Hemigrammus</i> sp.	5-7
	<i>Moenkhausia</i> sp. (aff. <i>copei</i> )	10
	<i>Moenkhausia sanctaefilomenae</i>	1-6-7
	<i>Moenkhausia tergimaculata</i>	10
Myleinae	<i>Myleus</i> sp.	9
Crenuchidae	<i>Characidium</i> sp. (aff. <i>zebra</i> )	8
Salmininae	<i>Salminus</i> cf. <i>hilarii</i>	9
Eletrophoridae	<i>Eletrophorus electricus</i>	9
Erythrinidae	<i>Hoplerethrinus unitaeniatus</i>	7
	<i>Hoplias malabaricus</i>	9
Cynodontidae	<i>Hydrolycus</i> cf. <i>armatus</i>	9
Cichlidae	<i>Cichlasoma</i> cf. <i>araguayensis</i>	7-8
	<i>Crenicichla impai</i>	1-8

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