

## LISTS OF SPECIES

### **Fishes from the Corumbá Reservoir, Paranaíba River drainage, upper Paraná River basin, State of Goiás, Brazil**

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#### **Abstract**

The Corumbá Reservoir is located in Corumbá River, a tributary to the right bank of Paranaíba River, upper Paraná River basin. Fish were collected monthly, from March 1996 to February 2000, in 17 sampling stations along Corumbá Reservoir and its influence area, using gill nets, casting nets, electrofishing and long lines. Considering the entire period, 119 fish species were collected, which belong to seven Orders, 26 Families, and 78 Genera. Among them, five species are considered endemic to Corumbá River basin, and 17 are probably new to the science.

#### **Introduction**

The Corumbá River is the main right bank tributary of the Paranaíba River which together with Grande River originates the Paraná River (Paiva 1982). Its drainage basin has an area of 34,000 km<sup>2</sup> (predominantly scrubland in the Cerrado Biome). It is an upland river and the largest part of its course is narrow, with rocky bed and steep banks (Paiva 1982). The Corumbá River was dammed in September 1996, forming the Corumbá Hydroelectric Reservoir, which has 65 km<sup>2</sup> of surface area, 1,500 x 106 m<sup>3</sup> of total volume, 23 m of average depth, and 30 days of hydraulic retention time (Luz-Agostinho et al. 2006). Understanding the environmental changes caused by this impoundment was the main aim of a four years study carried out by the Núcleo de Pesquisas em Limnologia, Ictiologia e Aqüicultura (Nupélia), of the Universidade Estadual de Maringá, which caught several fish samples at that region. Few studies have been carried at Corumbá River basin (17°29'S/48°22'W - 17°59'S/48°31'W). Although fish species descriptions and fish auto ecology studies have generated some valuable data, the lack of knowledge about fish population structure from Corumbá River is evident. This study provides a complete check list of fish species from that region, with information about non-indigenous, endemic, and new species as well.

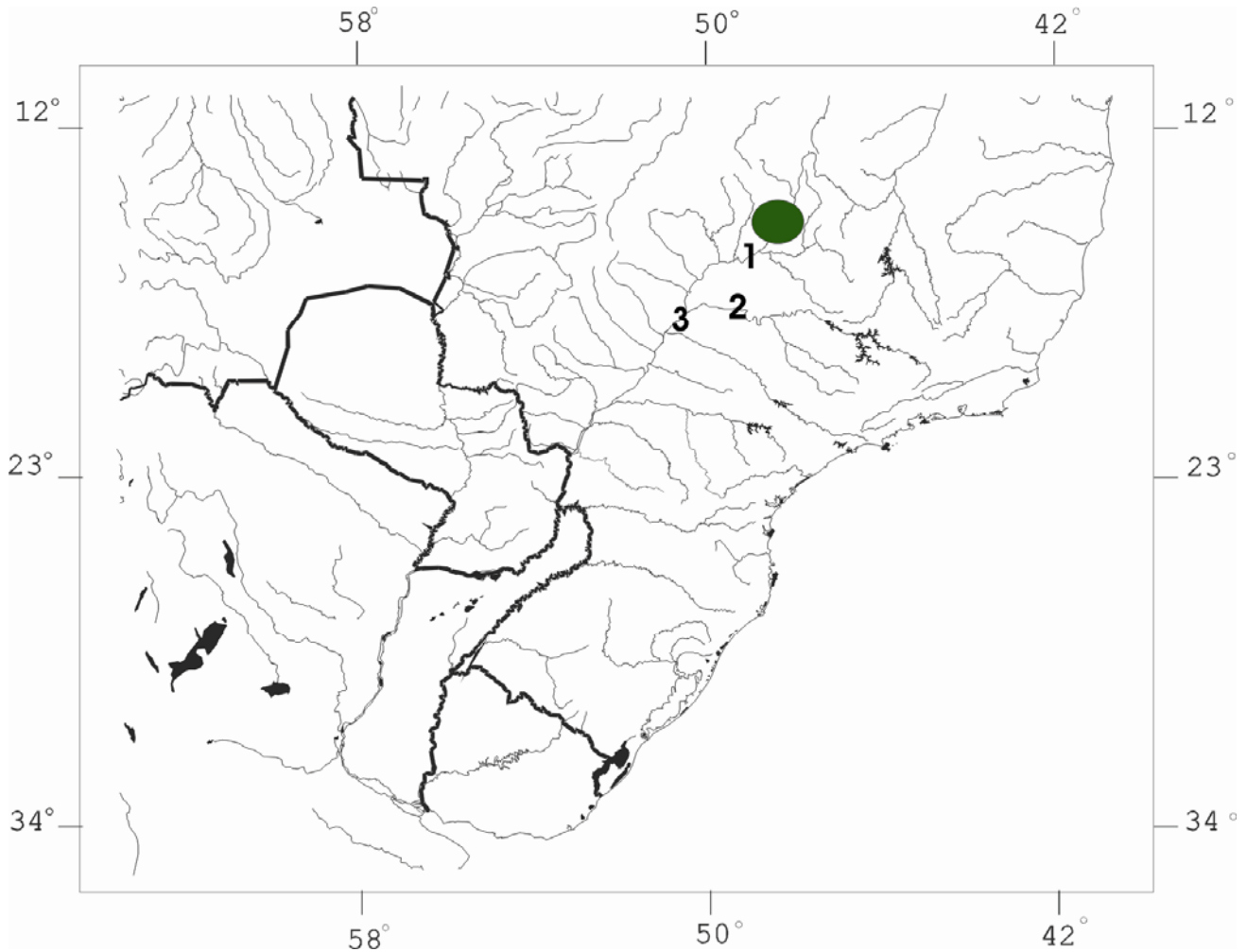
#### **Materials and methods**

Fish samples were carried out monthly from March 1996 to August 1996 (river phase), September 1996 to February 1997 (filling phase) and March 1997 to February 2000 (reservoir phase) in 17 sites distributed in the Corumbá reservoir and its tributaries (Figure 1). Fish were collected by gillnets with different mesh sizes (from 2.4 to 6.0 cm opposite knots). In littoral areas, 20 m long seining nets (0.5 cm mesh size) were operated during the day and night. In streams, electrofishing was conducted using a 220v generator equipped with 50 m cables and two energized dip nets. To identify fish species, specific literature for each group was used, in addition to contacts with experts in some groups. Classification of species is presented according to Eschmeyer (2006) for superior categories and non-Neotropical families Cyprinidae and Clariidae, and Reis et al. (2003) for Neotropical families,

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except Loricariidae, according to Armbruster (2004). Voucher specimens of each species are deposited in the Coleção de Peixes do Nupélia

(Núcleo de Pesquisas em Limnologia, Ictiologia e Aqüicultura), of the Universidade Estadual de Maringá.



**Figure 1.** Partial map of Brazil and adjoining countries showing Corumbá Reservoir and influence area (green dot), Paranaíba River drainage, State of Goiás, Brazil. 1- Paranaíba River, 2- Grande River, and 3- Paraná River.

### Results and discussion

Considering the entire period, 119 fish species belonging to seven Orders, 26 Families, and 78 Genera (Table 1) were collected, among which five

species are considered endemic from Corumbá River basin, and 17 are probably new to the science, besides eleven introduced non indigenous species.

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**Table 1.** Fish species from the Corumbá Reservoir, upper Paraná River basin. Endemic species to that basin are marked with \*\*, introduced species are marked with \*, and the regional popular name of each species is provided between quotation marks.

### ACTINOPTERYGII

#### Cypriniformes

##### Cyprinidae

*Cyprinus carpio* Linnaeus, 1758 – “carpa-comum”\*

#### Characiformes

##### Parodontidae

*Apareiodon affinis* (Steindachner, 1879) – “canivete”

*Apareiodon ibitiensis* Campos, 1944 – “canivete”

*Apareiodon piracicabae* (Eigenmann, 1907) – “canivete”

*Parodon nasus* Kner, 1859 – “canivete”

##### Curimatidae

*Cyphocharax modestus* (Fernández-Yépez, 1948) – “sagüiru”

*Steindachnerina corumbae* Pavanelli & Britski, 1999 – “sagüiru”\*\*

*Steindachnerina insculpta* (Fernández-Yépez, 1948) – “sagüiru”

##### Prochilodontidae

*Prochilodus lineatus* (Valenciennes, 1836) – “curimbatá”, “curimba”

##### Anostomidae

*Leporellus vittatus* (Valenciennes, 1850) – “solteira”

*Leporinus amblyrhynchus* Garavello & Britski, 1987 – “piauí”

*Leporinus friderici* (Bloch, 1794) – “piauí-três-pintas”

*Leporinus macrocephalus* Garavello & Britski, 1988 – “piavuçu”\*

*Leporinus microphthalmus* Garavello, 1989 – “piauí”

*Leporinus obtusidens* (Valenciennes, 1836) – “piapara”

*Leporinus octofasciatus* Steindachner, 1915 – “flamenguinho”

*Leporinus striatus* Kner, 1858 – “piauí-listrado”

*Leporinus tigrinus* Borodin, 1829 – “piauí”\*\*

*Leporinus* sp. – “piauí”

*Schizodon nasutus* Kner, 1858 – “ximborê”

##### Crenuchidae

*Characidium gomesi* Travassos, 1956 – “charutinho”, “mocinha”

*Characidium* aff. *zebra* Eigenmann, 1909 – “charutinho”, “mocinha”

*Characidium* sp. – “charutinho”, “mocinha”

#### Characidae

##### Genera *Incertae Sedis* in Characidae

*Astyanax altiparanae* Garutti & Britski, 2000 – “tambuí”

*Astyanax bockmanni* Vari & Castro, 2007 – “lambari-do-rabo-amarelo”

*Astyanax* aff. *fasciatus* (Cuvier, 1819) – “lambari-do-rabo-vermelho”

*Astyanax* aff. *paranae* Eigenmann, 1914 – “lambari”

*Bryconamericus stramineus* Eigenmann, 1908 – “lambari”, “piabinha”

*Bryconamericus turiuba* Langeani et al., 2005 – “lambari”, “piabinha”

*Hasemania hanseni* (Fowler, 1949) – “lambarizinho”

*Hypheobrycon balbus* Myers, 1927 – “lambarizinho”

*Moenkhausia* aff. *intermedia* Eigenmann, 1908 – “pequira”

*Oligosarcus planaltinae* Menezes & Géry, 1983 – “saicanga”

*Piabina argentea* Reinhardt, 1867 – “lambari”

*Salminus brasiliensis* (Cuvier, 1816) – “dourado”

*Salminus hilarii* Valenciennes, 1850 – “tabarana”

*Triportheus nematurus* (Kner, 1858) – “sardela”

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Bryconinae	<i>Brycon amazonicus</i> (Spix & Agassiz, 1829) – “piraputanga” <sup>*</sup> <i>Brycon nattereri</i> Günther, 1864 – “piraputanga” <i>Brycon orbignyianus</i> (Valenciennes, 1850) – “piraputanga”
Serrasalminae	<i>Colossoma macropomum</i> (Cuvier, 1818) – “tambaqui” <sup>*</sup> <i>Metynnis</i> cf. <i>lippincottianus</i> (Cope, 1870) – “pacu” <i>Myloplus tiete</i> (Eigenmann & Norris, 1900) – “pacu-prata” <i>Piaractus mesopotamicus</i> (Holmberg, 1887) – “pacu” <i>Serrasalmus maculatus</i> Kner, 1858 – “piranha”
Characinae	<i>Galeocharax knerii</i> (Steindachner, 1879) – “saicanga”
Cheirodontinae	<i>Odontostilbe</i> sp. – “lambarizinho”
Glandulocaudinae	<i>Planaltina myersi</i> Böhlke, 1954 – “lambari” <sup>**</sup>
<b>Acestrorhynchidae</b>	<i>Acestrorhynchus lacustris</i> (Lütken, 1875) – “peixe-cachorro”
<b>Erythrinidae</b>	<i>Erythrinus erythrinus</i> (Bloch & Schneider, 1801) – “jeju” <sup>*</sup> <i>Hoplias</i> aff. <i>malabaricus</i> (Bloch, 1794) – “traíra”
<b>Lebiasinidae</b>	<i>Pyrrhulina australis</i> Eigenmann & Kennedy, 1903
<b>Siluriformes</b>	
<b>Cetopsidae</b>	<i>Cetopsis gobioides</i> Kner, 1858 – “candiru”
<b>Trichomycteridae</b>	<i>Ituglanis</i> sp. – “candiru” <i>Paravandellia oxyptera</i> Miranda-Ribeiro, 1912 – “candiru-vampiro”
<b>Callichthyidae</b>	<i>Aspidoras fuscoguttatus</i> Nijssen & Isbrücker, 1976 – “coridoras” <i>Callichthys callichthys</i> (Linnaeus, 1758) – “camboja, tamboatá” <i>Corydoras difluviatilis</i> Britto & Castro, 2002 – “limpa-vidro” <i>Hoplosternum littorale</i> (Hancock, 1828) – “tamboatá”
<b>Loricariidae</b>	
Neoplecostominae	<i>Neoplecostomus</i> sp. – “cascudinho” <sup>**</sup>
Hypoptopomatinae	New genus – “cascudinho” <sup>**</sup>
Loricariinae	<i>Loricaria prolixa</i> Isbrücker & Nijssen, 1978 – “rapa-canoa” <i>Rineloricaria</i> cf. <i>latirostris</i> (Boulenger, 1900) – “rapa-canoa”
Hypostominae	<i>Hypostomus ancistroides</i> (Ihering, 1911) – “cascudo” <i>Hypostomus iheringi</i> (Regan, 1908) – “cascudo” <i>Hypostomus margaritifera</i> (Regan, 1908) – “cascudo” <i>Hypostomus nigromaculatus</i> (Schubart, 1964) – “cascudo” <i>Hypostomus regani</i> (Ihering, 1905) – “cascudo” <i>Hypostomus strigaticeps</i> (Regan, 1908) – “cascudo” <i>Hypostomus</i> sp. 1 – “cascudo” <i>Hypostomus</i> sp. 2 – “cascudo” <i>Hypostomus</i> sp. 3 – “cascudo” <i>Hypostomus</i> sp. 4 – “cascudo” <i>Hypostomus</i> sp. 5 – “cascudo” <i>Hypostomus</i> sp. 6 – “cascudo” <i>Hypostomus</i> sp. 7 – “cascudo” <i>Megalancistrus</i> sp. – “cascudo-abacaxi”
<b>Pseudopimelodidae</b>	<i>Pseudopimelodus mangurus</i> (Valenciennes, 1835) – “bagre-sapo” <i>Pseudopimelodus pulcher</i> (Boulenger, 1887) – “bagre-sapo”

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<b>Heptapteridae</b>	<i>Cetopsorhamdia iheringi</i> Schubart & Gomes, 1959 – “bagre” <i>Imparfinis borodini</i> Mees & Cala, 1989 – “bagre pedra” <i>Imparfinis schubarti</i> (Gomes, 1956) – “bagrinho” <i>Phenacorhamdia tenebrosa</i> (Schubart, 1964) – “bagrinho” <i>Pimelodella avanhandavae</i> Eigenmann, 1917 – “mandi-chorão” <i>Pimelodella gracilis</i> (Valenciennes, 1835) – “mandi-chorão” <i>Rhamdia quelen</i> (Quoy & Gaimard, 1824) – “jundiá”
<b>Pimelodidae</b>	<i>Iheringichthys labrosus</i> (Lütken, 1874) – “mandi-beiçudo” <i>Megalonema platanum</i> (Günther, 1880) – “bagre” <i>Pimelodus heraldoi</i> Azpelicueta, 2001 – “mandi” <i>Pimelodus maculatus</i> La Cèpède, 1803 – “mandi” <i>Pimelodus paranaensis</i> Britski & Langeani, 1988 – “mandi” <i>Pimelodus</i> sp. – “mandi” <i>Pinirampus pirinampu</i> (Spix & Agassiz, 1829) – “barbado” <i>Pseudoplatystoma corruscans</i> (Spix & Agassiz, 1829) – “pintado” <i>Sorubim lima</i> (Bloch & Schneider, 1801) – “bico-de-pato” <i>Steindachneridion scriptum</i> (Miranda-Ribeiro, 1918) – “sorubim” <i>Zungaro zungaro</i> (Humboldt, 1821) – “jaú”
<b>Doradidae</b>	<i>Rhinodoras dorbignyi</i> (Kner, 1855) – “armado”
<b>Auchenipteridae</b>	<i>Ageneiosus militaris</i> Valenciennes, 1836 – “manduvê” <i>Glanidium cesarpinto</i> Ihering, 1928 – “bocudo” <i>Tatia neivai</i> (Ihering, 1930) – “bocudo”
<b>Clariidae</b>	<i>Clarias gariepinus</i> (Burchell, 1822) – “bagre-africano”*
<b>Gymnotiformes</b>	
<b>Gymnotidae</b>	<i>Gymnotus inaequilabiatus</i> (Valenciennes, 1839) – “morenita, tuvira”*
<b>Sternopygidae</b>	<i>Eigenmannia trilineata</i> López & Castello, 1966 – “espadinha” <i>Eigenmannia</i> sp. – “espadinha” <i>Sternopygus macrurus</i> (Bloch & Schneider, 1801) – “itui”
<b>Apteronotidae</b>	<i>Apteronotus</i> sp. – “itui” <i>Porotergus ellisi</i> Arámburu, 1957 – “itui”
<b>Cyprinodontiformes</b>	
<b>Poeciliidae</b>	<i>Poecilia reticulata</i> Peters, 1859 – “guaru”* <i>Xiphophorus hellerii</i> Heckel, 1848 – “espadinha”*
<b>Synbranchiformes</b>	
<b>Synbranchidae</b>	<i>Synbranchus marmoratus</i> Bloch, 1795 – “muçum”
<b>Perciformes</b>	
<b>Cichlidae</b>	<i>Cichla kelberi</i> Kullander & Ferreira, 2006 – “tucunaré”* <i>Cichlasoma paranaense</i> Kullander, 1983 – “cará” <i>Crenicichla haroldoi</i> Luengo & Britski, 1974 – “joaninha” <i>Crenicichla niederleini</i> (Holmberg, 1891) – “joaninha” <i>Laetacara</i> sp. – “cará”* <i>Satanoperca pappaterra</i> (Heckel, 1840) – “cará” <i>Oreochromis niloticus</i> (Linnaeus, 1758) – “tilápia-do-Nilo”* <i>Tilapia rendalli</i> (Boulenger, 1897) – “tilápia”*

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Luz-Agostinho et al. (2006) studied food spectrum and trophic structure of 64 fish species from the Corumbá Reservoir, however some of them were misidentified. For standardizing purposes, the updated names of those species are presented between parentheses: *Ageneiosus valenciennesi* (*A. militaris*), *Astyanax bimaculatus* (*A. altiparanae*), *Astyanax eigenmanniorum* (*A. bockmanni*), *Cichla monoculus* (*C. kelberi*), *Gymnotus carapo* (*G. inaequilabiatus*), *Lebistes reticulatus* (*Poecilia reticulata*), *Megalonema platanus* (*M. platanum*), *Nannorhamdia schubarti* (*Imparfinis schubarti*), *Parodon tortuosus* (*P. nasus*), *Pimelodus fur* (*P. heraldoi*), *Pimelodus paranensis* (*P. paranaensis*), *Salminus maxillosus* (*S. brasiliensis*) and *Serrasalmus spilopleura* (*S. maculatus*). *Neoplecostomus paranensis* is called herein as *Neoplecostomus* sp. according to a study that has been carried out by C.H. Zawadzki, C.S. Pavanelli and F. Langeani (pers. comm.).

The Paranaíba River basin presents some endemic species of different groups. It is attributed to a series of rapids which represent barriers to free dispersal of fishes between upper and lower parts of the basin (Pavanelli and Britski 1999). This hypothesis is corroborated by some authors (e.g. Ribeiro et al. 2004) who described *Creagrutus varii* from the Paranaíba River basin. Zarske and Géry (1999), and Menezes et al. (2003) described new species apparently restrict to that region, in addition to some other species mentioned by Reis et al. (2003), which only occur in the Corumbá River basin, such as *Hasemania crenuchoides* (not captured in this study), *Planaltina myersi*, and *Steindachnerina corumbae*. *Leporinus tigrinus*, described from the type-locality “Goyaz” by Borodin in 1929 had never been collected again after that. Since then it has been considered restricted to the Araguaia/Tocantins basin (Britski 1997; Garavello and Britski 2003). However, considering the provenience of all material of Thayer Expedition labeled as “Goyaz” as from the Araguaia/Tocantins basin is not recommended by Lima (2004), who studied some *Brycon* species. Only one specimen attributed to *L. tigrinus* was caught in this study, but considering its very peculiar color pattern, it can be certainly attributed to this species. It corroborates the Lima’s comment

and contributes to indicate the type-locality of this species is Paraná River rather than Araguaia River.

Some of the non-indigenous species captured in the whole survey were originally from other Brazilian basins and others were even from other countries. *Brycon amazonicus*, *Clarias gariepinus*, *Colossoma macropomum*, *Cyprinus carpio*, *Leporinus macrocephalus*, *Oreochromis niloticus* and *Tilapia rendalli* which were represented only by large individuals, and occurred sporadically in the samples, may have been intentional or accidentally carried or having escaped from some small ponds or tanks situated near the sampling region. *Erythrinus erythrinus* and *Gymnotus inaequilabiatus* were also sporadic, and as they are commonly used as live bait by Brazilian anglers, it could explain their presence in the Corumbá River basin. *Laetacara* sp., *Poecilia reticulata*, and *Xiphophorus hellerii* may also have been intentional or accidentally carried by aquarists or for controlling insects’ larvae. *Cichla kelberi*, native from Amazon basin, was introduced in several Brazilian rivers for recreational fishing. All the indigenous species listed in Table I with no specific name are probably new species which have been studied for specialists, including a new genus of Hypoptopomatinae subfamily.

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