

Checklist of the Fishes of Paraguay (CLOFPY).

Stefan Koerber¹, Héctor S. Vera-Alcaraz² & Roberto E. Reis³

¹ Friesenstr. 11, 45476 Muelheim, Germany, pecescrilloos@koerber-germany.de

² Museo Nacional de Historia Natural del Paraguay, Secretaría del Ambiente. Ruta Mariscal Estigarribia km 10.5, Casilla de Correo 19004, 2169 (Sucursal 1 - Campus UNA). San Lorenzo, Central, Paraguay. hsveraalcaraz@gmail.com

³ PUCRS, Laboratory of Vertebrate Systematics. P.O. Box 1429, 90619-900 Porto Alegre, RS, Brazil. reis@puhrs.br

Abstract

A checklist of all freshwater fish species demonstrated to occur in Paraguay is presented with the aim of providing an updated list of all known fishes from Paraguay and to establish a baseline to keep the inventory updated. Species listed herein are only those that appear in published papers based on actual collection records. Type localities are provided for primary types of species originally described from Paraguay. For each species, the current name combination is followed by a list of synonyms, beginning with the original name combination, and followed by a list of literature citations for the Paraguayan territory. A total of 307 fish species were confirmed and listed, four of which are categorized as threatened, and including four introduced exotic species. Two thirds of the species belong to the Characiformes and Siluriformes, among the twelve orders and 39 families listed. A description of the hydrographic systems of Paraguay as well as an overview of the history of the ichthyology in Paraguay are also presented.

Introduction

Approximately one third of all freshwater fish species worldwide or more than 5,160 species occur in the aquatic habitats of South America. Further on the richest freshwater fish fauna, the highest rate of annual new species description is also recorded in the continent, with an average of 104 new species described every year in the past 15 years (Reis et al., 2016). Of the above total, 307 species (Table 1) are documented to occur in the waterways of Paraguay, representing almost 6% of the total in approximately 2.3% of the continental area. Among those, four species, *Coptodon rendalli* (Cichlidae, Africa), *Poecilia reticulata* (Poeciliidae, northern South America), and the two species of *Cichla* (Cichlidae, Amazon basin), are introduced exotic species. Previous estimates of Paraguayan fish richness based on published papers summarized 129 species (Ramlow, 1981), 189 species (Mandelburger et al., 1996) and 298 species (Bertoni, 1939). However, unpublished estimates vary from 259 (www.fishbase.org) to 395 (www.faanparaguay.com/fishlist.html), and even up to 451 (guyra.org.py).

The conservation status of Paraguayan freshwater fish species has been evaluated based on data generated during an international workshop for assessing extinction risk of fishes in the lower La Plata river basin (Baigún et al., 2012), conducted in August 2008 in Asunción, Paraguay. In that opportunity, 11 species were assessed as threatened in the lower La Plata basin using IUCN criteria (IUCN, 2010), four of which occur in Paraguay (*Ancistrus piriformis* and *Brycon orbignyanus* categorized as Vulnerable, and *Gymnogeophagus setequedas* and *Hypostomus dlouhyi* categorized as Endangered). *Salminus hilarii* and *Zungaro jahu*, two species probably present in Paraguay but still in need of confirmation, were also listed as Vulnerable. As in most of South America, continued habitat loss through land use change, construction and operation of hydroelectric dams, urbanization, poor agricultural practices, water pollution, overfishing, and introduction of alien species (Allan et al., 2005; Barletta et al., 2010; Reis, 2013; Reis et al., 2016) are the main causes of fish population decline in Paraguay.

This checklist is a biodiversity inventory of the freshwater fishes of Paraguay, which has two objectives: to provide an updated list of all known taxa for Paraguay based on literature funded in actual collection records, and to establish a baseline to keep the inventory updated. Previous papers dealing with the Paraguayan fish diversity consisted in regional species lists (Chernoff et al., 2001) or national approaches (Bertoni, 1914, 1939; Ramlow, 1981; Mandelburger et al., 1996). Surprisingly, all failed in providing the source of information, even those based on scientific collections (Ramlow, 1981; Mandelburger et al., 1996;

Chernoff et al., 2001). For this reason, several hundreds of papers had to be checked to identify the ones cited in here. After the first version of the list was completed, 39 fish taxonomists (see list in Acknowledgements) provided a review of their group of expertise, frequently adding new data and increasing accuracy to the work. All efforts were made to deliver a list free of errors, but as this is mostly improbable, we will be thankful for any correction or addition received. Despite the huge efforts of the reviewers all remaining errors are to be considered ours. For the future, all investigators are urged not only to use Paraguayan specimens in their publications, but to explicitly mention confirmations for doubtful species and first records as such.

	CLOFPY "locality"
Myliobatiformes	7
Clupeiformes	2
Characiformes	123
Siluriformes	110
Gymnotiformes	15
Cyprinodontiformes	18
Beloniformes	2
Synbranchiformes	1
„Perciformes“	2
Cichliformes	24
Pleuronectiformes	2
Ceratodontiformes	1
	307

Table 1.

Overview on the number of species of fishes to which the criterion "locality" could be assigned and which are thus confirmed for Paraguay.

Hydrographic systems of Paraguay

The Republic of Paraguay is located in central South America, its hydrologic systems belonging entirely to the Río de la Plata basin, the fifth largest basin in the world with a total area of about 3.1 million km². This basin encompasses four major freshwater ecoregions through the Paraguayan territory (Figure 1): Chaco, Paraguay, Upper Paraná, and Lower Paraná (Abell et al., 2008). Paraguay is drained by the Río Paraguay and Río Paraná systems, both rivers forming large alluvial fans (or megafans) in the Paraguayan territory. Megafans occur when mountain capture rivers fill a plain area in a large drainage and deposit sediments by a laterally moving arm of the river (DeCelles & Cavazza, 1999).

The alluvial fans on the right margin of the Río Paraguay in the Paraguayan 'Chaco' freshwater ecoregion are the Parapetí and the Pilcomayo (Iriondo, 1993). According to that author, the Parapetí fan flows to the Río Madeira regularly, and a little portion to the Timane-Paraguay around Bahía Negra during high flood in the rainy season. Furthermore, the Pilcomayo fan once drained in direction to and formed a swampy area known as the Estero Patiño (Iriondo et al., 2000). However, because of siltation and avulsion it actually drains to the Southeast in Argentina and to the West in Paraguay, flooding tributaries of the Río Paraguay as the Río Confuso and others. On the other hand, the Paraná fan covers the Southern part of Eastern Paraguay and the Northwestern part of Corrientes in Argentina (Iriondo & Paira, 2007), occupying the lowermost part of the freshwater ecoregion 'Paraguay' and the upper part of the freshwater ecoregion 'Lower Paraná' (Figure 2).

The Río Paraguay basin is about 2,500 km long and extends to a total area of about 1 million km², characterized by a vast plain which ranges from an altitude of 125 m in the Pantanal to 48 m at the confluence with the Río Paraná (Barros et al., 2004). Right margin tributaries to the Río Paraguay are generally intermittent systems draining the Chaco ecoregion in Paraguay as a result of the Pilcomayo alluvial fan (Iriondo et al., 2000). The Western Chaco is characterized by ephemeral channels, and the Eastern Chaco by swamps located in alluvial belts draining to the Río Paraguay (Iriondo, 1993). The most important right margin tributaries in the Paraguayan territory are nested entirely within the Chaco ecoregion and include the rivers Negro, Verde, Montelindo, Aguaray-Guasú, Confuso, and Pilcomayo. Left margin tributaries of the Río Paraguay are nested completely in the freshwater ecoregion 'Paraguay' and the most important tributaries on the Paraguayan territory are the rivers Apa, Aquidabán, Ypané, Jejuí-Guazú, Manduvirá, Salado, and Tebicuary (Figure 2).

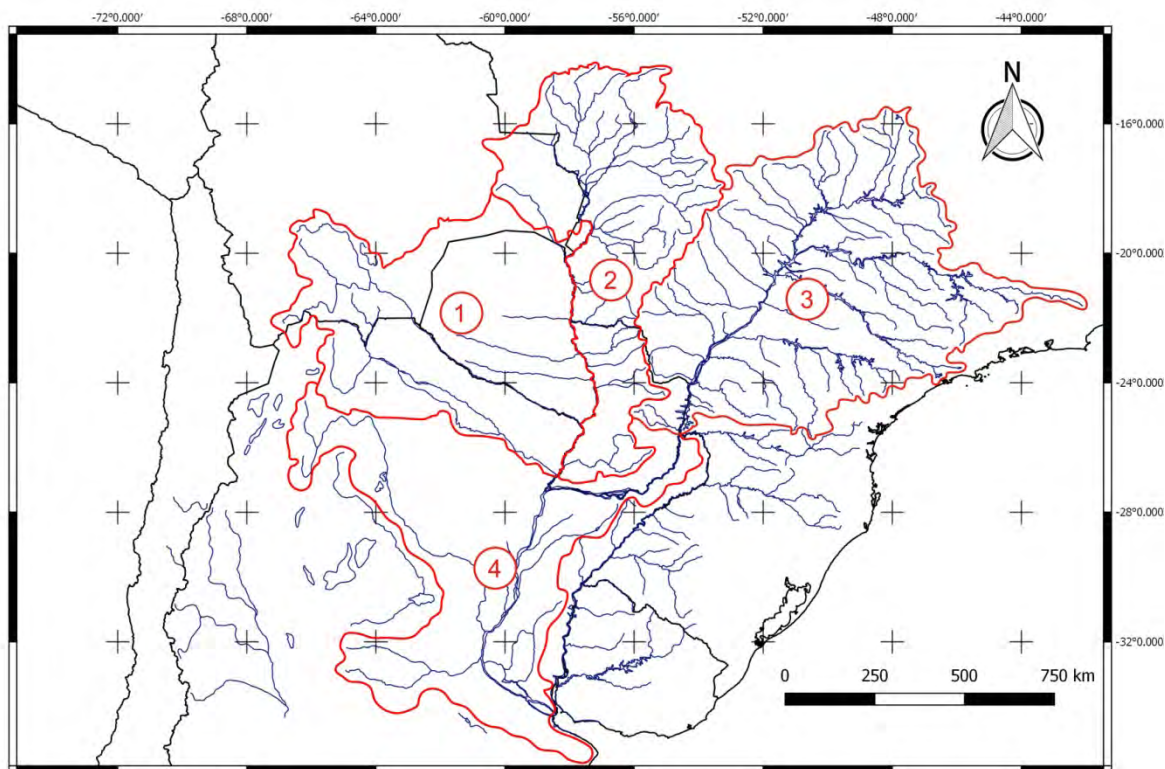


Figure 1. Partial map of South America showing the Río de la Plata Basin and four freshwater ecoregions: 1 Chaco, 2 Paraguay, 3 Upper Paraná, and 4 Lower Paraná. Red lines are ecoregion boundaries. Black lines are political boundaries.

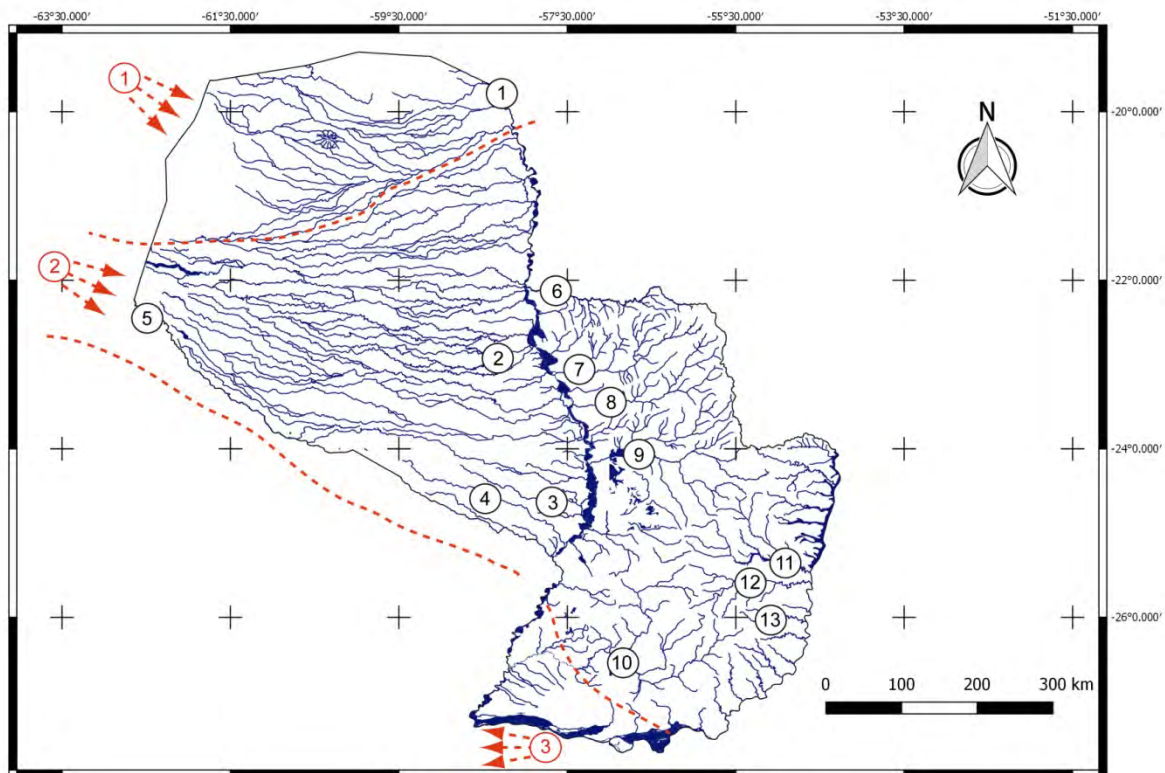


Figure 2. Map of Paraguay showing its hydrological systems: Black numbers indicate river: 1 Negro, 2 Verde, 3 Aguaray-Guasú, 4 Confuso, 5 Pilcomayo, 6 Apa, 7 Ypané, 8 Aquidabán, 9 Manduvirã, 10 Tebicuary, 11 Acaray, 12 Monday, and 13 Ñacunday. Red numbers indicate alluvial fans: 1 Parapetí fan, 2 Pilcomayo fan, 3 Paraná fan. Red arrows indicate flow direction. Dashed lines are fan boundaries.

The Río Paraná system is approximately 4,695 km long and extends from its source formed by the junction of the Grande and Paranaíba rivers at 20°S, to 34°S at its mouth, near Buenos Aires, Argentina (Stevaux, 1994). The Río Paraná basin is divided into two major ecoregions, extending the 'Upper Paraná' from its source to the Itaipú dam near Ciudad del Este (Paraguay) and Foz do Iguazu (Brazil). The most important right margin tributaries of this ecoregion is the Río Acaray. Below this point, Paraguayan water bodies are embedded entirely in the 'Lower Paraná' freshwater ecoregion and the most important right margin tributaries are the rivers Monday, Ñacunday, and Tembey (Figure 2).

The Río Paraguay and the Río Paraná, including the whole basin of the Río de La Plata, are considered an area of endemism for Neotropical fishes. This basin is characterized by harboring a high number of endemic species with low number of species shared with other areas (Hubert & Renno, 2006). Ichthyological surveys revealed some endemic regions for Paraguay as the Río Paraná's tributaries around the Itaipú Dam (Mahnert & Gery, 1987; Axenrot & Kullander, 2003), the Paraná fan (Uj & Géry, 1989), and temporary ponds in the dry Chaco region for cyprinodontiform fishes (Huber, 1995).

History of ichthyology in Paraguay

The earliest records about fishes from Paraguay date back to 1767 when the Jesuit missionary José Sánchez Labrador published his report *Paraguay Natural*. This descriptive narrative was based on his personal experiences and observations made during the two decades he lived among the Guaraní, Mbyá and Toba people. An extract on the birds and fishes was published by Castex (1968) in which many native names of fishes have been mentioned in the languages of the native people. Some of these names, such as Manguruyú and Patí, are still in use today and can be assigned to a species. In other cases the descriptions made by Sánchez Labrador are still detailed enough to trace his observations down to a genus or at least a family level.

After that work no additional information was gathered on the fishes of Paraguay for more than 120 years, until the beginning of an era of naturalist travelers typical for all South American countries. Following the examples of Darwin, Wallace, Natterer and others, European naturalists travelled extensively and took their collections home where those were worked by specialists at well-established museums.

In the last decade of the 19th century, Boulenger (1895a, 1895b) reported on the collections made by Borelli and Ternetz in Paraguay, Perugia (1891, 1897) on those of Balzan and Boggiani. Numerous first records of species from Paraguay, not only of fishes, are based on those collections and respective publications. Only a decade later this scenario of travelling Europeans changed drastically when the young Daniel Anisits at the age of 27 emigrated in 1883 from Hungary to Paraguay, where he lived until 1907. He first worked as a pharmacist in Asunción and later as a teacher at the Colegio Nacional. Finally Paraguay had a naturalist who lived there permanently and not only passed through with an expedition. Nobody before and for a long time after him conducted so extensive collections in Paraguay. He sent his fishes for determination to Eigenmann at the Indiana University who could publish numerous reports on these, as well as on other specimens received from Page and Ternetz (Eigenmann & Kennedy, 1903; Eigenmann et al., 1907; Eigenmann & Ogle, 1907).

In 1907 Eigenmann et al. stated that "Professor Anisits has made further collections of the fresh-water fishes of the basin of the Paraguay which were sent to Indiana University for identification. By these collections several new species and new genera are added to the South American fauna, the known distribution of many species is extended, and what is, perhaps, of most importance, the South American fauna is rid of a number of nominal species, which have been relegated to synonymy. The collections of Professor Anisits are the most important and extensive which have been made in the basin of the Paraguay, and his energy and enthusiasm, together with his great care in the preservation and labelling of his specimens, promise to make the basin of the Paraguay ichthyologically among the best known regions of the neotropical realm."

Based on the above mentioned authors and their publications, Bertoni published two catalogues of Paraguayan vertebrates in 1914 and 1939. To the present days, these are the most complete available lists of fishes from Paraguay. Unfortunately Bertoni's catalogues introduced two main issues: he did not cite his sources and he seems to have assumed the presence of species in Paraguay from reports made for nearby localities in Argentina and Brazil.

After Eigenmann's singing the praises of Anisits, Paraguayan ichthyology fell into a deep sleep which lasted for three generations. Only from the 1980ies onward again someone would collect fishes in Paraguay for scientific purpose on a noteworthy scale in the frame of the National Biological Inventory Project (IBN) (Ramlow, 1981). In cooperation with Paraguayan organizations researchers from the museums in Geneva and Stockholm collected, determined, and described elements of the local

ichthyofauna, mainly cichlids, loricariids, and characids (Kullander, 1981; Weber, 1986a; Mahnert & Géry, 1987, 1988). During the 1990ies and early 2000s several local collections have been undertaken in the frame of some rapid assessment programs by the National Museum of Natural History of Paraguay (MNHNP) together with national and international institutions (Chernoff et al., 2001). Today Paraguay is developing an own profile in systematic and taxonomic ichthyology in cooperation with specialists from neighboring countries and the Northern hemisphere.

Methods

Systematics: In the assignment of families to orders we follow Mirande (2016) with the exception of the Sciaenidae which we leave tentatively in "Perciformes". From family level down all taxa are sorted in alphabetical order. Unresolved units as clades follow at the end of the respective higher level.

Spelling, validity, authorship, and synonymy: We follow the currently available digital version of the database Catalog of Fishes (Eschmeyer et al., 2017). Unavailable names are not included in the listed synonyms. Synonyms are not provided for introduced exotic species. In cases where authors' names are of German origin or references published in German language and contain a diacritic vowel we adopt the recommendation given in the Code (ICZN, 1999) for names of taxa and change these from ä, ö, or ü to ae, oe or ue. Practise has shown that spellings containing German diacritic vowels are difficult or impossible to search for e.g. in databases.

Type localities: Type localities of both, valid species and synonyms, are only provided for holo-, syn-, lecto-, and neotypes if located within the territory of the country of Paraguay.

Localities and listings: We have analyzed all literature available to us and assigned either 'locality' or 'listing' to each publication. A record was considered as 'locality' when voucher specimens from a collection were provided and/or we could trust that the qualified author has examined and correctly determined specimens which are still available. 'Locality' not only permits corroboration that the respective species does occur in Paraguay, but also provides the information where future authors can obtain specimens for comparison. Both, listings and localities, must undoubtedly be from the territory of Paraguay. Mere records from e.g. Yaciretá or Itaipú dam lakes have not been considered. The same for mere mentionings of basins as 'Río Paraguay' or 'Upper Paraná'.

Doubtful species for Paraguay: Species which are considered to be doubtful for Paraguay and need confirmation based on voucher specimens or species assumed not to occur in this country at all are listed at the end the respective taxonomic level. The ones considered not to occur in Paraguay at all have been listed from all literature accounts published in 2000 or later. For these we provide the authors we follow. From earlier dates there are so many unqualified records that providing all those would clearly have inflated these sections too much.

Acknowledgements

Many colleagues have agreed to review the groups they are specialized in and their feedbacks have improved the quality of the present list enormously. For their effort and availability to share their expertise, we are thankful to Alice Hirschmann, Barbara Calegari, Carlos Lucena, Emmanuel Maxime, Fernando Carvalho, Fernando Jerep, Flávio Lima, Francisco Langeani, George Mattox, Guillermo Ortí, James Albert, Junior Chuctaya, Labbish Chao, Luis Birindelli, Luiz Fernández, Luiz Malabarba, Luiz Tencatt, Marcelo Britto, Marcos Mirande, Mariangeles Arce, Mark Sabaj, Mercedes Azpelicueta, Naércio Menezes, Oldrich Rican, Oscar Shibatta, Pablo Lehmann, Paulo Backup, Paulo Lucinda, Robson Ramos, Sonia Fisch-Muller, Thiago Loboda, Thomas Litz, Tiago Carvalho, Tyson Roberts, Vivianne Sant'Anna, Wefferson Graça, William Crampton, Wilson Costa, and Wolmar Wosiacky.

Special thanks are due to Guillermo Ortí and Marcos Mirande for discussion on the higher level systematics, to Hugo del Castillo for sharing his unpublished data with us, to Thomas Litz for the most time consuming task of checking the references from the species accounts against the ones in the reference list and vice versa, and to Nicolás Martínez for his support in elaborating the maps. The long term project of www.PecesCriollos.de and the publication of the present list would not have been possible without the ongoing support of Gfl - Gesellschaft fuer Ichthyology and Hotelwebservice GmbH.

Resumen

Presentamos una lista comentada de todas las especies de peces con ocurrencia demostrada en el Paraguay con dos objetivos principales, proveer una lista actualizada de todas las especies conocidas, y establecer una línea base para mantener el inventario de especies actualizado. Las especies listadas aquí corresponden únicamente a aquellas que aparecieron en artículos científicos publicados y que se basan en registros de especímenes testimonio. Para los tipos primarios de especies originalmente descritas para Paraguay se provee datos de localidad tipo. Para cada especie listada, se provee la combinación nomenclatural actualizada seguida de una lista de nombres sinónimos que comienza con la combinación original propuesta, y además se provee la lista de literatura citada para el territorio paraguayo. Un total de 307 especies de peces fueron confirmadas y listadas, cuatro de las cuales están categorizadas como amenazadas y cuatro especies corresponden a exóticas introducidas. De los 12 órdenes y 39 familias listadas, dos tercios de las especies corresponden a Characiformes y Siluriformes. Se presenta además una descripción de los sistemas hidrográficos y una reseña general de la historia de la ictiología del Paraguay.

Introducción

Aproximadamente un tercio de todos los peces de agua dulce del mundo, o más de 5.160 especies se distribuyen en hábitats acuáticos de América del Sur. Adicionalmente a la riqueza de peces de agua dulce, este continente registra la mayor tasa anual de descripción de nuevas especies para la ciencia, con un promedio anual de 104 nuevas especies descritas en los últimos 15 años (Reis et al., 2016). Del total citado, 307 especies fueron documentadas con distribución en los cursos de agua del Paraguay (Tabla 1), representando casi el 6% del total continental, y distribuidos en un área que representa aproximadamente el 2.3% de América del Sur. Entre estas hay cuatro especies exóticas introducidas: *Coptodon rendalli* (Cichlidae, Africa), *Poecilia reticulata* (Poeciliidae, norte de Sudamérica) y las dos especies de *Cichla* (Cichlidae, Cuenca Amazónica).

Estimativas previas de la riqueza de especies del Paraguay basadas en trabajos publicados varían desde 129 (Ramlow, 1981) a 189 (Mandelburger et al., 1996) y 298 (Bertoni, 1939). Estimaciones no publicadas varían de 259 (www.fishbase.org) a 395 (www.faunaparaguay.com/fishlist.html) hasta 451 (guyra.org.py).

El status de conservación de las especies de peces del Paraguay fue asesorado durante un taller internacional para evaluar el riesgo de extinción de los peces de la cuenca del Río de la Plata (Baigún et al., 2012), el cual fue realizado en Asunción, Paraguay en agosto del 2008. En esa oportunidad, 11 especies fueron evaluadas como amenazadas para la parte inferior de la cuenca del Río de la Plata utilizando criterios de la UICN (IUCN, 2010), siendo cuatro especies con distribución en el Paraguay (*Ancistrus piriformis* y *Brycon orbignyanus* categorizados como 'Vulnerable', y *Gymnogeophagus setequedas* e *Hypostomus dlouhyi* categorizados como 'En peligro'). *Salminus hilarii* y *Zungaro jahu*, dos especies con distribución probable en el Paraguay pero que aún requieren confirmación, fueron también listadas como 'Vulnerable'. Como en toda América del Sur, la principal causa de disminución poblacional de especies acuáticas del Paraguay es la pérdida de hábitats debido a cambios de uso de la tierra, construcción y operación de represas hidroeléctricas, urbanización, malas prácticas agrícolas, polución del agua, sobrepesca, e introducción de especies exóticas (Allan et al., 2005; Barletta et al., 2010; Reis, 2013; Reis et al., 2016).

Esta lista comentada es un inventario de la biodiversidad de los peces de agua dulce del Paraguay, el cual tiene dos objetivos: proveer una lista actualizada de todas las especies conocidas para el Paraguay en base a literatura publicada con registros de colecciones científicas y establecer una línea de base para mantener este inventario de especies actualizado. Se realizó un gran esfuerzo en proveer una lista libre de errores, pero como esto es casi siempre improbable, estaremos agradecidos en recibir cualquier corrección o adición necesaria. Trabajos previos que lidiaron con la diversidad de peces del Paraguay consistieron en listas regionales de especies (Chernoff et al., 2001) o listas nacionales (Bertoni, 1914, 1939; Ramlow, 1981; Mandelburger et al., 1996). Llamativamente, todas carecieron en proveer las fuentes de información, inclusive aquellas basadas en registros de colecciones científicas (Ramlow, 1981; Mandelburger et al., 1996; Chernoff et al., 2001). Por esta razón, varios cientos de manuscritos fueron revisados para identificar las especies aquí listadas.

Cuando la primera versión de la lista fue completada, 39 investigadores con especialidad en taxonomía de peces neotropicales (ver lista en Agradecimientos) realizaron una revisión de los grupos de su especialidad, frecuentemente agregando nuevos datos e incrementando la precisión del trabajo. Se realizó un gran esfuerzo en proveer una lista libre de errores, pero como esto es casi siempre imposible, estaremos agradecidos en recibir cualquier adición o corrección. A pesar del gran esfuerzo de los

revisores, los errores que se puedan encontrar en el manuscrito son nuestros. Para el futuro, se urge a los investigadores que no solamente citen a las especies paraguayas en sus publicaciones, sino que mencionen explícitamente las confirmaciones de especies probables y los primeros registros de especies para el país.

Sistemas hidrográficos del Paraguay

La República del Paraguay está localizada en el centro de América del Sur, sus sistemas hidrológicos pertenecen enteramente a la cuenca del Río de la Plata, la quinta mayor cuenca del mundo con un área total cercana a los 3.1 millones de km². Esta cuenca abarca cuatro grandes ecorregiones acuáticas a lo largo del territorio paraguayo (Figura 1): Chaco, Paraguay, Alto Paraná, y Bajo Paraná (Abell et al., 2008). Paraguay está irrigado por los sistemas del Río Paraguay y del Río Paraná, ambos ríos forman grandes abanicos aluviales (mega-abanicos) en el territorio paraguayo. Los mega-abanicos ocurren cuando ríos de captación de montaña de una cuenca grande llenan un área plana y el brazo del río posee un movimiento lateral debido al depósito de sedimentos en el cauce (DeCelles & Cavazza, 1999).

Los abanicos aluviales de la ecorregión 'Chaco' en el Paraguay que drenan en la margen derecha del Río Paraguay son el Parapetí y el Pilcomayo (Iriondo, 1993). De acuerdo con este autor, el abanico del Parapetí drena regularmente al Río Madeira y en una porción menor drena al Río Timane, y mediante este al Río Paraguay cerca de Bahía Negra, durante las grandes inundaciones de las estaciones lluviosas. Además, el abanico del Pilcomayo antiguamente drenaba en dirección al Estero Patiño formando dicha área pantanosa. No obstante, debido a procesos de colmatación y avulsión drena actualmente al sudeste de la Argentina y al este de Paraguay, inundando tributarios del Río Paraguay como el Río Confuso y otros (Iriondo et al., 2000). Por otro lado, el abanico del Paraná cubre la región sudeste del Paraguay y el noreste de Corrientes en la Argentina (Iriondo & Paira, 2007), ocupando la parte más inferior de la ecorregión acuática 'Paraguay' y la parte superior de la ecorregión acuática 'Bajo Paraná' (Figura 2).

La Cuenca del Río Paraguay tiene aproximadamente 2,500 km de largo y se extiende sobre un área total cercana al 1 millón de km², caracterizada por una amplia planicie que varía desde los 125 m de altitud en el Pantanal hasta los 48 m en su confluencia con el Río Paraná (Barros et al., 2004). Los tributarios de la margen derecha del Río Paraguay son generalmente sistemas intermitentes que drenan la ecorregión 'Chaco' del Paraguay como resultado del abanico aluvial del Pilcomayo (Iriondo et al., 2000). El Chaco Occidental se caracteriza por canales efímeros, y el Chaco Oriental por pantanos localizados en las fajas fluviales que drenan al Río Paraguay (Iriondo, 1993). Los tributarios más importantes de la margen derecha en territorio paraguayo están enteramente encajonados dentro de la ecorregión 'Chaco' e incluye a los ríos Negro, Verde, Montelindo, Aguaray-Guasú, Confuso y Pilcomayo. Los tributarios más importantes de la margen izquierda en territorio paraguayo están enteramente dentro de la ecorregión 'Paraguay' e incluye a los ríos Apa, Aquidabán, Ypané, Jejuí-Guasú, Manduvirá, Salado y Tebicuary (Figura 2).

La Cuenca del Río Paraná posee aproximadamente 4,695 km de largo y se extiende desde los 20°S en su nacimiento en la confluencia de los ríos Paranaíba y Grande, hasta los 34°S en su desembocadura, cerca de Buenos Aires, Argentina (Stevaux, 1994). El Río Paraná se divide en dos grandes ecorregiones, extendiéndose el 'Alto Paraná' desde su nacimiento hasta la Represa de Itaipú cerca de Ciudad del Este (Paraguay) y Foz do Iguaçu (Brasil). El tributario más importante de la margen derecha de la ecorregión 'Alto Paraná' es el Río Acaray. Por debajo de este punto, los cuerpos acuáticos paraguayos están incluidos enteramente dentro de la ecorregión 'Bajo Paraná' siendo los tributarios más importantes los ríos Monday, Ñacunday y Tembey (Figura 2).

El Río Paraguay y el Río Paraná, incluyendo toda la Cuenca del Río de la Plata, son considerados como áreas de endemismo para peces Neotropicales. Esta cuenca se caracteriza por albergar un alto número de especies endémicas con un bajo número de especies compartidas con otras áreas (Hubert & Renno, 2006). Estudios ictiológicos han revelado algunas regiones de endemismo para el Paraguay como los tributarios del Río Paraná cerca de la Represa de Itaipú (Mahner & Gery, 1987; Axenrot & Kullander, 2003), el abanico aluvial del Paraná (Uj & Géry, 1989), y charcos temporarios en la región del Chaco Seco para peces cyprinodontiformes (Huber, 1995).

Historia de la ictiología en Paraguay

Los primeros registros sobre peces del Paraguay datan de 1767 cuando el misionero jesuita José Sánchez Labrador publicó su informe *Paraguay Natural*. Este relato descriptivo se basó en sus propias experiencias y observaciones hechas durante las dos décadas que él vivió entre las tribus Guaraní, Mbyá y Toba. Un extracto sobre las aves y peces fue publicado por Castex (1968) en el cual muchos nombres han sido mencionados en los idiomas de las tribus nativas. Algunos de estos nombres, como p.ej. Manguruyú y Patí, aun están en uso y pueden ser asignados a especies. En otros casos, tal como las descripciones hechas por Sánchez Labrador, son suficientemente detalladas como para reconocer al menos el nivel de género o familia.

Luego de este trabajo ninguna información adicional sobre los peces del Paraguay fue reunida por más de 120 años después, hasta el comienzo de una etapa de viajeros naturalistas, típica para todos los países sudamericanos. Siguiendo los ejemplos de Darwin, Wallace, Natterer y otros, naturalistas europeos viajaron frecuentemente y llevaron las colecciones a sus países, donde fueron trabajadas por especialistas en museos ya bien establecidos. En la última década del Siglo 19, Boulenger (1895a, 1895b) informó sobre las colecciones hechas por Borelli y Ternetz en el Paraguay, y Perugia (1891, 1897) sobre las de Balzan y Boggiani. Numerosos primeros registros de especies del Paraguay, no solo de peces, se basan en estas colecciones y las respectivas publicaciones.

Solo una década más tarde, este escenario de viajeros europeos cambió drásticamente cuando el joven Daniel Anisits, a la edad de 27, emigró en 1883 desde Hungría a Paraguay donde vivió hasta 1907. Primero trabajó como farmacéutico en Asunción y luego como profesor en el Colegio Nacional. Finalmente, Paraguay disponía de un naturalista quien vivió allí permanentemente y no solo pasó con una expedición. Nadie, ni antes ni por mucho tiempo después de él, había hecho colecciones tan intensas en Paraguay. Mandó sus peces para determinación a Eigenmann en la Universidad de Indiana, quien pudo publicar numerosos informes sobre los mismos, como también sobre ejemplares recibidos de Page y Ternetz (Eigenmann & Kennedy, 1903; Eigenmann et al., 1907; Eigenmann & Ogle, 1907).

En 1907, Eigenmann y colaboradores contaron que el “Profesor Anisits ha hecho colecciones adicionales de peces de agua dulce en la Cuenca del Río Paraguay, los cuales ha mandado a la Universidad de Indiana para que sean identificados. En base a estas colecciones, varias especies y varios géneros se agregan a la fauna sudamericana, se extienden las distribuciones de muchas especies y, quizá lo más importante, en la fauna sudamericana se descartan un número importante de especies nominales, las cuales pudieron relegarse a sinonimia. Las colecciones del Profesor Anisits son las más importantes y completas que fueron efectuadas en la Cuenca del Paraguay, y su energía y entusiasmo, junto a su gran cuidado en la preservación y el etiquetado de sus especímenes, prometen colocar a la Cuenca del Paraguay entre las mejores conocidas ictiológicamente del dominio neotropical.”

Basándose en los autores mencionados antes y las publicaciones de ellos, Bertoni publicó dos catálogos de los vertebrados del Paraguay en 1914 y 1939. Hasta el día de hoy estas son las listas más completas disponibles para los peces del Paraguay. Desafortunadamente los catálogos de Bertoni han sufrido dos inconvenientes importantes: él no ha citado a sus fuentes y parece que ha asumido la presencia de especies en Paraguay en base a registros de localidades cercanas en Argentina y Brasil.

Luego que Eigenmann cantara loas a Anisits, la ictiología paraguaya cayó en un profundo letargo que duró tres generaciones. Recién desde la década de los 1980s se hicieron nuevamente colecciones de peces en Paraguay en mayor escala gracias al Proyecto Inventario Biológico Nacional (IBN) (Ramlow, 1981). En cooperación con organizaciones paraguayas, investigadores de Ginebra y Estocolmo recolectaron, determinaron y describieron especies de la ictiofauna local, principalmente cíclidos, loricáridos a carácidos (Kullander, 1981; Weber, 1986a; Mahnert & Géry, 1987, 1988). Durante los 1990s y el comienzo de los 2000, varias colecciones locales han sido efectuadas en el marco de programas de evaluación rápida por el Museo Nacional de Historia Natural del Paraguay (MNHNP) en cooperación con instituciones nacionales e internacionales (Chernoff et al., 2001). Actualmente, Paraguay está desarrollando un perfil propio en ictiología sistemática y taxonómica en cooperación con especialistas de los países vecinos y del hemisferio norte.

Métodos

Sistemática: En la asignación de familias y órdenes seguimos a Mirande (2016) con la excepción de Sciaenidae donde mantenemos tentativamente a este taxón dentro de “Perciformes”. Para los niveles taxonómicos inferior a familia se presenta un listado en orden alfabético. Unidades irresolutas como clados se encuentran al final del respectivo nivel taxonómico superior.

Escritura, validez, autoridad y sinononímia: Seguimos la versión digital actualmente disponible del banco de datos del Catalog of Fishes (Eschmeyer et al., 2017). Nombres indisponibles no están incluidos en los sinónimos listados. Para especies exóticas introducidas no están facilitados los sinónimos. En los casos donde nombres de autores son de origen alemán o publicaciones fueron escritas en alemán y contienen vocales diacríticos, adoptamos la recomendación dada en el Código (ICNZ, 1999) para nombres de taxa con ä, ö, ü, los cuales fueron reemplazados por ae, oe, ue. La práctica ha mostrado que escrituras que contienen vocales diacríticos alemanes son difíciles o imposibles de encontrar en p.ej. bancos de datos.

Localidades tipo: Localidades tipo de especies válidas y sinónimos fueron facilitadas para holo-, sin-, lecto-, y neotipos sólo en los casos que dicha localidad se encuentra dentro del territorio del país de Paraguay.

'Localities' y 'listings': Hemos analizado toda la literatura disponible a nosotros y asignados la palabra 'locality' o 'listing' a cada una de las referencias listadas. Un registro en literatura fue considerado como 'locality' cuando dentro de la misma publicación se ha informado sobre material depositado en colecciones científicas y/o podemos confiar que un autor calificado ha examinado y correctamente determinado el material disponible. 'Locality' no solo permite corroborar la presencia de la respectiva especie en Paraguay, sino también facilita la información donde futuros investigadores pueden conseguir especímenes para comparación. Ambos casos, 'listing' y 'locality', indudablemente tienen que ser del territorio del país de Paraguay. Meros registros de p.ej. Lago del dique Yaciretá o Itaipú no fueron considerados. Lo mismo para casos con meras menciones de cuencas como 'Río Paraguay' o 'Upper Paraná'.

Especies dudosas para Paraguay: Fueron listadas al final del nivel taxonómico superior, corresponden a especies que se consideran dudosas para Paraguay y que requieren confirmación basada en material de colección, o a especies que no se encuentran en Paraguay. Para los casos de especies consideradas no distribuidas en Paraguay fueron consideradas en base a toda literatura publicada en el 2000 o posteriormente. Para estos casos proveemos los nombres de los autores que han hecho dichas citaciones de especies. Hay tantos registros equivocados en la literatura más antigua que facilitándolos todos, hubiera sido una lista demasiado larga.

ELASMOBRANCHII

order **MYLIOBATIFORMES**family **Potamotrygonidae****Potamotrygon** Garman, 1877**P. amandae** Loboda & Carvalho, 2013*Potamotrygon amandae* Loboda & Carvalho, 2013
records ○ Loboda (2016): locality**P. brachyura** (Guenther, 1880)*Trygon brachyurus* Guenther, 1880
Potamotrygon brumi Devincenzi, 1942
records ○ Bertoni (1939): listing sub *Ellipsurus brachyurus*
○ Rosa (1985): listing
○ Compagno & Cook (1995): listing
○ Carvalho et al. (2003): listing
○ Araujo et al. (2004): listing
○ Neris et al. (2008): listing
○ Insaurrealde et al. (2013): listing sub *P. brumi*
○ Lucifora et al. (2015): locality**P. falkneri** Castex & Maciel, 1963*Potamotrygon menchacai* Martínez Achenbach, 1967*Potamotrygon castexi* Castello & Yagolkowski, 1969records ○ Rosa (1985): locality
○ Compagno & Cook (1995): listing sub *P. castexi* and *P. falkneri*
○ Ramlow (1989): listing
○ Carvalho et al. (2003): listing
○ Araujo et al. (2004): listing[info](#)**P. hystrix** (Mueller & Henle, 1841)? *Pastinaca humboldtii* Roulin, 1829*Trygon hystrix* Mueller & Henle, 1841records ○ Eigenmann & Kennedy (1903): locality
○ Bertoni (1914): listing sub *P. humboldtii*
○ Bertoni (1939): listing sub *Ellipsurus h.*
○ Rosa (1985): listing
○ Ramlow (1989): listing
○ Mandelburger et al. (1996): listing
○ Chernoff et al. (2001): listing
○ Araujo et al. (2004): listing
○ Vera (2005): listing
○ Vera & del Castillo (2006): listing
○ Neris et al. (2010): listing sub *P. hystrix***P. motoro** (Mueller & Henle, 1841)*Taeniura motoro* Mueller & Henle, 1841? *Trygon garrapa* Jardine, 1843*Trygon adans* Schomburgk, 1849*Trygon mulleri* Castelnau, 1855*Potamotrygon laticeps* Garman, 1913*Potamotrygon alba* Castex, 1963*Potamotrygon labradori* Castex, 1963*Potamotrygon pauckei* Castex, 1963type locality *alba*: Asunciónrecords ○ Bertoni (1914): listing sub *P. dumerilii*
○ Bertoni (1939): listing sub *Ellipsurus m.*
○ Castex (1963): type locality of synonym *P. alba*
○ Castex & Yagolkowski (1970): listing sub *P. pauckei*
○ Rosa (1985): locality
○ Gill Morlis (1997): listing
○ Chernoff et al. (2001): listing
○ Carvalho et al. (2003): listing
○ Araujo et al. (2004): listing
○ Chernoff et al. (2004): listing
○ Vera (2005): listing[info](#)

- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

P. pantanensis Loboda & Carvalho, 2013

Potamotrygon pantanensis Loboda & Carvalho, 2013
records

- Loboda (2016): locality

P. schuhmacheri Castex, 1964

Potamotrygon schuhmacheri Castex, 1964
records

- Rosa (1985): locality
- Carvalho et al. (2003): listing
- Araujo et al. (2004): listing

ACTINOPTERYGII

order

CLUPEIFORMES

family

Engraulidae***Lycengraulis*** Guenther, 1868***L. grossidens*** (Agassiz, 1829)*Engraulis grossidens* Agassiz, 1829*Engraulis janeiro* Spix, 1829*Engraulis dentex* Valenciennes, 1848*Engraulis olidus* Guenther, 1874*Anchovia abbotti* Fowler, 1915*Clupea inermis* Larrañaga, 1923*Clupea vigintiquiniradiata* Larrañaga, 1923*Lycengraulis polymera* Marini, 1935*Lycengraulis schroederi* Hildebrand, 1943*Lycengraulis simulator* Fuster de Plaza, 1962

records

- Boulenger (1896): listing sub *Engraulis olidus*
- Ramlow (1989): listing sub *L. olidus*
- Mandelburger et al. (1996): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing sub *L. simulator*
- Insaurralde et al. (2013): listing sub *L. simulator*
- Vera-Alcaraz & Emhart (2016): locality

family

Pristigasteridae***Pellona*** Valenciennes, 1847***P. flavipinnis*** (Valenciennes, 1837)*Pristigaster flavipinnis* Valenciennes, 1347*Pellona orbignyana* Valenciennes, 1847

records

- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2013): listing
- Vera-Alcaraz & Emhart (2016): locality

order **CYPRINIFORMES**

family **Cyprinidae**

Cyprinidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Cyprinus carpio Linnaeus, 1758 | listed in Neris et al. (2008) as introduced species

Leuciscus nobilis Richardson, 1845 | listed sub *Aristichthys nobilis* in Neris et al. (2008) as introduced species

order **CHARACIFORMES**

family **Hemiodontidae**

Hemiodus Mueller, 1842

H. orthonops Eigenmann & Kennedy, 1903

Hemiodus orthonops Eigenmann & Kennedy, 1903

type locality Arroyo Trementina

- records
- Eigenmann & Kennedy (1903): type locality
 - Eigenmann et al. (1907): locality sub *Anisitsia othonops*
 - Eigenmann & Ogle (1907): locality sub *H. othonops*
 - Bertoni (1914): listing sub *Anisitsia othonops*
 - Bertoni (1939): listing sub *Anisitsia othonops*
 - Géry et al. (1987): locality
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Langeani (2003): listing
 - Vera (2005): listing
 - Vera & del Castillo (2006): listing
 - Neris et al. (2010): listing
 - Insaurrealde et al. (2012): listing
 - Zarske (2012a): locality

H. semitaeniatus Kner, 1858

Hemiodus semitaeniatus Kner, 1858

- records
- Géry et al. (1987): locality
 - Mahnert (1987): listing
 - Langeani (2003): listing

family **Parodontidae**

Apareiodon Eigenmann, 1916

A. affinis (Steindachner, 1879)

Parodon affinis Steindachner, 1879

Parodon paraguayensis Eigenmann, 1907

type locality *paraguayensis*: Asunción

- records
- Boulenger (1896): listing sub *Parodon a.*
 - Eigenmann & Kennedy (1903): locality sub *Parodon a.*
 - Eigenmann & Ogle (1907): type locality of synonym *P. paraguayensis*
 - Eigenmann et al. (1907): locality sub *Parodon paraguayensis*
 - Bertoni (1914): listing sub *Parodon a.* and *P. paraguayensis*
 - Eigenmann (1916): locality
 - Fowler (1918): locality sub *P. paraguayensis*
 - Schindler (1938): locality
 - Bertoni (1939): listing sub *Parodon a.* and *P. paraguayensis*
 - Géry et al. (1987): locality
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Gill Morlis (1994): listing
 - Mandelburger et al. (1996): listing
 - Pavanelli (1999): locality
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing

- Pavanelli (2003a): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Insaurrealde et al. (2012): listing
- Zarske (2012a): locality

A. piracicabae (Eigenmann, 1907)*Parodon piracicabae* Eigenmann, 1907

records

- Eigenmann (1916): locality
- Géry et al. (1987): locality
- Mahnert (1987): listing
- Pavanelli (2003a): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing

Parodon Valenciennes, 1850***P. nasus*** Kner, 1959*Parodon tortuosus* Eigenmann & Norris, 1900*Parodon gestri* Boulenger, 1902*Apareiodon pirassunungae* Amaral Campos, 1945

records

- Eigenmann & Kennedy (1903): locality sub *P. tortuosus*
- Bertoni (1914): listing sub *P. tortuosus*
- Bertoni (1939): listing sub *P. tortuosus*
- Géry et al. (1987): locality sub *P. t. tortuosus*
- Mahnert (1987): listing sub *P. tortuosus*
- Mandelburger et al. (1996): listing sub *P. tortuosus*
- Pavanelli (1999): listing
- Pavanelli (2003a): listing
- Neris et al. (2010): listing

[info](#)**Parodontidae - unconfirmed listings from Paraguay requiring a verification based on voucher material***Parodon carrikeri* Fowler, 1940 | listed in Pavanelli (2003a)

family

Curimatidae***Curimatella*** Eigenmann & Eigenmann, 1889***C. dorsalis*** (Eigenmann & Eigenmann, 1889)*Curimatus dorsalis* Eigenmann & Eigenmann, 1889*Curimatella alburnus* var. *australe* Eigenmann & Kennedy, 1903*Curimatus elegans* var. *paraguayensis* Eigenmann & Kennedy, 1903*Curimatus alburnus* var. *caudimaculatus* Pellegrin, 1909*Curimatus bolivarensis* Steindachner, 1910type localities *alburnus* var. *australe*: Asunción*elegans* var. *paraguayensis*: Estancia La Armonia, Arroyo Carumbey

records

- Eigenmann & Kennedy (1903): type localities of *Curimatella alburnus australe* and *Curimatus elegans paraguayensis*
- Eigenmann et al. (1907): locality sub *Curimatella alburnus*
- Bertoni (1914): listing sub *C. alburna alburna* and *alburna australis*
- Bertoni (1939): listing sub *C. alburna alburna* and *alburna australis*
- Géry et al. (1987): locality sub *Curimatella* cf. *australis*
- Gill Morlis (1994): listing
- Chernoff et al. (2001): listing
- Vari (1992a): locality
- Azpelicueta et al. (2001): locality
- Vari (2003): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Zarske (2012a): locality

Curimatopsis Steindachner, 1876**C. myersi** Vari, 1982*Curimatopsis myersi* Vari, 1982

type locality San Pedro, 3 km NW of Lima

- records
- Vari (1982): type locality
 - Géry et al. (1987): locality
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Vari (2003): listing
 - Neris et al. (2010): listing

Cyphocharax Fowler, 1906**C. gillii** (Eigenmann & Kennedy, 1903)*Curimatus gillii* Eigenmann & Kennedy, 1903*Curimatella rehni* Fowler, 1932type locality *gillii*: Arroyo Trementina

- records
- Eigenmann & Kennedy (1903): type locality
 - Bertoni (1914): listing sub *Curimatus g.*
 - Bertoni (1939): listing sub *Curimatus g.*
 - Géry et al. (1987): locality
 - Vari (1992b): locality
 - Vari (2003): listing
 - Castro & Vari (2004): locality
 - Vera (2005): listing
 - Vera & del Castillo (2006): listing
 - Neris et al. (2010): listing

C. modestus (Fernández-Yépez, 1948)*Curimatorbis modestus* Fernández-Yépez, 1948

- records
- Géry et al. (1987): locality sub *C. cf. modesta*
 - Vari (1992b): locality
 - Gill Morlis (1994): listing
 - Vari (2003): listing
 - Neris et al. (2008): listing

C. platanus (Guenther, 1880)*Curimatus platanus* Guenther, 1880

- records
- Eigenmann & Ogle (1907): locality sub *Curimatus p.*
 - Géry et al. (1987): locality sub *Curimata platana*
 - Vari (1992b): locality
 - Vari (2003): listing
 - Insaurralde et al. (2013): listing

C. saladensis (Meinken, 1933)*Curimatopsis saladensis* Meinken, 1933

- records
- Géry et al. (1987): locality sub *Curimata saladensis*
 - Vari (1992b): locality
 - Vari (2003): listing

C. spilotos (Vari, 1987)*Curimata spilota* Vari, 1987*Curimata gnaca* Azpelicueta & Braga, 1988

- records
- Vari (1992b): locality
 - Vari (2003): listing

C. voga (Hensel, 1870)*Curimatus voga* Hensel, 1870*Curimatopsis maculatus* Ahl, 1934

- records
- Eigenmann & Kennedy (1903): locality sub *Curimatus gilberti*
 - Bertoni (1914): listing sub *Curimatus gilberti*
 - Bertoni (1939): listing sub *Curimatus gilberti gilberti*
 - Géry et al. (1987): locality sub *Curimata cf. voga*
 - Vari (1992b): locality
 - Vari (2003): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

Potamorhina Cope, 1878**P. squamoraievis** (Braga & Azpelicueta, 1983)*Semitapiscis squamoraievis* Braga & Azpelicueta, 1983

records

- Boulenger (1896): listing sub *Curimatus latior* and *C. rutiloides*
- Eigenmann & Kennedy (1903): locality sub *Anodus latior*
- Eigenmann & Ogle (1907): locality sub *Psectrogaster curviventris*
- Bertoni (1914): listing sub *Curimatus rutiloides* and *Semitapiscis laticeps*
- Bertoni (1932): listing sub *Curimata latior*
- Bertoni (1939): listing sub *Curimata latior* and *C. rutiloides*, and *Semitapiscis laticeps*
- Géry et al. (1987): locality
- Vari (1984): locality
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Vari (2003): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

Psectrogaster Eigenmann & Eigenmann, 1889**P. curviventris** Eigenmann & Kennedy, 1903*Psectrogaster curviventris* Eigenmann & Kennedy, 1903*Curimata pearsoni* Myers, 1929*Psectrogaster rhomboides australis* Risso & Sánchez, 1964

type locality

curviventris: Asunción

records

- Eigenmann & Kennedy (1903): type locality
- Eigenmann et al. (1907): locality
- Eigenmann & Ogle (1907): locality
- Bertoni (1914): listing sub *P. ciliatus* and *P. curviventris*
- Bertoni (1939): listing sub *P. ciliatus* and *P. curviventris*
- Géry et al. (1987): locality
- Chernoff et al. (2001): listing
- Vari (1989): locality
- Azpelicueta et al. (2001): locality
- Vari (2003): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Sidlauskas & Vari (2008): locality
- Neris et al. (2010): listing
- Insaurralde et al. (2012): listing
- Zarske (2012a): locality

Steindachnerina Fowler, 1906**S. brevipinna** (Eigenmann & Eigenmann, 1889)*Curimatus gilberti* var. *brevipinnis* Eigenmann & Eigenmann, 1889*Curimatus nitens* Holmberg, 1891*Curimatus nigrotaenia* Boulenger, 1902

records

- Eigenmann et al. (1907): locality sub *C. elegans nitens*
- Bertoni (1914): listing sub *C. elegans elegans*, *C. elegans nitens*, *C. gilberti*, and *C. spilurus*
- Bertoni (1939): listing sub *Curimata elegans elegans*, *C. elegans nitens*, *C. gilberti brevipinnis*, and *C. spilura*
- Géry et al. (1987): locality sub *Curimata nitens*
- Ramlow (1989): listing sub *Curimata nitens*
- Vari (1991): locality
- Mandelburger et al. (1996): listing
- Gill Morlis (1994): listing
- Gill Morlis (1997): listing sub *Curimata nitens*
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Vari (2003): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing

- Neris et al. (2008): listing
- Insaurrealde et al. (2012): listing
- Insaurrealde et al. (2013): listing
- Kullander & Lucena (2013): locality

S. conspersa (Holmberg, 1891)*Curimatus conspersus* Holmberg, 1891

records

- Eigenmann & Kennedy (1903): locality sub *Curimatus bimaculatus*
- Eigenmann & Ogle (1907): locality sub *Curimatus bimaculatus*
- Bertoni (1914): listing sub *Curimatus bimaculatus* and *C. conspersus*
- Bertoni (1939): listing sub *Curimata bimaculata* and *C. conspersa*
- Géry et al. (1987): locality sub *Curimata bimaculata*
- Ramlow (1989): listing sub *Curimata bimaculata* and *Curimata conspersa*
- Mandelburger et al. (1996): listing
- Chernoff et al. (2001): listing
- Vari (1991): locality
- Vari (1992b): locality
- Azpelicueta et al. (2001): locality
- Vari (2003): listing
- Castro & Vari (2004): locality
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Sidlauskas & Vari (2008): locality
- Lucinda & Vari (2009): locality

S. insculpta (Fernández-Yépez, 1948)*Cruxentina insculpta* Fernández-Yépez, 1948

remarks

As this species was described from a locality in Venezuela, its presence in Paraguay might be doubtful (Azpelicueta, pers.comm.).

records

- Eigenmann & Kennedy (1903): locality sub *Curimatus nasus*
- Bertoni (1914): listing sub *Curimatus nasus*
- Bertoni (1939): listing sub *Curimata nasa*
- Géry et al. (1987): locality sub *Curimata nasa*
- Chernoff et al. (2001): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing

Curimatidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Curimata biomata Braga & Azpelicueta, 1987 | listed sub *Steindachnerina biomata* in Vari (2003)

family

Prochilodontidae**Prochilodus** Agassiz, 1829**P. lineatus** (Valenciennes, 1837)*Paca lineatus* Valenciennes, 1837*Prochilodus scrofa* Steindachner, 1881*Prochilodus platensis* Holmberg, 1891*Salmo novemradiatus* Larrañaga, 1923

records

- Sanchez Labrador (1767): listing [*fide* Castex (1968)]
- Eigenmann & Kennedy (1903): locality sub *P. scrofa*
- Eigenmann et al. (1907): locality sub *P. scrofa*
- Eigenmann & Ogle (1907): locality sub *P. scrofa*
- Bertoni (1914): listing sub *P. argenteus*, *P. nigricans*, *P. reticulatus* and *P. scrofa*
- Barbero (1923): listing sub *P. reticulatus*
- Bertoni (1923): listing sub *P. reticulatus*
- Bertoni (1939): listing sub *P. argenteus*, *P. nigricans*, *P. reticulatus* and *P. scrofa*
- Géry et al. (1987): locality sub *P. lineatus* and *P. scrofa*
- Ramlow (1989): listing sub *P. cf. lineatus*, *P. reticulatus* and *P. scrofa*
- Gill Morlis (1994): listing sub *Prochilodus scrofa*
- Mandelburger et al. (1996): listing sub *P. cf. lineatus* and *P.*

[info](#)[info](#)

reticulatus

- o Gill Morlis (1997): listing sub *Prochilodus scrofa*
- o Azpelicueta et al. (2001): locality
- o Chernoff et al. (2001): listing
- o Vari (2003): listing
- o Castro & Vari (2003): listing
- o Castro & Vari (2004): locality
- o Vera (2005): listing
- o Vera & del Castillo (2006): listing
- o Neris et al. (2008): listing
- o Insaurralde et al. (2012): listing
- o Insaurralde et al. (2013): listing

family

Anostomidae**Abramites** Fowler, 1906**A. hypselonotus** (Guenther, 1868)*Leporinus hypselonotus* Guenther, 1868*Leporinus solarii* Holmberg, 1891*Abramites microcephalus* Norman, 1926*Abramites ternetzi* Norman, 1926*Leporinus nigripinnis* Meinken, 1935

records

- o Eigenmann & Kennedy (1903): locality sub *Leporinus h.*
- o Eigenmann et al. (1907): locality sub *Leporinus h.*
- o Bertoni (1914): listing sub *Leporinus h.*
- o Bertoni (1939): listing sub *Leporinus h.*
- o Géry et al. (1987): locality sub *A. solarii*
- o Vari & Williams (1987): locality
- o Mandelburger et al. (1996): listing
- o Garavello & Britski (2003): listing
- o Vera (2005): listing
- o Vera & del Castillo (2006): listing
- o Neris et al. (2008): listing
- o Insaurralde et al. (2012): listing

Leporellus Luetken, 1875**L. pictus** (Kner, 1858)*Leporinus pictus* Kner, 1858*Leporinus maculifrons* Luetken, 1875*Leporellus cartledgei* Fowler, 1941

remarks

L. pictus is possibly a jr. synonym of *L. vittatus* (Garavello & Britski 2003, Britski & Garavello 2007).

records

- o Géry et al. (1987): locality
- o Gill Morlis (1997): listing
- o Mandelburger et al. (1996): listing
- o Insaurralde et al. (2012): listing

Leporinus Agassiz, 1829**L. acutidens** (Valenciennes, 1837)*Curimatus acutidens* Valenciennes, 1837

remarks

Leporinus acutidens is a possible jr. synonym of *L. friderici* and it could be more accurate to use the latter name for the Paraguayan species. (Birindelli, comm.pers.). Thus, as the distribution of the 'true' *L. friderici* is restricted to northern South America (Sidlauskas & Vari 2008, 2012), we prefer to apply *L. acutidens* until this issue is sorted out.

records

- o Eigenmann et al. (1907): locality sub *L. friderici*
- o Bertoni (1914): listing sub *L. friderici*
- o Bertoni (1939): listing sub *L. friderici*
- o Géry et al. (1987): locality sub *L. friderici acutidens*
- o Mahnert (1987): listing sub *L. friderici*
- o Ramlow (1989): listing sub *L. friderici*
- o Azpelicueta et al. (2001): locality
- o Chernoff et al. (2001): listing sub *L. friderici* and *L. friderici*

acutidens

- o Vera (2005): listing sub *L. friderici*
- o Vera & del Castillo (2006): listing sub *L. friderici*
- o Neris et al. (2008): listing sub *L. friderici*
- o Insaurralde et al. (2012): listing

L. lacustris Amaral Campos, 1945*Leporinus lacustris* Amaral Campos, 1945

records

- o Géry et al. (1987): locality
- o Mahnert (1987): listing
- o Mandelburger et al. (1996): listing
- o Azpelicueta et al. (2001): locality
- o Chernoff et al. (2001): listing
- o Vera (2005): listing
- o Vera & del Castillo (2006): listing
- o Britski & Birindelli (2008): locality
- o Neris et al. (2008): listing
- o Kullander & Lucena (2013): locality

L. octofasciatus Steindachner, 1915*Leporinus octofasciatus* Steindachner, 1915

records

- o Bertoni (1914): listing sub *L. affinis* and *L. fasciatus*
- o Bertoni (1939): listing sub *L. affinis* and *L. fasciatus*
- o Géry et al. (1987): locality
- o Neris et al. (2008): listing

L. striatus Kner, 1858*Leporinus striatus* Kner, 1858*Salmo tiririca* Natterer, 1859

records

- o Eigenmann & Eigenmann (1891): listing
- o Bertoni (1914): listing
- o Bertoni (1939): listing
- o Géry et al. (1987): locality
- o Ramlow (1989): listing
- o Azpelicueta et al. (2001): locality
- o Chernoff et al. (2001): listing
- o Garavello & Britski (2003): listing
- o Vera (2005): listing
- o Vera & del Castillo (2006): listing
- o Ávila et al. (2007): listing
- o Neris et al. (2008): listing
- o Mirande (2010): locality
- o Insaurralde et al. (2012): listing
- o Birindelli & Britski (2013): listing
- o Vanegas-Ríos (2016): locality

Megaleporinus Ramirez, Birindelli & Galetti, 2017***M. obtusidens*** (Valenciennes, 1837)*Curimatus obtusidens* Valenciennes, 1837*Leporinus silvestrii* Boulenger, 1902? *Salmo boops* Larrañaga, 1923? *Salmo undecimradiatus* Larrañaga, 1923*Leporinus aguapeiensis* Amaral Campos, 1945

records

- o Eigenmann & Kennedy (1903): locality sub *L. trifasciatus*
- o Géry et al. (1987): locality sub *Leporinus o.*
- o Ramlow (1989): listing sub *Leporinus o.*
- o Mandelburger et al. (1996): listing sub *Leporinus o.*
- o Chernoff et al. (2001): listing sub *Leporinus o.*
- o Garavello & Britski (2003): listing sub *Leporinus o.*
- o Vera (2005): listing sub *Leporinus o.*
- o Vera & del Castillo (2006): listing sub *Leporinus o.*
- o Neris et al. (2008): listing sub *Leporinus o.*
- o Ortí et al. (2008): locality sub *Leporinus o.*
- o Britski et al. (2012): locality sub *Leporinus o.*
- o Insaurralde et al. (2012): listing sub *Leporinus o.*

Schizodon Agassiz, 1829***S. borellii*** (Boulenger, 1900)*Anostomus borellii* Boulenger, 1900*Leporinus platycephalus* Meinken, 1935

- records
- Eigenmann & Kennedy (1903): locality sub *Anostomus fasciatus*
 - Eigenmann & Ogle (1907): locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Garavello & Britski (1990): locality
 - Azpelicueta et al. (2001): locality
 - Vera & del Castillo (2006): listing
 - Ávila et al. (2007): listing
 - Neris et al. (2008): listing

S. isognathus Kner, 1858*Schizodon isognathus* Kner, 1858

- records
- Eigenmann & Ogle (1907): locality sub *Anostomus i.*
 - Géry et al. (1987): locality
 - Mandelburger et al. (1996): listing
 - Sidlauskas et al. (2007): locality
 - Sidlauskas & Vari (2008): locality

S. nasutus Kner, 1858*Schizodon nasutus* Kner, 1858

- records
- Bertoni (1914): listing sub *Lahilliella nasuta*
 - Bertoni (1939): listing sub *Lahilliella nasuta*
 - Géry et al. (1987): locality
 - Gill Morlis (1994): listing
 - Mandelburger et al. (1996): listing
 - Neris et al. (2008): listing
 - Sidlauskas & Vari (2008): locality

S. platae (Garman, 1890)*Anostomus platae* Garman, 1890

- records
- Géry et al. (1987): locality sub *S. cf. platae*
 - Vera (2005): listing
 - Vera & del Castillo (2006): listing sub *S. cf. platae*
 - Insaurralde et al. (2012): listing

Anostomidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Leporinus paranensis Garavello & Britski, 1987 | listed in Gill Morlis (1994)

Leporinus vittatus Valenciennes, 1850 | listed in Gill Morlis (1994), sub *Schizodon vittatus* in Bertoni (1914) and Insaurralde et al. (2012), sub *Anostomus vittatus* in Bertoni (1932, 1939), and sub *Leporellus vittatus* in Garavello & Britski (2003)

Anostomidae - species considered not to be distributed in Paraguay

Anostomus dissimilis Garman, 1890 | Chernoff et al. (2001), Vera (2005), and Vera & del Castillo (2006) sub *Schizodon d.* | Géry et al. (1987), Garavello & Britski (2003)

Leporinus elongatus Amaral Campos, 1945 | Chernoff et al. (2001) and Neris et al. (2008) | Britski et al. (2012)

Leporinus pellegrinii Steindachner, 1910 (syn. of *Leporinus maculatus* Mueller & Troschel, 1844) | Insaurralde et al. (2013) | Garavello & Britski (2003), Mol et al. (2012)

Salmo friderici Bloch, 1794 | Chernoff et al. (2001) and Vera (2005) sub *Leporinus f.* | Garavello & Britski (2003), Sidlauskas & Vari (2008, 2012) | see remarks in *Leporinus acutidens*

family

Erythrinidae**Erythrinus** Scopoli, 1777**E. erythrinus** (Bloch & Schneider, 1801)*Synodus erythrinus* Bloch & Schneider, 1801*Erythrinus salmoneus* Gronow, 1854*Erythrinus brevicauda* Guenther, 1864*Erythrinus longipinnis* Guenther, 1864

- records
- Géry et al. (1987): listing with ? for PY
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Vera (2005): listing
 - Neris et al. (2010): listing
 - Vera-Alcaraz et al. (2017): locality

Hoplerythrinus Gill, 1896**H. unitaeniatus** (Agassiz, 1829)*Erythrinus unitaeniatus* Agassiz, 1829*Erythrinus salvus* Agassiz, 1829*Erythrinus vittatus* Valenciennes, 1846*Pseuderythrinus rosapinnis* Hoedeman, 1950

records

- Perugia (1891): listing sub *Erythrinus u.*
- Perugia (1897): listing sub *Erythrinus u.*
- Kerr (1898b): listing sub *Erythrinus u.*
- Eigenmann & Kennedy (1903): locality
- Eigenmann et al. (1907): locality
- Bertoni (1914): listing
- Carter & Beadle (1931): listing
- Schindler (1938): locality
- Bertoni (1939): listing
- Géry et al. (1987): locality
- Ramlow (1989): listing
- Gill Morlis (1994): listing
- Mandelburger et al. (1996): listing
- Azpelicueta et al. (2001): locality
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2013): listing

Hoplias Gill, 1903**H. malabaricus** (Bloch, 1794)*Esox malabaricus* Bloch, 1794*Erythrinus macrodon* Agassiz, 1829*Erythrinus trahira* Agassiz, 1829*Macrodon tareira* Valenciennes, 1846*Macrodon ferox* Gill, 1858*Esox tararira* Larrañaga, 1923

records

- Sanchez Labrador (1767): listing [*vide* Castex (1968)]
- Eigenmann & Eigenmann (1889): locality sub *Macrodon m.*
- Perugia (1891) locality sub *Macrodon trahira*
- Boulenger (1895a): locality sub *Macrodon trahira*
- Kerr (1898b): listing sub *Macrodon trahira*
- Eigenmann & Kennedy (1903): locality
- Eigenmann et al. (1907): locality
- Bertoni (1914): listing
- Carter & Beadle (1931): listing
- Schindler (1938): locality
- Bertoni (1939): listing
- Géry et al. (1987): locality
- Mahnert (1987): listing
- Ramlow (1989): listing
- Weber et al. (1992): listing
- Gill Morlis (1994): listing
- Mandelburger et al. (1996): listing
- Gill Morlis (1997): listing
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Oyakawa (2003): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Ávila et al. (2007): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

H. mbigua Azpelicueta, Benítez, Aichino & Mendez, 2015*Hoplias mbigua* Azpelicueta, Benítez, Aichino & Mendez, 2015

records

- Bifi (2013): locality sub *Hoplias* sp. A

[info](#)**H. misionera** Rosso, Mabragaña, González-Castro, Delpiani, Avigliano, Schenone & Díaz de Astarloa, 2016*Hoplias misionera* Rosso, Mabragaña, González-Castro, Delpiani, Avigliano, Schenone & Díaz de Astarloa, 2016

records

- Bifi (2013): locality sub *Hoplias* sp. D

[info](#)

family **Lebiasinidae**

subfamily Pyrrhulininae

Pyrrhulina Valenciennes, 1846**P. australis** Eigenmann & Kennedy, 1903*Pyrrhulina australe* Eigenmann & Kennedy, 1903*Pyrrhulina macrolepis* Ahl & Schindler, 1937type locality *australe*: Arroyo Trementina

records

- Boulenger (1895a): locality sub *P. semifasciata*
- Boulenger (1896): listing sub *P. semifasciata*
- Eigenmann & Kennedy (1903): type locality
- Eigenmann et al. (1907): listing sub *P. australis* and *P. brevis*
- Regan (1912a): listing
- Bertoni (1914): listing sub *P. australis* and *P. brevis*
- Carter & Beadle (1931): listing
- Bertoni (1939): listing sub *P. australis* and *P. brevis*
- Schindler (1938): locality
- Géry et al. (1987): locality sub *P. brevis australis*
- Mahnert (1987): listing sub *P. brevis australis*
- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Zarske & Gery (2001a): locality
- Weitzman & Weitzman (2003): listing
- Chernoff et al. (2004): listing
- Zarske & Gery (2004): locality
- Vera (2005): listing
- Neris et al. (2008): listing
- Mirande (2010): locality
- Insaurralde et al. (2012): listing sub *P. australis* and *P. macrolepis*
- Zarske (2012b): locality
- Insaurralde et al. (2013): listing
- Kullander & Lucena (2013): locality

[info](#)**Lebiasinidae - species considered not to be distributed in Paraguay***Pyrrhulina brevis* Steindachner, 1876 | Mandelburger et al. (1996) and Insaurralde et al. (2012) | Zarske & Gery (2001a), Weitzman & Weitzman (2003)family **Gasteropelecidae****Thoracocharax** Fowler, 1907**T. stellatus** (Kner, 1858)*Gastrolepecus stellatus* Kner, 1858

records

- Eigenmann & Kennedy (1903): locality sub *Gastrolepecus s.*
- Eigenmann et al. (1907): locality
- Bertoni (1914): listing
- Bertoni (1939): listing
- Fraser-Brunner (1950): listing
- Weitzman (1960): listing
- Géry et al. (1987): locality
- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Mirande (2010): locality
- Insaurralde et al. (2013): listing
- Vanegas-Ríos (2016): locality

family

Serrasalminidae**Metynnis** Cope, 1878**M. mola** Eigenmann & Kennedy, 1903*Metynnis mola* Eigenmann & Kennedy, 1903

records

- Eigenmann & Kennedy (1903): type locality
- Eigenmann et al. (1907): locality
- Bertoni (1914): listing sub *M. maculatus* and *M. mola*
- Ahl (1923a): locality
- Norman (1929): listing sub *M. maculatus*
- Bertoni (1939): listing sub *M. maculatus* and *M. mola*
- Géry et al. (1987): locality
- Mahnert (1987): listing
- Zarske & Géry (1999): locality
- Chernoff et al. (2001): listing
- Jégu (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing

M. otuquensis Ahl, 1923*Metynnis otuquensis* Ahl, 1923

type locality

Bahia Negra, Río Otuquis

records

- Ahl (1923a): type locality
- Zarske & Géry (1999): locality
- Jégu (2003): listing
- Zarske (2012b): locality
- Ota et al. (2016): locality

Myloplus Gill, 1896**M. levis** (Eigenmann & McAtee, 1907)*Myletes levis* Eigenmann & McAtee, 1907

type locality

Bahia Negra

records

- Eigenmann et al. (1907): type locality
- Bertoni (1914): listing sub *Myleus l.*
- Bertoni (1939): listing sub *Myleus l.*
- Jégu (2003): listing sub *Myleus l.*
- Vera (2005): listing sub *Myleus l.*
- Neris et al. (2010): listing sub *Myleus l.*

M. tiete (Eigenmann & Norris, 1900)*Myletes tiete* Eigenmann & Norris, 1900

records

- Géry et al. (1987): locality sub *Myleus t.*
- Chernoff et al. (2001): listing sub *Myleus t.*
- Jégu (2003): listing sub *Myleus t.*
- Vera (2005): listing sub *Myleus t.*
- Neris et al. (2008): listing sub *Myleus t.*

[info](#)**Mylossoma** Eigenmann & Kennedy, 1903**M. duriventre** (Cuvier, 1818)*Myletes duriventris* Cuvier, 1818*Myletes orbignyanus* Valenciennes, 1850*Myletes albiscopis* Cope, 1872*Metynnis unimaculatus* Steindachner, 1908*Mylossoma ocellatum* Eigenmann, 1915*Mylossoma argenteum* Ahl, 1928*Salmo trigintaradiatus* Larrañaga, 1923*Mylossomma paraguayensis* Norman, 1929type locality *ocellatum*: Río Confuso at Villa Hays

records

- Boulenger (1896): listing sub *Myletes d.*
- Eigenmann & Kennedy (1903): locality sub *M. albiscopis*
- Eigenmann et al. (1907): locality sub *M. albiscopis*
- Eigenmann & Ogle (1907): locality sub *M. albiscopis*
- Eigenmann (1915a): type locality of *Mylossoma ocellatum* and locality sub *M. albiscopis*
- Bertoni (1914): listing sub *Calossoma arbignyanum* and *Mylossoma aureum*
- Bertoni (1932): listing sub *Myletes duriventris* and *M.*

- orbignyanus*
- Bertoni (1939): listing sub *Myletes duriventris*, *M. orbignyanum*, *Mylosoma aureum*, and *Calossoma orbignyanum*
- Géry et al. (1987): locality sub *M. duriventris orbignyanum*
- Azpelicueta et al. (2001): locality sub *M. paraguayensis*
- Chernoff et al. (2001): listing
- Jégu (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing sub *M. duriventris*, *M. orbignyanum*, and *M. paraguayensis*

Piaractus Eigenmann, 1903

P. mesopotamicus (Holmberg, 1887)

Myletes mesopotamicus Holmberg, 1887

Myletes edulis Castelnau, 1855

Myletes mitrei Berg, 1895

Colossoma canterai Devincenzi, 1942

records

- Sanchez Labrador (1767): listing [fide Castex (1968)]
- Boulenger (1896): listing sub *Myletes brachypomus*
- Eigenmann & Kennedy (1903): locality sub *Colossoma brachypomus*
- Eigenmann & Ogle (1907): locality sub ?*P. brachypomus*
- Bertoni (1914): listing sub *Calossoma mitrei*, *Myletes asterias*, and *Piaractus brachypomus*
- Bertoni (1939): listing sub *Calossoma mitrei*, *Myletes asterias*, and *Piaractus brachypomus*
- Géry (1986): listing
- Géry et al. (1987): locality
- Gill Morlis (1994): listing
- Gill Morlis (1997): listing
- Chernoff et al. (2001): listing sub *P. mitrei*
- Jégu (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing

Pygocentrus Mueller & Troschel, 1844

P. nattereri Kner, 1858

Pygocentrus nattereri Kner, 1858

Pygocentrus altus Gill, 1870

Serrasalmo ternetzi Steindachner, 1908

records

- Sanchez Labrador (1767): listing [fide Castex (1968)]
- Eigenmann & Ogle (1907) locality
- Bertoni (1914): listing sub *P. ternetzi* and *P. piraya*
- Eigenmann (1915a): locality
- Norman (1929): locality sub *Serrasalmus ternetzi*
- Schindler (1938): locality sub *Serrasalmus n.*
- Bertoni (1939): listing sub *P. ternetzi* and *P. piraya*
- Géry et al. (1987): locality sub *Serrasalmus n.*
- Mahnert (1987): listing
- Fink (1993): locality
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Jégu (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing sub *Serrasalmus n.*
- Insaurralde et al. (2013): listing sub *Serrasalmus n.*

Serrasalmus Lacepède, 1803

S. maculatus Kner, 1858

Serrasalmus maculatus Kner, 1858

Pygocentrus melanurus Kner, 1860

Serrasalmo aesopus Cope, 1872

records

- Sanchez Labrador (1767): listing [fide Castex (1968)]
- Boulenger (1896): listing sub *S. spilopleura* and *S. serrulatus*
- Kerr (1898b): listing sub *S. serrulatus*
- Eigenmann & Kennedy (1903): locality sub *S. spilopleura*
- Eigenmann & Ogle (1907): listing sub *S. spilopleura*

- Eigenmann et al. (1907): locality sub *S. spilopleura*
- Bertoni (1914): listing sub *S. spilopleura* and *S. gymnogenys*, and *Pygopristis serrulatus*
- Ahl (1922): locality sub *S. spilopleura*
- Norman (1929): locality sub *S. spilopleura*
- Carter & Beadle (1931): listing sub *S. spilopleura*
- Schindler (1938): locality sub *S. spilopleura*
- Bertoni (1939): listing sub *S. spilopleura* and *S. gymnogenys*, and *Pygopristis serrulatus*
- Géry et al. (1987): locality sub *S. spilopleura*
- Mahnert (1987): listing sub *S. spilopleura*
- Ramlow (1989): listing sub *S. spilopleura*
- Mandelburger et al. (1996): listing sub *S. spilopleura*
- Gill Morlis (1997): listing sub *S. spilopleura*
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing sub *S. spilopleura*
- Jégu & Dos Santos (2001): listing
- Jégu (2003): listing
- Chernoff et al. (2004): listing sub *S. spilopleura*
- Gómez et al. (2004): locality sub *S. spilopleura*
- Vera (2005): listing
- Neris et al. (2008): listing sub *S. spilopleura*
- Insaurralde et al. (2012): listing sub *S. spilopleura*
- Insaurralde et al. (2013): listing sub *S. spilopleura*

S. marginatus Valenciennes, 1837

Serrasalmus marginatus Valenciennes, 1837

records

- Boulenger (1896): listing sub *S. humeralis*
- Perugia (1897) locality sub *S. rhombeus*
- Eigenmann & Kennedy (1903): locality sub *S. humeralis*
- Eigenmann et al. (1907): locality sub *S. humeralis*
- Eigenmann & Ogle (1907): locality
- Bertoni (1914): listing sub *S. marginatus*, *S. humeralis*, and *S. rhombeus*
- Eigenmann (1915a): locality sub *S. humeralis*
- Bertoni (1939): listing sub *S. marginatus*, *S. humeralis* and *S. rhombeus*
- Géry et al. (1987): locality
- Mahnert (1987): listing
- Mandelburger et al. (1996): listing
- Gill Morlis (1997): listing
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Jégu (2003): listing
- Vera (2005): listing
- Ávila et al. (2007): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

Serrasalmidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Myletes brachypomus Cuvier, 1818 | listed sub *Piaractus brachypomus* in Neris et al. (2008) as introduced species
Myletes maculatus Kner, 1858 | listed sub *Metynnis maculatus* in Neris et al. (2008) and in Jégu (2003) with ? for PY

Serrasalmidae - species considered not to be distributed in Paraguay

Salmo rhombeus Linnaeus, 1766 | Insaurralde et al. (2012) sub *Serrasalmus rombeus* | Jégu (2003)
Serrasalmus elongatus Kner, 1858 | Chernoff et al. (2001, 2004) | Jégu & Santos (2001)
Serrasalmus spilopleura Kner, 1858 | Insaurralde et al. (2012, 2013) | Jégu & Santos (2001)

family

Characidae

subfamily

Acestrorhynchinae

Acestrorhynchus Eigenmann & Kennedy, 1903

A. pantaneiro Menezes, 1992

Acestrorhynchus pantaneiro Menezes, 1992

records

- Sanchez Labrador (1767): listing [*fide* Castex (1968)]
- Boulenger (1896): listing sub *Xiphorhamphus ferox*
- Kerr (1898b): listing sub *Xiphorhamphus ferox*
- Eigenmann & Kennedy (1903): locality sub *A. falcatus*
- Eigenmann & Ogle (1907): locality sub *A. ferox*

- Bertoni (1939): listing sub *A. falcatus*
- Mahnert (1987): listing sub *A. altus*
- Menezes (1992): listing
- Chernoff et al. (2001): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

Acestrorhynchinae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Xiphorhamphus lacustris Luetken, 1875 | listed sub *Acestrorhynchus lacustris* in Neris et al. (2008)

subfamily Aphyocharacinae

Aphyocharax Guenther, 1868

A. anisitsi Eigenmann & Kennedy, 1903

Aphyocharax anisitsi Eigenmann & Kennedy, 1903

Phoxinopsis typicus Regan, 1907

Aphyocharax rubropinnis Pappenheim, 1922

Aphyocharax affinis Ahl, 1923

Aphyocharax ipacarayensis Ahl, 1923

type localities *anisitsi*: Guairá, Villarica

ipacarayensis: Central/Cordillera, laguna Ypacaraí

- records
- Eigenmann & Kennedy (1903): type locality
 - Bertoni (1914): listing
 - Eigenmann (1915b): locality
 - Ahl (1923b): type locality of *A. ipacarayensis*
 - Bertoni (1939): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Chernoff et al. (2004): listing
 - Souza-Lima (2003a): listing
 - Souza-Lima (2003b): locality
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Tagliacollo (2011): locality
 - Vanegas-Ríos (2016): locality

A. dentatus Eigenmann & Kennedy, 1903

Aphyocharax dentatus Eigenmann & Kennedy, 1903

Aphyocharax pappenheimi Ahl, 1923

Notropocharax difficilis Marini, Nichols & La Monte, 1933

Aphyocharax nasutus Ahl, 1936

type localities *dentatus*: Asunción

pappenheimi: Asunción

- records
- Eigenmann & Kennedy (1903): type locality
 - Eigenmann et al. (1907): locality
 - Eigenmann (1915b): locality
 - Ahl (1923b): type locality of *A. pappenheimi*
 - Schindler (1938): locality
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Souza-Lima (2003a): listing
 - Souza-Lima (2003b): locality
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Tagliacollo (2011): locality

A. nattereri (Steindachner, 1882)

Chirodon nattereri Steindachner, 1882

Chirodon pulcher Steindachner, 1882

Cheirodon steindachneri Eigenmann & Eig., 1891

Aphyocharax paraguayensis Eigenmann, 1915

[info](#)

- records
- Bertoni (1914): listing sub *Cheirodon n.*
 - Schindler (1938): locality sub *A. paraguayensis*
 - Bertoni (1939): listing sub *Cheirodon n.*
 - Mandelburger et al. (1996): listing sub *A. paraguayensis*
 - Azpelicueta et al. (2001): locality sub *A. paraguayensis*
 - Chernoff et al. (2001): listing
 - Souza-Lima (2003a): listing
 - Souza-Lima (2003b): locality
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Neris et al. (2010): listing sub *A. paraguayensis*

A. rathbuni Eigenmann, 1907*Aphyocharax rathbuni* Eigenmann, 1907*Aphyocharax stramineus* Eigenmann, 1907type localities *rathbuni*: Arroyo Chagalalina*stramineus*: Arroyo Trementina

- records
- Eigenmann & Ogle (1907): type locality of *A. rathbuni* and *A. stramineus*
 - Bertoni (1914): listing sub *A. rathbuni* and *A. stramineus*
 - Eigenmann (1915b): locality
 - Bertoni (1939): listing sub *A. rathbuni* and *A. stramineus*
 - Azpelicueta et al. (2001): locality
 - Souza-Lima (2003a): listing
 - Souza-Lima (2003b): locality
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Tagliacollo (2011): locality

Prionobrama Fowler, 1913**P. paraguayensis** (Eigenmann, 1914)*Bleptonema paraguayensis* Eigenmann, 1914

- records
- Eigenmann (1915b): locality
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Malabarba (2003b): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Vera & del Castillo (2006): listing
 - Neris et al. (2008): listing
 - Mirande (2010): locality
 - Vanegas-Ríos (2016): locality

subfamily Bryconinae

Brycon Mueller & Troschel, 1844**B. hilarii** (Valenciennes, 1850)*Chalceus hilarii* Valenciennes, 1850*Brycon microlepis* Perugia, 1897type locality *microlepis*: Bahia Negra

- records
- Perugia (1897): type locality of synonym *B. microlepis*
 - Eigenmann & Kennedy (1903): locality
 - Eigenmann & Ogle (1907): locality
 - Bertoni (1914): listing sub *B. hilarii* and *B. microlepis*
 - Bertoni (1939): listing sub *B. hilarii* and *B. microlepis*
 - Howes (1982): listing sub *B. hilarii* and *B. microlepis*
 - Mahnert (1987): listing
 - Géry & Mahnert (1992): locality sub *B. microlepis*
 - Lima (2003c): listing
 - Vera (2005): listing
 - Lima (2017): locality

B. orbignyanus (Valenciennes, 1850)*Chalceus orbignyanus* Valenciennes, 1850*Chalceus rodopterus* Valenciennes, 1850*Brycon lineatus* Steindachner, 1866

Brycon travassosi Campos, 1950

- records
- Sanchez Labrador (1767): listing [*fide* Castex (1968)]
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Ramlow (1989): listing
 - Géry & Mahnert (1992): locality
 - Gill Morlis (1997): listing
 - Azpelicueta et al. (2001): locality
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Insaurrealde et al. (2012): listing
 - Lima (2017): locality

Triportheus Cope, 1872*T. nematurus* (Kner, 1858)*Chalcinus nematurus* Kner, 1858*Salmo clupeoides* Kner, 1860*Chalcinus paranensis* Guenther, 1874

- records
- Sanchez Labrador (1767): listing [*fide* Castex (1968)]
 - Boulenger (1896) sub *Chalcinus n.* and *C. paranensis*
 - Eigenmann et al. (1907): locality sub *Chalcinus angulatus*
 - Eigenmann & Ogle (1907): listing sub *Chalcinus angulatus*
 - Bertoni (1914): listing sub *Chalcinus paranensis*
 - Bertoni (1939): listing sub *Chalcinus paranensis*
 - Mandelburger et al. (1996): listing sub *T. paranensis*
 - Azpelicueta et al. (2001): locality sub *T. nematurus* and *T. paranensis*
 - Chernoff et al. (2001): listing sub *T. nematurus* and *T. paranensis*
 - Malabarba & Lima (2003): listing
 - Malabarba, M.C. (2004): locality
 - Vera (2005): listing sub *T. nematurus* and *T. paranensis*
 - Vera & del Castillo (2006): listing sub *T. nematurus* and *T. paranensis*
 - Neris et al. (2008): listing sub *T. nematurus* and *T. paranensis*
 - Mirande (2010): locality
 - Insaurrealde et al. (2012): listing sub *T. paranensis*
 - Nakagawa (2012): locality
 - Insaurrealde et al. (2013): listing sub *T. paranensis*

[info](#)*T. pantanensis* Malabarba, 2004*Triportheus pantanensis* Malabarba, 2004

- records
- Malabarba, M.C. (2004): paratype locality
 - Mirande (2010): locality
 - Neris et al. (2010): listing
 - Nakagawa (2012): locality
 - Vanegas-Rios (2016): locality

Bryconinae - unconfirmed listings from Paraguay requiring a verification based on voucher material*Brycon nattereri* Guenther, 1864 | listed in Bertoni (1939), see Lima (2017)

subfamily

Characinae

Charax Scopoli, 1777*C. leticiae* Lucena, 1987*Charax leticiae* Lucena, 1987

- records
- Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Lucena & Menezes (2003): listing
 - Vera (2005): listing
 - Neris et al. (2010): listing
 - Insaurrealde et al. (2012): listing
 - Menezes & Lucena (2014): listing

C. stenopterus (Cope, 1894)*Asiphonichthys stenopterus* Cope, 1894

- records
- Lucena (1987): locality
 - Mahnert (1987): listing sub *Asiphonichthys s.*
 - Chernoff et al. (2001): listing

- Lucena & Menezes (2003): listing
- Vera (2005): listing
- Menezes & Lucena (2014): listing

Cynopotamus Valenciennes, 1850**C. argenteus** (Valenciennes, 1837)*Hydrocyon argenteum* Valenciennes, 1837*Characinus squamosus* Eig. & Kennedy, 1903*Charax caliurus* Eigenmann & Kennedy, 1907type localities *caliurus*: Laguna Pasito*squamosus*: Laguna Pasito

- records
- Eigenmann & Kennedy (1903): type locality of synonym *Characinus squamosus*
 - Eigenmann et al. (1907): type locality of *Charax caliurus* and locality of *Charax squamosus*
 - Eigenmann & Ogle (1907): locality
 - Bertoni (1914): listing sub *Charax argentea*, *Ch. caliura* and *Ch. Squamosa*
 - Bertoni (1939): listing sub *Charax argentea*, *Ch. Caliura*, *Ch. squamosa* and *Eucynopotamus magdalenae*
 - Menezes (1976): localities sub *C. argenteus* and *C. caliurus*
 - Menezes (1987b): listing
 - Lucena & Menezes (2003): listing
 - Vera (2005): listing

C. kincaidi (Schultz, 1950)*Cyrtocharax kincaidi* Schultz, 1950*Cynopotamus zettii* Iriart, 1979type locality *kincaidi*: Paraguay

- records
- Schultz (1950): type locality
 - Menezes (1976): locality
 - Lucena & Menezes (2003): listing
 - Vera (2005): listing

Galeocharax Fowler, 1910**G. humeralis** (Valenciennes, 1834)*Hydrocyon humeralis* Valenciennes, 1834

- records
- Bertoni (1914): listing sub *Eucynopotamus h.*
 - Bertoni (1939): listing sub *Eucynopotamus h.*
 - Menezes (1976): listing
 - Mandelburger et al. (1996): listing
 - Azpelicueta et al. (2001): locality
 - Lucena & Menezes (2003): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing

G. gulo (Cope, 1870)*Cynopotamus gulo* Cope, 1870*Anacyrtus knerii* Steindachner, 1879

- records
- Eigenmann et al. (1907): locality sub *Cynopotamus knerii*
 - Bertoni (1914): listing sub *Eucynopotamus knerii*
 - Bertoni (1939): listing sub *Cynopotamus gulo* and *Eucynopotamus knerii*
 - Vera (2005): listing
 - Neris et al. (2008): listing sub *G. knerii*

[info](#)**Phenacogaster** Eigenmann, 1907**P. tegatus** (Eigenmann, 1911)*Vesicatrus tegatus* Eigenmann, 1911

- records
- Mandelburger et al. (1996): listing sub *Vesicatrus t.*
 - Lucena & Menezes (2003): listing
 - Neris et al. (2010): listing
 - Vera-Alcaraz et al. (2017): locality

Roeboides Guenther, 1864**R. affinis** (Guenther, 1868)*Anacyrtus affinis* Guenther, 1868*Roeboides bicornis* Cope, 1870*Anacyrtus prognathus* Boulenger, 1895*Roeboides thurni* Eigenmann, 1912

type locality

prognathus: Paraguay

records

- o Boulenger (1895b): type locality of synonym *Anacyrtus prognathus*
- o Boulenger (1896): listing sub *Anacyrtus prognathus*
- o Eigenmann & Kennedy (1903): locality sub *R. prognathus*
- o Eigenmann et al. (1907): locality sub *R. prognathus*
- o Eigenmann & Ogle (1907): locality sub *R. prognathus*
- o Bertoni (1914): listing sub *R. prognathus*
- o Bertoni (1939): listing sub *R. prognathus*
- o Mandelburger et al. (1996): listing sub *R. prognathus*
- o Azpelicueta et al. (2001): locality sub *R. prognathus*
- o Chernoff et al. (2001): listing sub *R. prognathus*
- o Lucena & Menezes (2003): listing sub *R. prognathus*
- o Vera (2005): listing sub *R. prognathus*
- o Lucena (2007): locality
- o Neris et al. (2008): listing sub *R. affinis* and *R. prognathus*
- o Insaurrealde et al. (2012): listing sub *R. prognathus*

[info](#)**R. descalvadensis** Fowler, 1932*Roeboides descalvadensis* Fowler, 1932*Roeboides paranensis* Pignalberi, 1975

records

- o Gill Morlis (1997): listing sub *R. paranensis*
- o Chernoff et al. (2001): listing sub *R. cf. descalvadensis* and *R. paranensis*
- o Lucena & Menezes (2003): listing sub *R. descalvadensis* and *R. paranensis*
- o Vera (2005): listing sub *R. paranensis*
- o Lucena (2007): locality
- o Neris et al. (2008): listing sub *R. paranensis*
- o Neris et al. (2010): listing

[info](#)**R. microlepis** (Reinhardt, 1851)*Epiclyrtus microlepis* Reinhardt, 1851*Anacyrtus bonariensis* Steindachner, 1879

records

- o Boulenger (1896): listing sub *Anacyrtus m.*
- o Perugia (1897) locality sub *Anacyrtus m.*
- o Eigenmann & Kennedy (1903): locality
- o Bertoni (1914): listing
- o Bertoni (1939): listing
- o Lucena (2003): locality
- o Lucena & Menezes (2003): listing sub *R. bonariensis*
- o Vera (2005): listing
- o Neris et al. (2008): listing sub *R. bonariensis*
- o Neris et al. (2010): listing
- o Insaurrealde et al. (2012): listing sub *R. bonariensis*
- o Insaurrealde et al. (2013): photo sub *R. bonariensis*

[info](#)

subfamily

Cheirodontinae

Cheirodon Girard, 1855**C. stenodon** Eigenmann, 1915*Cheirodon stenodon* Eigenmann, 1915

remarks

This species is possibly a senior synonym of *Hyphessobrycon arianae* and its generic allocation is questionable (Malabarba, 1998; Carvalho, 2011).

records

- o Uj (1987): locality sub *Odontostilbe s.*
- o Mandelburger et al. (1996): listing sub *C. cf. stenodon*
- o Chernoff et al. (2001): listing sub *C. cf. stenodon*

Odontostilbe Cope, 1870**O. microcephala** Eigenmann, 1907*Odontostilbe microcephalus* Eigenmann, 1907

- records
- Bertoni (1914): listing
 - Eigenmann (1915b): locality
 - Bertoni (1939): listing
 - Uj (1987): locality

O. paraguayensis Eigenmann & Kennedy, 1903*Odontostilbe paraguayensis* Eigenmann & Kennedy, 1903

- type locality Asunción
- records
- Eigenmann & Kennedy (1903): type locality
 - Bertoni (1914): listing
 - Eigenmann (1915b): locality
 - Bertoni (1939): listing
 - Uj (1987): locality
 - Burns et al. (1997): locality
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Vari & Harold (2001): locality
 - Malabarba (2003c): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Buehrnheim (2006): locality
 - Mirande (2010): locality
 - Neris et al. (2010): listing

O. pequirá (Steindachner, 1882)*Chirodon pequirá* Steindachner, 1882*Odontostilbe trementinae* Eigenmann & Kennedy, 1903

- type locality *trementinae*: Arroyo Trementina
- records
- Eigenmann & Kennedy (1903): type locality of synonym *O. trementinae*
 - Eigenmann et al. (1907): locality sub *O. trementinae*
 - Bertoni (1914): listing sub *Holoshesthes p.* and *O. trementinae*
 - Eigenmann (1915b): locality sub *Holesthes p.*
 - Bertoni (1939): listing sub *Holoshesthes p.* and *O. trementinae*
 - Mahnert (1987): listing sub *Holoshesthes p.*
 - Uj (1987): locality sub *Holoshesthes p.*
 - Ramlow (1989): listing sub *Holoshesthes p.*
 - Mandelburger et al. (1996): listing sub *Holoshesthes p.*
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing sub *Holoshesthes p.*
 - Malabarba (2003c): listing
 - Chernoff et al. (2004): listing sub *Holoshesthes p.*
 - Vera (2005): listing
 - Buehrnheim (2006): locality sub *Holoshesthes p.*
 - Neris et al. (2010): listing

Serrapinnus Malabarba, 1998**S. calliurus** (Boulenger, 1900)*Chirodon calliurus* Boulenger, 1900

remarks The Paraguayan records of *Chirodon piaba* are herein assigned to *Serrapinnus calliurus* (Chuctaya and Malabarba, pers. comm.).

- records
- Eigenmann & Kennedy (1903): locality sub *Cheirodon insignis* and *C. interruptus*
 - Eigenmann & et al. (1907): locality sub *Cheirodon interruptus*
 - Bertoni (1914): listing sub *Cheirodon insignis*
 - Eigenmann (1915b): locality sub *Cheirodon piaba*
 - Schindler (1938): locality sub *Serrapinnus piaba*
 - Bertoni (1939): listing sub *Cheirodon insignis*
 - Mahnert (1987): listing sub *Odontostilbe piaba*
 - Gill Morlis (1994): listing sub *Serrapinnus piaba*
 - Burns et al. (1997): locality sub *Odontostilbe piaba*
 - Ramlow (1989): listing sub *Cheirodon piaba*
 - Uj (1987): locality sub *Serrapinnus piaba*
 - Mandelburger et al. (1996): listing sub *Cheirodon piaba*
 - Malabarba (2003c): listing

- Chernoff et al. (2004): listing sub *Cheirodon piaba*
- Vera (2005): listing sub *Serrapinnus piaba*
- Neris et al. (2008): listing sub *Serrapinnus piaba*
- Neris et al. (2010): listing

S. kriegi (Schindler, 1937)*Cheirodon kriegi* Schindler, 1937

type locality Centurión

records

- Schindler (1937): type locality
- Schindler (1938): locality
- Mahnert (1987): listing sub *Odontostilbe k.*
- Malabarba (2003c): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Neumann (2011): type catalog
- Jerep & Malabarba (2014): locality

S. microdon (Eigenmann, 1915)*Cheirodon microdon* Eigenmann, 1915

records

- Schindler (1938): locality sub *Cheirodon m.*
- Uj (1987): locality sub *Odontostilbe m.*
- Azpelicueta et al. (2001): locality
- Malabarba (2003c): listing
- Neris et al. (2010): listing

S. notomelas (Eigenmann, 1915)*Cheirodon notomelas* Eigenmann, 1915

records

- Uj (1987): locality
- Neris et al. (2008): listing

Cheirodontinae - unconfirmed listings from Paraguay requiring a verification based on voucher material*Holesthes heterodon* Eigenmann, 1915 | listed sub *Holestes heterodon* in Schindler (1938) and sub *Serrapinnus heterodon* in Malabarba (2003c)**Cheirodontinae - species considered not to be distributed in Paraguay***Chirodon piaba* Luetken, 1875 | see listings and localities for this species in the account of *Serrapinnus calliurus* | Malabarba & Jerep (2014)

subfamily

Clupeacharacinae

Clupeacharax Pearson, 1924**C. anchoveoides** Pearson, 1924*Clupeacharax anchoveoides* Pearson, 1924

records

- Chernoff et al. (2001): listing
- Neris et al. (2010): listing
- Vera-Alcaraz et al. (2017): locality

subfamily

Cynodontinae

Rhaphiodon Agassiz, 1829**R. vulpinus** Spix & Agassiz, 1829*Rhaphiodon vulpinus* Spix & Agassiz, 1829*Hydropardus rapax* Reinhardt, 1849? *Salmo tamuco* Kner, 1860

records

- Perugia (1891): locality sub *Cynodon v.*
- Eigenmann & Kennedy (1903): locality sub *Cynodon v.*
- Eigenmann & Ogle (1907): locality
- Bertoni (1914): listing
- Bertoni (1939): listing
- Ramlow (1989): listing
- Gill Morlis (1997): listing
- Toledo-Piza (2000): locality
- Chernoff et al. (2001): listing
- Toledo-Piza (2003): listing
- Vera (2005): listing
- Ávila et al. (2007): listing
- Neris et al. (2008): listing

- Insaurralde et al. (2012): listing

subfamily Iguanodectinae

Piabucus Oken, 1817

P. melanostoma Holmberg, 1891

Piabuca melanostoma Holmberg, 1891

type locality Asunción

- records
- Holmberg (1891): type locality
 - Eigenmann & Ogle (1907): locality
 - Eigenmann & Myers (1929): listing
 - Boelhke (1954): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Moreira (2002): locality
 - Moreira (2003): listing
 - Vera (2005): listing
 - Ávila et al. (2007): listing
 - Neris et al. (2008): listing

subfamily Salmininae

Salminus Agassiz, 1829

S. brasiliensis (Cuvier, 1816)

Hydrocynus brasiliensis Cuvier, 1816

Hydrocyon brevidens Cuvier, 1819

Salminus cuvieri Valenciennes, 1850

Salminus maxillosus Valenciennes, 1850

Salminus orbignyianus Valenciennes, 1850

Salmo auratus Larrañaga, 1923

Salmo 27-radiatus Larrañaga, 1923

- records
- Boulenger (1896): listing sub *S. maxillosus*
 - Eigenmann & Kennedy (1903): locality sub *S. brevidens*
 - Eigenmann & Ogle (1907): locality sub *S. maxillosus*
 - Bertoni (1914): listing sub *S. brevidens* and *S. maxillosus*
 - Barbero (1923): listing sub *S. brevidens*
 - Bertoni (1923): listing sub *S. brevidens*
 - Bertoni (1939): listing *S. brevidens* and *S. maxillosus*
 - Mahnert (1987): listing sub *S. maxillosus*
 - Mandelburger et al. (1996): listing
 - Gill Morlis (1997): listing sub *S. maxillosus*
 - Azpelicueta et al. (2001): locality sub *S. maxillosus*
 - Chernoff et al. (2001): listing sub *S. maxillosus*
 - Lima (2003b): listing
 - Chernoff et al. (2004): listing sub *S. maxillosus*
 - Vera (2005): listing
 - Vera & del Castillo (2006): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2012): listing sub *S. maxillosus*

Salmininae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Salminus hilarii Valenciennes, 1850 | listed in Bertoni (1914, 1939), Gill Morlis (1994, 1997), Neris et al. (2008), and Insaurralde et al. (2012)

subfamily Stethaprioninae

Brachychalcinus Boulenger, 1892

B. retrospina Boulenger, 1892

Brachychalcinus retrospina Boulenger, 1892

- records
- Reis (1989): locality
 - Chernoff et al. (2001): listing
 - Reis (2003a): listing
 - Chernoff et al. (2004): listing

- o Neris et al. (2010): listing

Gymnocorymbus Eigenmann, 1908**G. ternetzi** (Boulenger, 1895)*Tetragonopterus ternetzi* Boulenger, 1895

records

- o Bertoni (1914): listing
- o Eigenmann (1918): locality
- o Bertoni (1939): listing
- o Mahnert (1987): listing
- o Ramlow (1989): listing
- o Azpelicueta et al. (2001): locality
- o Chernoff et al. (2001): listing
- o Vera (2005): listing
- o Knaack (2006): locality
- o Vera & del Castillo (2006): listing
- o Neris et al. (2008): listing
- o Mirande et al. (2007): locality
- o Mirande (2010): locality
- o Etzel (2012): listing
- o Insaurralde et al. (2013): listing
- o Benine et al. (2015): locality
- o Vanegas-Ríos (2016): locality

Poptella Eigenmann, 1908**P. paraguayensis** (Eigenmann, 1907)*Fowlerina paraguayensis* Eigenmann, 1907

records

- o Eigenmann & Kennedy (1903): locality sub *Tetragonopterus orbicularis*
- o Bertoni (1914): listing sub *Fowleria p.*
- o Eigenmann & Myers (1929): locality sub *Ephippicharax orbicularis p.*
- o Bertoni (1939): listing sub *Fowleria p.*
- o Ramlow (1989): listing sub *Ephippicharax orbicularis p.*
- o Reis (1989): locality
- o Mandelburger et al. (1996): listing
- o Chernoff et al. (2001): listing
- o Reis (2003a): listing
- o Vera (2005): listing
- o Neris et al. (2008): listing

subfamily

Stevardiinae

tribus

Creagrutini

Creagrutus Guenther, 1864**C. meridionalis** Vari & Harold, 2001*Creagrutus meridionalis* Vari & Harold, 2001

records

- o Vari & Harold (2001): paratype locality
- o Vari & Harold (2003a): listing
- o Neris et al. (2010): listing

C. paraguayensis Mahnert & Géry, 1988*Creagrutus paraguayensis* Mahnert & Géry, 1988

type locality

Concepción, Río Azotey at Cororo, near Río Ypané

records

- o Mahnert & Géry (1988): type locality
- o Vari & Harold (2001): locality
- o Vari & Harold (2003a): listing
- o Neris et al. (2008): listing

tribus

Diapomini

Bryconamericus Eigenmann, 1907**B. exodon** Eigenmann, 1907*Bryconamericus exodon* Eigenmann, 1907

type locality

Puerto Max

- records
- Eigenmann & Kennedy (1903): locality sub *Poecilurichthys dichrourus*
 - Eigenmann et al. (1907): type locality
 - Bertoni (1914): listing
 - Eigenmann (1927): locality
 - Bertoni (1939): listing sub *Knodus e.*
 - Mandelburger et al. (1996): listing
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Pezzi da Silva (2003a): listing
 - Chernoff et al. (2004): listing
 - Langeani et al. (2005): locality
 - Vera (2005): listing
 - Weitzman et al. (2005): locality
 - Serra & Langeani (2006): locality
 - Vera & del Castillo (2006): listing
 - Neris et al. (2008): listing
 - Mirande (2010): locality
 - Vanegas-Ríos (2016): locality

Diapoma Cope, 1894

D. guarani (Mahnert & Géry, 1987)

Hyphessobrycon guarani Mahnert & Géry, 1987

[info](#)

- type locality Alto Paraná, Puerto Bertoni
- records
- Mahnert & Géry (1987): type locality
 - Géry & Mahnert (1993): listing sub *Hyphessobrycon g.*
 - Lima & Malabarba (2003): listing sub *Hyphessobrycon g.*
 - Miquelarena & López (2006): locality sub *Hyphessobrycon g.*
 - Miquelarena & López (2010): locality sub *Hyphessobrycon g.*
 - Neris et al. (2010): listing sub *Hyphessobrycon g.*
 - Carvalho (2011): locality sub *Hyphessobrycon g.*
 - Dagosta et al. (2014): locality sub *Hyphessobrycon g.*
 - Carvalho & Malabarba (2015): locality

Knodus Eigenmann, 1911

K. moenkhausii (Eigenmann & Kennedy, 1903)

Poecilurichthys moenkhausii Eigenmann & Kennedy, 1903

- type locality Arroyo Trementina
- records
- Eigenmann & Kennedy (1903): type locality
 - Bertoni (1914): locality sub *Bryconamericus m.*
 - Eigenmann (1918): locality
 - Bertoni (1939): locality
 - Pezzi da Silva (2003b): listing
 - Vera (2005): listing
 - Vera & del Castillo (2006): listing
 - Weitzman et al. (2005): locality
 - Ferreira & Lima (2006): locality
 - Carvalho (2011): locality

Piabarchus Myers, 1928

P. analis (Eigenmann, 1914)

Piabina analis Eigenmann, 1914

- records
- Mahnert (1987): listing
 - Mahnert & Géry (1988): locality
 - Chernoff et al. (2001): listing sub *P. cf. analis*
 - Lima (2003a): listing
 - Chernoff et al. (2004): listing sub *P. cf. analis*

P. stramineus (Eigenmann, 1908)

Bryconamericus stramineus Eigenmann, 1908

[info](#)

- records
- Ramlow (1989): listing sub *Bryconamericus s.*
 - Mandelburger et al. (1996): listing sub *Bryconamericus s.*
 - Vari & Harold (2001): locality sub *Bryconamericus s.*
 - Pezzi da Silva (2003a): listing sub *Bryconamericus s.*
 - Neris et al. (2010): listing sub *Bryconamericus s.*
 - Kullander & Lucena (2013): locality sub *Bryconamericus s.*

P. torrenticola Mahnert & Géry, 1988

Piabarchus torrenticola Mahnert & Géry, 1988

- type locality Cordillera, Salto Pirareta
 records ○ Mahnert (1987): listing sub *P.* sp.
 ○ Mahnert & Géry (1988): type locality
 ○ Weber et al. (1992): listing
 ○ Lima (2003a): listing

Piabina Reinhardt, 1867***P. argentea*** Reinhardt, 1867*Piabina argentea* Reinhardt, 1867*Piabina piquira* Eigenmann, 1910

- records ○ Vari & Harold (2001): locality
 ○ Vari & Harold (2003b): listing

tribus

Eretmobryconini

Markiana Eigenmann, 1903***M. nigripinnis*** (Perugia, 1891)*Tetragonopterus nigripinnis* Perugia, 1891*Tetragonopterus anomalus* Steindachner, 1891

- records ○ Eigenmann & Ogle (1907): locality
 ○ Eigenmann (1918): listing
 ○ Carter & Beadle (1931): listing sub *Tetragonopterus* n.
 ○ Bertoni (1939): listing
 ○ Ramlow (1989): listing
 ○ Mandelburger et al. (1996): locality
 ○ Azpelicueta et al. (2001): locality
 ○ Pavanelli (2003b): listing
 ○ Vera (2005): listing
 ○ Vera & del Castillo (2006): listing
 ○ Neris et al. (2008): listing
 ○ Mirande (2010): locality
 ○ Vanegas-Ríos (2016): locality

[info](#)

tribus

Glandulocaudini

Mimagoniates Regan, 1907***M. barberi*** Regan, 1907*Mimagoniates barberi* Regan, 1907

type locality Arroyo Yáca [Yhaca, Yuca], Estación Caballero

- records ○ Regan (1907): type locality
 ○ Eigenmann & Myers (1929): locality
 ○ Bertoni (1939): listing
 ○ Weitzman & Fink (1985): locality
 ○ Menezes & Weitzman (1990): locality
 ○ Weitzman et al. (1996): listing
 ○ Weitzman (2003): listing
 ○ Menezes & Weitzman (2009): locality
 ○ Neris et al. (2010): listing sub *M. barberi* and *M. microlepis*

tribus

Xenobryconini

Xenobrycon Myers & Miranda Ribeiro, 1945***X. macropus*** Myers & Miranda Ribeiro, 1945*Xenobrycon macropus* Myers & Miranda Ribeiro, 1945

- records ○ Mahnert & Géry (1984): locality
 ○ Weitzman & Fink (1985): locality
 ○ Mandelburger et al. (1996): listing
 ○ Weitzman & Burns (1997): listing
 ○ Chernoff et al. (2001): listing
 ○ Weitzman (2003): listing
 ○ Chernoff et al. (2004): listing
 ○ Neris et al. (2010): listing
 ○ Barreira Mendonça et al. (2016): locality

Stevardiinae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Tetragonopterus iheringii Boulenger, 1887 | listed sub *Astyanax i.* in Eigenmann et al. (1907) and sub *Bryconamericus i.* in Schindler (1938), Gill Morlis (1994), and Neris et al. (2010)

Tetragonopterus rubropictus Berg, 1901 | listed sub *Astyanax r.* in Insaurrealde et al. (2012)

Stevardiinae - species considered not to be distributed in Paraguay

Paragoniates microlepis Steindachner, 1877 | listed in Neris et al. (2010) sub *Mimagoniates microlepis* | Menezes & Weitzman (1990), Weitzman et al. (1996)

subfamily Tetragonopterinae

Tetragonopterus Cuvier, 1816

T. argenteus Cuvier, 1816

Tetragonopterus argenteus Cuvier, 1816

Tetragonopterus sawa Castelnau, 1855

Tetragonopterus huberi Steindachner, 1909

records

- o Boulenger (1896): listing
- o Perugia (1891): locality sub *T. rufipes*
- o Perugia (1897): locality
- o Eigenmann & Kennedy (1903): locality sub *T. chalceus*
- o Eigenmann et al. (1907): locality
- o Eigenmann & Ogle (1907): locality
- o Bertoni (1914): listing
- o Eigenmann (1917a): locality
- o Bertoni (1939): listing
- o Azpelicueta et al. (2001): locality
- o Chernoff et al. (2001): listing
- o Reis (2003b): listing
- o Chernoff et al. (2004): listing
- o Vera (2005): listing
- o Neris et al. (2008): listing
- o Mirande (2010): locality
- o Insaurrealde et al. (2013): listing
- o Vanegas-Ríos (2016): locality

subfamily *Astyanax* clade

Astyanax Baird & Girard, 1854

A. abramis (Jenyns, 1842)

Tetragonopterus abramis Jenyns, 1842

Bertoniolus paraguayensis Fowler, 1918

type locality *paraguayensis*: Puerto Bertoni

records

- o Eigenmann & Kennedy (1903): listing sub *Poecilurichthys a.*
- o Eigenmann & Ogle (1907): locality
- o Fowler (1918): type locality of synonym *B. paraguayensis*
- o Eigenmann (1921): locality
- o Eigenmann & Myers (1929): listing sub *B. paraguayensis*
- o Bertoni (1939): listing
- o Garutti & Britski (2000): locality sub *A. paraguayensis*
- o Chernoff et al. (2001): listing sub *A. paraguayensis*
- o Backup (2003a): listing sub *A. paraguayensis*
- o Chernoff et al. (2004): listing sub *A. paraguayensis*
- o Vera (2005): listing sub *A. paraguayensis*
- o Vera & del Castillo (2006): listing sub *A. paraguayensis*
- o Neris et al. (2008): listing sub *A. paraguayensis*
- o Neris et al. (2010): listing
- o Insaurrealde et al. (2012): listing

A. alleni (Eigenmann & McAtee, 1907)

Tetragonopterus alleni Eigenmann & McAtee, 1907

type locality Asunción

records

- o Eigenmann et al. (1907): type locality
- o Bertoni (1914): listing sub *Ctenobrycon a.*
- o Eigenmann (1921): locality
- o Bertoni (1939): listing

- Ramlow (1989): listing
- Vera (2005): listing sub *Ctenobrycon a.*
- Vera & del Castillo (2006): listing sub *Ctenobrycon a.*
- Neris et al. (2008): listing sub *Ctenobrycon a.*
- Soneira et al. (2010): locality sub *Ctenobrycon a.*

A. eigenmanniorum (Cope, 1894)

Tetragonopterus eigenmanniorum Cope, 1894

- records
- Bertoni (1914): listing
 - Eigenmann (1921): locality
 - Bertoni (1939): listing
 - Mandelburger et al. (1996): listing
 - Buckup (2003a): listing
 - Neris et al. (2010): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

A. lacustris (Luetken, 1875)

Tetragonopterus lacustris Luetken, 1875

Tetragonopterus jacuhiensis Cope, 1894

Astyanax bimaculatus paraguayensis Eigenmann, 1921

Astyanax bimaculatus asuncionensis Géry, 1972

Astyanax altiparanae Garutti & Britski, 2000

type locality *bimaculatus paraguayensis*: Paraguay

remarks Bertoni (1914) listed the subspecies *A. bimaculatus paraguayensis* 7 years before Eigenmann (1921) presented the same as “subsp. nov.”. Therefore the taxon exists twice with different authorship, but the one of Bertoni must be treated as a *nomen nudum* as it was published as a mere listing without any further information than the name.

A. bimaculatus asuncionensis was proposed by Géry as a replacement name for Eigenmann's *A. bimaculatus paraguayensis*, preoccupied in *Astyanax* by *A. paraguayensis* (Fowler, 1918).

- records
- Eigenmann & Kennedy (1903): listing sub *Poecilurichthys maculatus l.*
 - Bertoni (1914): listing sub *A. bimaculatus paraguayensis*
 - Eigenmann (1921): type locality of synonym *A. bimaculatus paraguayensis*
 - Schindler (1938): locality sub *A. bimaculatus paraguayensis*
 - Bertoni (1939): listing sub *A. bimaculatus paraguayensis*
 - Tortonese (1942): locality sub *A. bimaculatus paraguayensis*
 - Garutti & Britski (2000): locality sub *A. asuncionensis*
 - Azpelicueta et al. (2001): locality sub *A. asuncionensis*
 - Buckup (2003a): listing sub *A. asuncionensis*
 - Vera (2005): listing sub *A. asuncionensis*
 - Vera & del Castillo (2006): listing sub *A. asuncionensis*
 - Neris et al. (2008): listing sub *A. asuncionensis* and *A. bimaculatus paraguayensis*
 - Garutti & Langeani (2009): locality sub *A. asuncionensis*
 - Garutti & Venere (2009): locality sub *A. asuncionensis*
 - Mirande (2010): locality sub *A. asuncionensis*
 - Neris et al. (2010): listing sub *A. altiparanae*
 - Insaurralde et al. (2013): listing sub *A. bim. Paraguayensis*
 - Lucena & Soares (2016): locality
 - Vanegas-Ríos (2016): locality sub *A. asuncionensis*

[info](#)

[info](#)

A. lineatus (Perugia, 1891)

Tetragonopterus lineatus Perugia, 1891

- records
- Eigenmann et al. (1907): locality sub *A. bimaculatus lineatus*
 - Eigenmann & Ogle (1907): locality
 - Bertoni (1914): listing
 - Eigenmann (1921): locality
 - Schindler (1938): locality
 - Bertoni (1939): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing

- Vera & del Castillo (2006): listing
- Neris et al. (2010): listing

A. pellegrini Eigenmann, 1907*Astyanax pelegri* Eigenmann, 1907type locality
records

Bahia Negra

- Eigenmann & Kennedy (1903): locality sub *Poecilurichthys multiradiatus*
- Eigenmann et al. (1907): type locality
- Bertoni (1914): listing
- Eigenmann (1921): locality
- Schindler (1938): locality
- Bertoni (1939): listing
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing sub *Ctenobrycon p.*
- Vera (2005): listing
- Mirande et al. (2006): locality
- Vera & del Castillo (2006): listing
- Mirande (2010): locality
- Neris et al. (2010): listing
- Insaurralde et al. (2012): listing

A. rutilus (Jenyns, 1842)*Tetragonopterus rutilus* Jenyns, 1842? *Salmo ovatus* Larrañaga, 1923

records

- Eigenmann & Ogle (1907): locality
- Bertoni (1932): listing
- Bertoni (1939): listing
- probably most of the Paraguayan records of *A. fasciatus* can be assigned to *A. rutilus* (Mirande, pers.comm.)

Psellogrammus Eigenmann, 1908**P. kennedyi** (Eigenmann, 1903)*Hemigrammus kennedyi* Eigenmann, 1903type locality
records

Campo Grande

- Eigenmann & Kennedy (1903): type locality
- Eigenmann et al. (1907): locality sub *Hemigrammus k.*
- Bertoni (1914): listing
- Eigenmann (1927): locality
- Schindler (1938): locality
- Bertoni (1939): listing
- Tortonese (1942): locality
- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Benine & Casatti (2003): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Mirande (2010): locality
- Vanegas-Ríos (2016): locality

Oligosarcus Guenther, 1864**O. oligolepis** (Steindachner, 1867)*Xiphorhamphus oligolepis* Steindachner, 1867

records

- Eigenmann & Kennedy (1903): locality sub *Acestrorhamphus hepsetus*
- Menezes (1987a): locality
- Menezes (2003): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

O. paranensis Menezes & Géry, 1983*Oligosarcus paranensis* Menezes & Géry, 1983

records

- Menezes (1987a): locality
- Gill Morlis (1994): listing
- Mandelburger et al. (1996): listing
- Menezes (2003): listing
- Kullander (2009): locality

- Neris et al. (2010): listing
- Ribeiro & Menezes (2015): listing

O. pintoi Campos, 1945*Oligosarcus pintoi* Campos, 1945*Hemibrycon marciae* Godoy, 1971

records

- Menezes (1987a): locality
- Ramlow (1989): listing sub *Paroligosarcus p.*
- Mandelburger et al. (1996): locality sub *Paroligosarcus p.*
- Menezes (2003): listing

Astyanax clade - unconfirmed listings from Paraguay requiring a verification based on voucher material*Astyanax bockmanni* Vari & Castro, 2007 | listed in Neris et al. (2010)*Astyanax marionae* Eigenmann, 1911 | listed in Ramlow (1989), Mandelburger et al. (1996), Chernoff et al. (2001), and Neris et al. (2010)*Hydrocyon hepsetus* Cuvier, 1829 | listed sub *Oligosarcus*. cf. *hepsetus* in Mandelburger et al. (1996)*Tetragonopterus correntinus* Holmberg, 1891 | listed sub *Asytanax correntinus* in Bertoni (1914, 1939)*Tetragonopterus erythropterus* Holmberg, 1891 | listed sub *Asytanax erythropterus* in Bertoni (1914, 1939) and Insaurralde et al. (2012)*Tetragonopterus scabripinnis* Jenyns, 1842 | listed sub *Astyanax scabripinnis* in Insaurralde et al. (2012)*Tetragonopterus scabripinnis* var. *paranae* Eigenmann, 1914 | listed sub *Astyanax scabripinnis paranae* in Neris et al. (2010)**Astyanax clade - species considered not to be distributed in Paraguay***Chalceus fasciatus* Cuvier, 1819 | Chernoff et al. (2001, 2004), Vera (2005), Vera & del Castillo (2006), and Neris et al. (2008) sub *Astyanax fasciatus* | Melo & Buckup (2006), Mirande & Koerber (2015)*Salmo bimaculatus* Linnaeus, 1758 | Insaurralde et al. (2013) sub *Astyanax bimaculatus* | Buckup (2003a), Garutti (2003), Mirande & Koerber (2015)

subfamily

Bryconops clade**Bryconops** Kner, 1858**B. melanurus** (Bloch, 1794)*Salmo melanurus* Bloch, 1794*Cretochanes melanurus* var. *transitoria* Steindachner, 1915*Cretochanes cyrtogaster* Norman, 1926

records

- Perugia (1897): locality
- Bertoni (1939): listing
- Mahnert (1987): listing
- Neris et al. (2008): listing

subfamily

Hemigrammus clade**Hemigrammus** Gill, 1858**H. durbinae** Ota, Lima & Pavanelli, 2015*Hemigrammus durbinae* Ota, Lima & Pavanelli, 2015

records ○ Ota et al. (2015): paratype localities

H. lunatus Durbin, 1918*Hyphessobrycon lunatus* Durbin, 1918*Hyphessobrycon maxillaris* Fowler, 1932

records

- Weitzman (1985): listing sub *H. maxillaris*
- Chernoff et al. (2001): listing sub *H. cf. lunatus* and *H. maxillaris*
- Chernoff et al. (2004): listing sub *H. cf. lunatus*
- Vera (2005): listing sub *H. lunatus* and *H. maxillaris*
- Vera & del Castillo (2006): listing sub *H. lunatus* and *H. maxillaris*
- Neris et al. (2010): listing
- Lima & Sousa (2009): locality
- Ota et al. (2014): locality

H. mahnerti Uj & Géry, 1989*Hemigrammus mahnerti* Uj & Géry, 1989

type locality Misiones, swamp near Panchito Lopez, 4 km from Yabebyry

- records
- Uj & Géry (1989): type locality
 - Lima & Oyakawa (2003): listing
 - Carvalho (2011): locality

H. tridens Eigenmann, 1907*Hemigrammus tridens* Eigenmann, 1907

- type locality Arroyo Pypucu
- records
- Eigenmann & Ogle (1907): type locality
 - Bertoni (1914): listing
 - Eigenmann (1918): locality
 - Bertoni (1939): listing
 - Weitzman (1985): listing
 - Mahnert (1987): listing
 - Géry & Mahnert (1993): listing
 - Chernoff et al. (2001): listing sub *H. cf. tridens*
 - Lima & Oyakawa (2003): listing
 - Vera (2005): listing
 - Vera & del Castillo (2006): listing
 - Neris et al. (2008): listing
 - Carvalho et al. (2010): locality
 - Carvalho (2011): locality

H. ulreyi (Boulenger, 1895)*Tetragonopterus ulreyi* Boulenger, 1895

- records
- Bertoni (1914): listing
 - Bertoni (1939): listing
 - Neris et al. (2008): listing
 - Ota et al. (2014): locality

Hyphessobrycon Durbin, 1908***H. anisitsi*** (Eigenmann, 1907)*Hemigrammus anisitsi* Eigenmann, 1907*Hemigrammus caudovittatus* Ahl, 1923*Hyphessobrycon erythrurus* Ahl, 1928

- type locality *anisitsi*: Villarica
- records
- Eigenmann & Kennedy (1903): locality [in part]
 - Eigenmann & Ogle (1907): type locality
 - Ellis (1911): locality
 - Eigenmann (1918): locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Weitzman (1985): listing
 - Géry & Mahnert (1993): listing
 - Mandelburger et al. (1996): listing
 - Lima & Malabarba (2003): listing
 - Miquelarena & López (2006): locality sub *Hemigrammus a.*
 - Neris et al. (2010): listing
 - Carvalho (2011): locality

H. arianae Uj & Géry, 1989*Hyphessobrycon arianae* Uj & Géry, 1989

type locality Caaguazú, Río Güyrauguá, tributary of Río Monday, 3 km E of Juan Frutos

remarks This species is possibly a junior synonym of *Cheirodon stenodon* (Malabarba, 1998; Carvalho, 2011).

- records
- Uj & Géry (1989): type locality
 - Géry & Mahnert (1993): listing
 - Lima & Malabarba (2003): listing
 - Miquelarena & López (2006): locality
 - Carvalho (2011): locality

H. elachys Weitzman, 1985*Hyphessobrycon elachys* Weitzman, 1985

type locality San Pedro, Río Aguaray-guazú system, 3 km NE of Lima

- records
- Weitzman (1985): type locality
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Géry & Mahnert (1993): listing

- Mandelburger et al. (1996): listing
- Lima & Malabarba (2003): listing
- Carvalho (2011): locality
- Carvalho & Malabarba (2015): locality

H. eques (Steindachner, 1882)*Chirodon eques* Steindachner, 1882*Tetragonopterus callistus* Boulenger, 1900*Hemigrammus melasopterus* Eigenmann, 1903*Hyphessobrycon serpae* Durbin, 1908type locality *melasopterus*: Aguada, near Arroyo Trementina

- records
- Eigenmann & Kennedy (1903): type locality of synonym *Hemigrammus melasopterus*
 - Eigenmann (1918): locality sub *H. callistus*
 - Bertoni (1939): listing sub *H. callistus*
 - Weitzman (1985): listing sub *H. callistus*
 - Mahnert (1987): listing sub *H. callistus*
 - Ramlow (1989): listing sub *H. callistus*
 - Géry & Mahnert (1993): listing sub *H. callistus*
 - Mandelburger et al. (1996): listing sub *H. callistus*
 - Weitzman & Palmer (1997): locality
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Lima & Malabarba (2003): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Vera & del Castillo (2006): listing
 - Neris et al. (2008): listing
 - Carvalho (2011): locality sub *Hemigrammus melasopterus*
 - Carvalho & Malabarba (2015): locality

H. luetkenii (Boulenger, 1887)*Tetragonopterus luetkenii* Boulenger, 1887

- records
- Eigenmann & Kennedy (1903): locality [in part]
 - Eigenmann et al. (1907): locality sub *Hemigrammus l.*
 - Ellis (1911): locality
 - Bertoni (1914): listing
 - Eigenmann (1918): locality
 - Schindler (1938): locality
 - Bertoni (1939): listing
 - Mahnert (1987): listing
 - Géry & Mahnert (1993): listing
 - Lima & Malabarba (2003): listing
 - Neris et al. (2010): listing
 - Carvalho (2011): locality
 - Weiss (2013): locality sub *Astyanax l.*

H. procerus Mahnert & Géry, 1987*Hyphessobrycon procerus* Mahnert & Géry, 1987

type locality Caaguazú, río Guyrau-gua at Ltr. Juan M. Frutos

- records
- Mahnert & Géry (1987): type locality
 - Géry & Mahnert (1993): listing
 - Lima & Malabarba (2003): listing
 - Carvalho (2011): locality
 - Dagosta et al. (2014): locality
 - Carvalho & Malabarba (2015): locality

H. pytai Géry & Mahnert, 1993*Hyphessobrycon pytai* Géry & Mahnert, 1993

type locality Caaguazú, small tributary of Río Güyrauguá, near Juan Frutos, Río Monday basin

- records
- Géry & Mahnert (1993): type locality
 - Lima & Malabarba (2003): listing
 - Carvalho & Malabarba (2015): locality

Moenkhausia Eigenmann, 1903**M. dichroua** (Kner, 1858)*Tetragonopterus dichrouus* Kner, 1858

- records
- Eigenmann & Eigenmann (1891): listing sub *Tetragonopterus dichrouus*
 - Eigenmann & Kennedy (1903): locality sub *Poecilurichthys*

dichrourus

- Eigenmann et al. (1907): locality
- Bertoni (1914): listing
- Eigenmann (1917a): locality
- Schindler (1938): locality
- Bertoni (1939): listing
- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Chernoff et al. (2004): listing
- Benine (2003): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2008): listing
- Mirande (2010): locality
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

M. sanctaefilomenae (Steindachner, 1907)*Tetragonopterus sanctaefilomenae* Steindachner, 1907*Moenkhausia australe* Eigenmann, 1908

- | | |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| type locality | <i>australe</i> : Arroyos Trementina and Chagalalina |
| records | <ul style="list-style-type: none"> ○ Eigenmann (1908): type locality of synonym <i>M. australe</i> ○ Bertoni (1914): listing sub <i>M. australis</i> ○ Eigenmann (1917a): locality ○ Bertoni (1939): listing ○ Tortonese (1942): locality ○ Mahnert (1987): listing ○ Ramlow (1989): listing ○ Mandelburger et al. (1996): listing ○ Chernoff et al. (2001): listing ○ Benine (2003): listing ○ Chernoff et al. (2004): listing ○ Vera (2005): listing ○ Vera & del Castillo (2006): listing ○ Neris et al. (2008): listing ○ Mirande (2010): locality ○ Insaurralde et al. (2012): listing ○ Dagosta et al. (2015): locality sub <i>M. sanctaefilomenae</i> and <i>M. australe</i> ○ Vanegas-Ríos (2016): locality |

Hemigrammus clade - unconfirmed listings from Paraguay requiring a verification based on voucher material*Hyphessobrycon igneus* Miquelarena, Menni, López & Casciotta, 1980 | listed in Mahnert (1987) and Géry & Mahnert (1993)*Hyphessobrycon meridionalis* Ringuelet, Miquelarena & Menni, 1978 | listed in Géry & Mahnert (1993)*Moenkhausia dichrourus intermedius* Eigenmann, 1908 | listed sub *Moenkhausia intermedia* in Eigenmann (1917a), Bertoni (1939), Chernoff et al. (2001), Benine (2003), Vera (2005), Vera & del Castillo (2006), Neris et al. (2008), and Insaurralde et al. (2012, 2013)**Hemigrammus clade - species considered not to be distributed in Paraguay***Hemigrammus marginatus* Ellis, 1911 | Neris et al. (2010) | Ota et al. (2015) [as juvenile *Moenkhausia* sp.]

subfamily

Jupiaba clade***Jupiaba* clade - unconfirmed listings from Paraguay requiring a verification based on voucher material***Deuterodon acanthogaster* Eigenmann, 1911 | listed sub *Deuterodon acanthogaster* in Ramlow (1989) and sub *Jupiaba acanthogaster* in Chernoff et al. (2001, 2004)

subfamily

*incertae sedis****Mixobrycon*** Eigenmann, 1915***M. ribeiroi*** (Eigenmann, 1907)*Cheirodon riberoi* Eigenmann, 1907

- | | |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| type locality | Puerto Max |
| records | <ul style="list-style-type: none"> ○ Eigenmann & Ogle (1907): type locality ○ Bertoni (1914): listing sub <i>Cheirodon r.</i> ○ Eigenmann (1915b): locality |

- Bertoni (1939): listing sub *Cheirodon r.*
- Malabarba (2003a): listing
- Carvalho (2011): locality

Characinae incertae sedis - unconfirmed listings from Paraguay requiring a verification based on voucher material

Tetragonopterus moorii Boulenger, 1892 | listed sub *Astyanacinus moorii* in Bertoni (1914, 1939) and Ramlow (1989)

family **Crenuchidae**

Characidium Reinhardt, 1867

C. etzeli Zarske & Géry, 2001

Characidium etzeli Zarske & Géry, 2001

type locality 4 km from Bella Vista, about 50 km NE of Encarnacion towards the Rio Paraná

- records
- Zarske & Géry (2001b): type locality
 - Buckup (2003b): listing
 - Zarske (2003): type catalog

C. laterale (Boulenger, 1895)

Nannostomus lateralis Boulenger, 1895

type locality Colonia Risso

- records
- Boulenger (1895a): type locality
 - Boulenger (1896): listing sub *Nannostomus lateralis*
 - Bertoni (1914): listing sub *Microcharax lateralis*
 - Bertoni (1939): listing sub *Microcharax lateralis*
 - Buckup (1993): locality
 - Buckup (2003b): listing
 - Neris et al. (2010): listing

Crenuchidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Characidium pterostictum Gomes, 1947 | listed in Neris et al. (2010)

Characidium zebra Eigenmann 1909 | listed sub *C. aff. zebra* in Neris et al. (2010)

Crenuchidae - species considered not to be distributed in Paraguay

Characidium fasciatum Reinhardt, 1866 | Chernoff et al. (2001, 2004) and Vera (2005) | Buckup (1992, 2003b)

order **SILURIFORMES**

family **Doradidae**

Anadoras Eigenmann, 1925

A. weddellii (Castelnau, 1855)

Doras weddellii Castelnau, 1855

- records
- Boulenger (1896): listing sub *Doras w.*
 - Eigenmann et al. (1907): locality sub *Doras w.*
 - Bertoni (1914): listing sub *Doras weddellii*
 - Eigenmann (1925): locality
 - Bertoni (1939): listing sub *Doras weddellii*
 - Sabaj & Ferraris (2003): listing
 - Neris et al. (2010): listing

Ossancora Sabaj Pérez & Birindelli, 2011

O. eigenmanni (Boulenger, 1895)

Oxydoras eigenmanni Boulenger, 1895

- records
- Bertoni (1914): listing sub *Oxydoras e.*
 - Eigenmann (1925): locality sub *Doras e.*
 - Bertoni (1939): listing sub *Oxydoras e.*
 - Azpelicueta et al. (2001): locality sub *Doras e.*
 - Chernoff et al. (2001): listing sub *Doras e.*
 - Sabaj & Ferraris (2003): listing sub *Oxydoras e.*
 - Vera (2005): listing sub *Doras e.*
 - Neris et al. (2008): listing sub *Oxydoras e.*

- Birindelli & Sabaj (2011): locality
- Insaurralde et al. (2012): listing sub *Doras e.*
- Insaurralde et al. (2013): listing sub *Doras e.*

O. punctata (Kner, 1853)*Doras punctatus* Kner, 1853

- records
- Neris et al. (2010): listing sub *Doras punctatus*
 - Vera-Alcaraz et al. (2017): locality

Oxydoras Kner, 1855***O. kneri*** Bleeker, 1862*Oxydoras kneri* Bleeker, 1862

- records
- Boulenger (1896): listing sub *Rhinodoras k.*
 - Eigenmann & Kennedy (1903): locality
 - Bertoni (1914): listing
 - Eigenmann (1925): locality
 - Bertoni (1939): listing
 - Gill Morlis (1997): listing
 - Azpelicueta et al. (2001): locality
 - Sabaj (2002): locality
 - Sabaj & Ferraris (2003): listing
 - Vera (2005): listing
 - Ávila et al. (2007): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2012): listing

Platydoras Bleeker, 1862***P. armatulus*** (Valenciennes, 1840)*Doras armatulus* Valenciennes, 1840

- records
- Eigenmann et al. (1907): locality sub *Doras costatus*
 - Bertoni (1914): listing sub *Doras costatus*
 - Eigenmann (1925): locality sub *Platydoras costatus*
 - Bertoni (1939): listing sub *Doras costatus*
 - Sabaj & Ferraris (2003): listing
 - Ávila et al. (2007): listing
 - Neris et al. (2008): listing
 - Piorski et al. (2008): locality
 - Neris et al. (2010): listing
 - Insaurralde et al. (2012): listing sub *P. costatus*
 - Insaurralde et al. (2013): listing sub *P. costatus*

Pterodoras Bleeker, 1862***P. granulosis*** (Valenciennes, 1821)*Doras granulosis* Valenciennes, 1821*Doras maculatus* Valenciennes, 1834*Doras murica* Natterer, 1855*Doras laevigatulus* Berg, 1901*Doras lentiginosus* Eigenmann, 1917*Silurus armatus* Larrañaga, 1923*Silurus duodecimradiatus* Larrañaga, 1923*Parapterodoras paranensis* Risso & Morra, 1964

- records
- Boulenger (1896): listing sub *Doras maculatus*
 - Eigenmann & Kennedy (1903): locality sub *Doras maculatus*
 - Bertoni (1914): listing sub *Doras armatus* and *D. maculatus*
 - Eigenmann (1925): locality
 - Bertoni (1939): listing sub *Doras armatus* and *D. maculatus*
 - Gill Morlis (1997): listing
 - Azpelicueta et al. (2001): locality sub *Megalodoras laevigatulus*
 - Sabaj (2002): locality
 - Sabaj & Ferraris (2003): listing
 - Vera (2005): listing
 - Makrakis et al. (2007): listing
 - Sabaj et al. (2007): locality
 - Neris et al. (2008): listing

Rhinodoras Bleeker, 1862**R. dorbignyi** (Kner, 1855)*Doras d'Orbigny* Kner, 1855*Doras nebulosus* Eigenmann & Kennedy, 1903type locality *nebulosus*: Asunción

- records
- Eigenmann & Kennedy (1903): type locality of synonym *Doras nebulosus*
 - Bertoni (1914): listing sub *Doras nebulosus*
 - Eigenmann (1925): locality
 - Bertoni (1939): listing sub *Doras nebulosus*
 - Sabaj & Ferraris (2003): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Neris et al. (2008): listing
 - Sabaj et al. (2007): locality
 - Sabaj et al. (2008): locality
 - Insaurralde et al. (2013): listing

Trachydoras Eigenmann, 1925**T. paraguayensis** (Eigenmann & Ward, 1907)*Hemidoras paraguayensis* Eigenmann & Ward, 1907

- records
- Bertoni (1914): listing sub *Hemidoras p.*
 - Fisher (1917): locality sub *Hemidoras nattereri*
 - Eigenmann (1925): locality
 - Bertoni (1939): listing sub *Hemidoras p.*
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Azpelicueta et al. (2001): locality
 - Sabaj (2002): locality
 - Sabaj & Ferraris (2003): listing
 - Vera (2005): listing
 - Ávila et al. (2007): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

Doradidae - species considered not to be distributed in Paraguay

Doras grypus Cope, 1872 | Chernoff et al. (2001) and Vera (2005) sub *Anadoras g.* | Sabaj & Ferraris (2003)
Silurus costatus Linnaeus, 1758 | Insaurralde et al. (2012, 2013) sub *Platydoras c.* | Piorski et al. (2008)

family

Auchenipteridae

subfamily

Auchenipterinae

Ageneiosus Lacepède, 1803**A. inermis** (Linnaeus, 1766)*Silurus inermis* Linnaeus, 1766*Ageneiosus armatus* Lacepède, 1803*Ageneiosus brevifilis* Valenciennes, 1840*Hypothalmus dawalla* Jardine, 1841*Davalla schomburgkii* Bleeker, 1858*Ageneiosus axillaris* Guenther, 1864*Ageneiosus sebae* Guenther, 1864*Ageneiosus therezinae* Steindachner, 1909*Ageneiosus marmoratus* Eigenmann, 1912*Ageneiosus ogilviei* Fowler, 1914*Ageneiosus barranquerensis* Risso & Risso, 1964*Ageneiosus gabardinii* Risso & Risso, 1964

- records
- Boulenger (1896): listing sub *A. brevifilis*
 - Bertoni (1914): listing sub *A. brevifilis*
 - Bertoni (1939): listing sub *A. brevifilis*
 - Walsh (1990): locality sub *A. brevifilis*
 - Gill Morlis (1997): listing sub *A. brevifilis*
 - Azpelicueta et al. (2001): locality sub *A. cf. brevifilis*

- Chernoff et al. (2001): listing sub *A. cf. brevifilis*
- Ferraris (2003b): listing
- Chernoff et al. (2004): listing sub *A. brevifilis*
- Vera (2005): listing
- Neris et al. (2008): listing
- Ribeiro (2011): locality
- Ribeiro et al. (2017): locality

Auchenipterus Valenciennes, 1840

A. nigripinnis (Boulenger, 1895)

Euanemus nigripinnis Boulenger, 1895

Auchenipterus paysanduanus Devincenzi, 1933

type locality *nigripinnis*: Paraguay

- records
- Boulenger (1895b): type locality
 - Boulenger (1896): listing sub *Euanemus n.*
 - Eigenmann & Kennedy (1903): locality
 - Eigenmann et al. (1907): locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Ferraris & Vari (1999): locality
 - Ferraris (2003b): listing
 - Vera (2005): listing
 - Ferraris (2007): listing

A. osteomystax (Miranda Ribeiro, 1918)

Ceratocheilus osteomystax Miranda Ribeiro, 1918

- records
- Bertoni (1939): listing sub *Ageniosus nuchalis*
 - Ferraris & Vari (1999): locality
 - Ferraris (2003b): listing
 - Neris et al. (2008): listing
 - Neris et al. (2010): listing

Epapterus Cope, 1878

E. dispilurus Cope, 1878

Epapterus dispilurus Cope, 1878

Euanemus longipinnis Steindachner, 1881

Epapterus chaquensis Risso & Risso, 1962

- records
- Vari et al. (1984): locality sub *E. chaquensis*
 - Ramlow (1989): listing sub *E. chaquensis*
 - Vari & Ferraris (1998): locality
 - Mandelburger et al. (1996): listing sub *E. chaquensis*
 - Ferraris (2003b): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Neris et al. (2010): listing

Trachelyopterus Valenciennes, 1840

T. galeatus (Linnaeus, 1766)

Silurus galeatus Linnaeus, 1766

Auchenipterus maculosus Valenciennes, 1840

Parauchenipterus paseae Regan, 1906

- records
- Bertoni (1914): listing sub *Trachycorystes g.*
 - Bertoni (1939): listing sub *Trachycorystes g.*
 - Chernoff et al. (2001): listing sub *Parauchenipterus g.*
 - Akama (2004): locality
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Neris et al. (2010): listing sub *Parauchenipterus g.*
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

T. striatulus (Steindachner, 1877)

Auchenipterus striatulus Steindachner, 1877

- records
- Eigenmann & Kennedy (1903): locality sub *Trachycorystes s.*
 - Eigenmann et al. (1907): locality sub *Trachycorystes s.*
 - Bertoni (1914): listing sub *Trachycorystes striatus*

- Carter & Beadle (1931): listing sub *Trachycorystes* s.
- Bertoni (1939): listing sub *Trachycorystes striatus*
- Vera (2005): listing sub *Trachycorystes* s.

subfamily **Centromochlinae**

Tatia Miranda Ribeiro, 1911

T. neivai (Ihering, 1930)

Glanidium neivai Ihering, 1930

records

- Drennen (1986): locality sub *Glanidium neivae*
- Mahnert (1987): listing sub *T. aulopygia*
- Ramlow (1989): listing sub *Glanidium neivae*
- Mandelburger et al. (1996): listing sub *Glanidium neivae*
- Chernoff et al. (2001): listing sub *T. aulopygia*
- Sarmiento-Soares & Martins-Pinheiro (2008): locality
- Pavanelli & Bifi (2009): locality
- Neris et al. (2010): listing sub *T. aulopygia*

Auchenipteridae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Ageneiosus militaris Valenciennes, 1835 | listed sub *Ageneiosus valenciennesi* in Bertoni (1914, 1939), Walsh (1990), and Gill Morlis (1997), and sub *Ageneiosus militaris* in Ferraris (2003b) and Neris et al. (2008)

Ageneiosus ucayalensis Castelnau, 1855 | listed in Bertoni (1932, 1939)

Auchenipteridae - species considered not to be distributed in Paraguay

Centromochlus aulopygius Kner, 1857 | Chernoff et al. (2001) and Neris et al. (2010) sub *Tatia aulopygia* | Sarmiento-Soares & Martins-Pinheiro (2008)

Hypophthalmus nuchalis Spix & Agassiz, 1829 | Chernoff et al. (2001), Vera (2005) and Insaurrealde et al. (2012, 2013) sub *Auchenipterus n.* | Ferraris & Vari (1999), Ferraris (2003b)

Trachelyopterus coriaceus Valenciennes, 1840 | Neris et al. (2010) | Ferraris (2003b, 2007)

family **Pimelodidae**

Hemisorubim Bleeker, 1862

H. platyrhynchus (Valenciennes, 1840)

Platystoma platyrhynchus Valenciennes, 1840

? *Pimelodus coruscans* Lichtenstein, 1819

Silurus gerupoca Natterer, 1858

records

- Boulenger (1896): listing
- Eigenmann & Kennedy (1903): locality
- Bertoni (1914): listing
- Bertoni (1939): listing
- Chernoff et al. (2001): listing
- Lundberg & Littmann (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurrealde et al. (2012): listing

Hypophthalmus Cuvier, 1829

H. oremaculatus Nani & Fuster, 1947

Hypophthalmus oremaculatus Nani & Fuster, 1947

records

- Bertoni (1932): listing sub *H. edentatus*
- Bertoni (1939): listing sub *H. edentatus*
- Ramlow (1989): listing sub *H. edentatus*
- Gill Morlis (1994): listing sub *H. edentatus*
- Mandelburger et al. (1996): listing sub *H. edentates*
- Gill Morlis (1997): listing sub *H. edentatus*
- Neris et al. (2008): listing sub *H. edentatus*
- Insaurrealde et al. (2013): listing sub *H. edentates*
- Littmann et al. (2015): locality

Iheringichthys Eigenmann & Norris, 1900

I. labrosus (Luetken, 1874)

Pimelodus labrosus Luetken, 1874)

records

- Eigenmann & Kennedy (1903): locality

- Eigenmann et al. (1907): locality
- Bertoni (1914): listing
- Bertoni (1939): listing
- Lundberg & Littmann (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurrealde et al. (2012): listing
- Insaurrealde et al. (2013): listing

I. megalops Eigenmann & Ward, 1907*Iheringichthys megalops* Eigenmann & Ward, 1907

type locality Bahia Negra

- records
- Eigenmann et al. (1907): type locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Lundberg & Littmann (2003): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Azpelicueta & Britski (2012): locality

Megalonema Eigenmann, 1912***M. argentinum*** (MacDonagh, 1938)*Perugia argentina* MacDonagh, 1938

- records
- Azpelicueta et al. (2001): locality sub *Perugia argentina*
 - Vera (2005): listing

M. pauciradiatum Eigenmann, 1919*Megalonema pauciradiatum* Eigenmann, 1919

type locality Villa Rica

- records
- Eigenmann in Driver (1919): type locality
 - Lundberg & Littmann (2003): listing
 - Ferraris (2007): listing

M. platanum (Guenther, 1880)*Pimelodus platanus* Guenther, 1880

- records
- Boulenger (1896): listing sub *Pimelodus platanus*
 - Bertoni (1914): listing sub *Luciopimelodus platanus*
 - Fisher (1917): locality sub *Luciopimelodus platanus*
 - Bertoni (1939): listing sub *Luciopimelodus platanus*
 - Azpelicueta et al. (2001): locality sub *M. platana*
 - Lundberg & Littmann (2003): listing
 - Vera (2005): listing
 - Lundberg & Dahdul (2008): locality
 - Neris et al. (2008): listing

Parapimelodus La Monte, 1933***P. valenciennis*** (Luetken, 1874)*Pimelodus valenciennis* Luetken, 1874*Pimelodus spegazzinii* Perugia, 1891

- records
- Eigenmann & Kennedy (1903): locality sub *Pimelodus v.*
 - Eigenmann et al. (1907): locality sub *Pimelodus v.*
 - Bertoni (1914): listing sub *Pimelodus v.*
 - Bertoni (1939): listing sub *Pimelodus v.*
 - Lundberg & Littmann (2003): listing

Pimelodus Lacepède, 1803***P. albicans*** (Valenciennes, 1840)*Arius albidus* Valenciennes, 1835*Arius albicans* Valenciennes, 1840*Arius moroti* Valenciennes, 1847*Silurus muticus* Larrañaga, 1923

remarks The name *albicans* was retained for stability over *albidus* by Lundberg & Littmann (2003).

- records
- Boulenger (1896): listing
 - Eigenmann & Kennedy (1903): locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Vera (2005): listing

P. argenteus Perugia, 1891*Pimelodus argenteus* Perugia, 1891*Pimelodus brevis* Marini, Nichols & La Monte, 1933

records

- Bertoni (1914): listing
- Bertoni (1939): listing
- Azpelicueta et al. (2001): locality
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing

[info](#)***P. maculatus*** Lacépède, 1803*Pimelodus maculatus* Lacépède, 1803? *Mystus ascita* Walbaum, 1792*Silurus lima* Natterer, 1858

records

- Boulenger (1896): listing
- Perugia (1897): locality
- Eigenmann & Kennedy (1903): locality sub *P. clarias*
- Eigenmann et al. (1907): locality sub *P. clarias*
- Bertoni (1914): listing sub *P. clarias*
- Fisher (1917): locality sub *P. clarias*
- Bertoni (1939): listing sub *P. clarias*
- Mandelburger et al. (1996): listing
- Gill Morlis (1997): listing
- Chernoff et al. (2001): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

P. misteriosus Azpelicueta, 1998*Pimelodus misteriosus* Azpelicueta, 1998

records

- Azpelicueta (1998): paratype locality
- Azpelicueta et al. (2001): locality

P. ornatus Kner, 1858*Pimelodus ornatus* Kner, 1858*Megalonema rhabdostigma* Fowler, 1914

records

- Eigenmann & Kennedy (1903): locality
- Bertoni (1914): listing
- Fisher (1917): locality
- Bertoni (1939): listing
- Mahnert (1987): listing
- Gill Morlis (1997): listing
- Lundberg & Littmann (2003): listing
- Vera (2005): listing
- Ávila et al. (2007): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

Pseudoplatystoma Bleeker 1862***P. corruscans*** (Spix & Agassiz, 1829)*Platystoma corruscans* Spix & Agassiz, 1829*Sorubim caparary* Spix, 1829? *Platystoma orbignianus* Valenciennes, 1835*Silurus macrocephalus* Larrañaga, 1923

records

- Boulenger (1896): listing sub *Platystomas orbignyanum*
- Eigenmann & Kennedy (1903) locality
- Bertoni (1914): listing
- Barbero (1923): listing
- Bertoni (1923): listing
- Bertoni (1939): listing
- Ramlow (1989): listing
- Gill Morlis (1997): listing
- Azpelicueta et al. (2001): locality
- Lundberg & Littmann (2003): listing
- Vera (2005): listing
- Buitrago-Suárez (2006): locality
- Ávila et al. (2007): listing

- Buitrago-Suárez & Burr (2007): locality
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing

P. reticulatum Eigenmann & Eigenmann, 1889

Pseudoplatystoma fasciatum var. *reticulatum* Eigenmann & Eigenmann, 1889

remarks Buitrago-Suárez & Burr (2007) revalidated

P. reticulatum from synonymy with *P. fasciatum*. [info](#)

records

- Barbero (1923): listing sub *P. fasciatum*
- Bertoni (1923): listing sub *P. fasciatum*
- Bertoni (1939): listing sub *P. fasciatum*
- Lundberg & Littmann (2003): listing sub *P. fasciatum* with ? for Paraguay
- Vera (2005): listing sub *P. fasciatum*
- Buitrago-Suárez (2006): locality sub *P. fasciatum*
- Buitrago-Suárez & Burr (2007): locality
- Neris et al. (2008): listing sub *P. fasciatum*
- Insaurralde et al. (2012): listing sub *P. fasciatum*

Sorubim Cuvier, 1829***S. lima*** (Bloch & Schneider, 1801)

Silurus lima Bloch & Schneider, 1801

Sorubim infraoculare Spix, 1829

Platystoma luceri Weyenbergh, 1877

Sorubim latirostris Miranda Ribeiro, 1920

records

- Boulenger (1896): listing
- Eigenmann & Kennedy (1903): locality
- Bertoni (1914): listing
- Fisher (1917): locality
- Bertoni (1939): listing
- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Gill Morlis (1997): listing
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Lundberg & Littmann (2003): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Littmann (2007): locality
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing

Pimelodidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Bergiella platana Steindachner, 1908 | listed sub *Bergiaria platana* in Bertoni (1914, 1939)

Paulicea jahu Ihering, 1898 | listed sub *Paulicea lutkeni* in Bertoni (1928, 1939), sub *Paulicea luetkenii* in Gill Morlis (1997), with ? for Paraguay in Lundberg & Littmann (2003), and sub *Zungaro zungaro* in Neris et al. (2008) and Insaurralde et al. (2012)

Pimelodus pati Valenciennes, 1835 | listed in Sanchez Labrador (1767) [*vide* Castex (1968)], sub *Pimelodus pati* in Boulenger (1896), and sub *Luciopimelodus pati* in Bertoni (1914, 1939), Lundberg & Littmann (2003), and Insaurralde et al. (2012)

Pimelodus pirinampu Spix & Agassiz, 1829 | listed sub *Pimelodus pirinampus* in Boulenger (1896) and sub *Pirinampus pirinampu* in Bertoni (1914, 1939), Gill Morlis (1997), Chernoff et al. (2001, 2004), Lundberg & Littmann (2003), Vera (2005), and Neris et al. (2008)

Pimelodidae - species considered not to be distributed in Paraguay

Hypophthalmus edentatus Spix & Agassiz, 1829 | Neris et al. (2008) and Insaurralde et al. (2013) | Lundberg & Littmann (2003), Littmann et al. (2015)

Pimelodus blochii Valenciennes, 1840 | Chernoff et al. (2001, 2004) and Vera (2005) | Lundberg & Littmann (2003)

Pimelodus zungaro Humboldt, 1821 | Neris et al. (2008) sub *Zungaro zungaro* | Lundberg & Littmann (2003)

Silurus fasciatus Linnaeus, 1766 | Vera (2005), Neris et al. (2008), and Insaurralde et al. (2012) sub

Pseudoplatystoma fasciatum | Buitrago-Suárez & Burr (2007) [info](#)

family

Pseudopimelodidae***Microglanis*** Eigenmann, 1912

M. carlae Vera-Alcaraz, da Graça & Shibatta 2008

Microglanis carlae Vera-Alcaraz, da Graça & Shibatta 2008

- type locality Ñeembucú, Mburika, arroyo Yacaré, tributary of río Tebicuary
- records
- Bertoni (1914): listing sub *M. cottoides*
 - Vera-Alcaraz et al. (2008): type locality
 - Neris et al. (2010): listing
 - Jarduli & Shibatta (2013): locality
 - Shibatta (2016): locality

Pseudopimelodus Bleeker 1858***P. mangurus*** (Valenciennes, 1835)*Pimelodus mangurus* Valenciennes, 1835*Pseudopimelodus roosevelti* Borodin, 1927

- records
- Bertoni (1914): listing sub *Zungaro m.*
 - Bertoni (1939): listing sub *Zungaro m.*
 - Shibatta (2003): listing
 - Vera (2005): listing
 - Vera-Alcaraz et al. (2017): locality

Pseudopimelodidae - species considered not to be distributed in Paraguay

Pseudopimelodus parahybae Steindachner, 1880 | Chernoff et al. (2001) and Vera (2005) sub *Microglanis parahybae* | Shibatta (2003), Vera-Alcaraz et al. (2008)

family

Heptapteridae***Heptapterus*** Bleeker 1858***H. mustelinus*** (Valenciennes, 1835)*Pimelodus mustelinus* Valenciennes, 1835*Heptapterus eigenmanni* Steindachner, 1907

- records
- Bertoni (1914): listing
 - Eigenmann (1917b): locality
 - Drennen (1986): locality
 - Ramlow (1989): listing
 - Gill Morlis (1994): listing
 - Mandelburger et al. (1996): listing
 - Silfvergrip (1996): locality
 - Axenrot & Kullander (2003): listing
 - Kullander (2009): locality
 - Neris et al. (2010): listing
 - Insaurralde et al. (2012): listing

Pimelodella Eigenmann & Eigenmann, 1888***P. gracilis*** (Valenciennes, 1835)*Pimelodus gracilis* Valenciennes, 1835

- records
- Eigenmann et al. (1907): locality
 - Eigenmann (1917c): locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Azpelicueta et al. (2001): locality sub *P. cf. gracilis*
 - Chernoff et al. (2001): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

P. griffini Eigenmann, 1917*Pimelodella griffini* Eigenmann, 1917

- type locality Near Sapucay
- records
- Eigenmann (1917c): type locality
 - Bockmann & Guazzelli (2003): listing
 - Ferraris (2007): listing

P. laticeps Eigenmann, 1917*Pimelodella laticeps* Eigenmann, 1917

- type locality Sapucay

- records
- Eigenmann (1917c): type locality
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Bockmann & Guazzelli (2003): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Neris et al. (2010): listing
 - Insaurralde et al. (2013): listing

P. mucosa Eigenmann & Ward, 1907*Pimelodella mucosa* Eigenmann, 1907

type locality Bahia Negra

- records
- Eigenmann et al. (1907): type locality
 - Bertoni (1914): listing
 - Eigenmann (1917c): locality
 - Bertoni (1939): listing
 - Chernoff et al. (2001): listing
 - Bockmann & Guazzelli (2003): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Neris et al. (2010): listing
 - Aguilera & Azpelicueta (2015): locality

P. parva Guentert, 1942*Pimelodella parva* Guentert, 1942

type locality Paraguay

- records
- Guentert (1942): type locality
 - Bockmann & Guazzelli (2003): listing
 - Ferraris (2007): listing

Rhamdia Bleeker 1858***R. quelen*** (Quoy & Gaimard, 1824)*Pimelodus quelen* Quoy & Gaimard, 1824*Pimelodus sapo* Valenciennes, 1835*Pimelodus hilarii* Valenciennes, 1840*Rhamdia sebae martyi* Guentert, 1942

to numerous to list all (> 50)

- type locality *sebae martyi*: Central, Itá, Canãwé
- records
- Eigenmann & Kennedy (1903): locality
 - Bertoni (1914): listing sub *R. quelen* and *R. sebae*
 - Eigenmann & Fisher (1917): locality
 - Carter & Beadle (1931): listing
 - Bertoni (1932): listing sub *R. hilarii*
 - Bertoni (1939): listing sub *R. hilarii*, *R. quelen*, *R. sapo*, and *R. sebae*
 - Guentert (1942): type locality of synonym *R. sebae martyi*
 - Ramlow (1989): listing
 - Gill Morlis (1994): listing
 - Mandelburger et al. (1996): listing
 - Silfvergrip (1996): locality
 - Azpelicueta et al. (2001): locality sub *R. cf. quelen*
 - Chernoff et al. (2001): listing sub *R. cf. quelen*
 - Axenrot & Kullander (2003): listing
 - Bockmann & Guazzelli (2003): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Neris et al. (2008): listing
 - Kullander (2009): locality
 - Insaurralde et al. (2012): listing sub *R. hilarii*
 - Insaurralde et al. (2013): listing sub *R. quelen* and *R. hilarii*

Heptapteridae - unconfirmed listings from Paraguay requiring a verification based on voucher material*Nannoglanis hoehnei* Miranda Ribeiro, 1914 | listed sub *Phenacorhamdia hoehnei* in Neris et al. (2010)*Pimelodella megalura* Miranda Ribeiro, 1918 | listed in Neris et al. (2010)*Pimelodella taenioptera* Miranda Ribeiro, 1914 | listed in Neris et al. (2010)*Pimelodus taeniophorus* Regan, 1903 | listed sub *Pimelodella taeniophora* in Bertoni (1914, 1939)

Heptapteridae - species considered not to be distributed in Paraguay

Rhamdia minuta Luetken, 1874 | Chernoff et al. (2001, 2004) sub *Imparfinis minutus* | Bockmann & Guazzelli (2003)

family

Cetopsidae**Cetopsis** Agassiz, 1829**C. gobioides** Kner, 1858*Cetopsis gobioides* Kner, 1858*Silurus pygmaeus* Natterer, 1858*Cetopsis chalmersi* Norman, 1926

records

- Bertoni (1939): listing sub *Pseudocetopsis g.*
- Chernoff et al. (2001): listing sub *Pseudocetopsis g.*
- Vari & Ferraris (2003): listing sub *Pseudocetopsis g.*
- Vari et al. (2005): locality
- Neris et al. (2008): listing sub *Pseudocetopsis g.*

family

Aspredinidae**Amaralia** Fowler, 1954**A. oviraptor** Friel & Carvalho, 2016*Amaralia oviraptor* Friel & Carvalho, 2016

records

- Friel (1994): locality sub *Amaralia sp.*
- Ávila et al. (2007): listing sub *A. hypsiura*
- Cardoso (2008): locality sub *Amaralia sp.*
- Neris et al. (2008): listing sub *A. hypsiura*
- Friel & Carvalho (2016): paratype locality

Bunocephalus Kner, 1855**B. doriae** Boulenger, 1902*Bunocephalus doriae* Boulenger, 1902*Bunocephalus retropinnis* Eigenmann, 1942

type locality

doriae: Villa Rica (Villarrica)

records

- Boulenger (1895): type locality
- Eigenmann et al. (1907): locality
- Bertoni (1914): listing
- Bertoni (1939): listing
- Friel (1994): locality
- Chernoff et al. (2001): listing
- Friel (2003): listing
- Ferraris (2007): listing
- Cardoso (2008): locality
- Neris et al. (2008): listing
- Cardoso (2010): locality
- Insaurrealde et al. (2013): listing
- Insaurrealde et al. (2013): listing

Pseudobunocephalus Friel, 2008**P. iheringii** (Boulenger, 1891)*Bunocephalus iheringii* Boulenger, 1891*Bunocephalus salatheii* Myers, 1927*Bunocephalus minutus* Guentert, 1942*Bunocephalus carvalhoi* Miranda Ribeiro, 1944

type locality

minutus: Small running marshy waters in Dept. Villetta

records

- Boulenger (1896): listing sub *Bunocephalus i.*
- Bertoni (1914): listing sub *Bunocephalus i.*
- Bertoni (1939): listing sub *Bunocephalus i.*
- Guentert (1942): type locality of synonym *B. minutus*
- Friel (1994): locality
- Friel (2003): listing
- Ferraris (2007): listing
- Cardoso (2008): locality

P. rugosus (Eigenmann & Kennedy, 1903)*Bunocephalus rugosus* Eigenmann & Kennedy, 1903*Dysichthys australe* Eigenmann & Ward, 1907

- type locality *rugosus*: Laguna near Arroyo Chagalalina
- records
- Eigenmann & Kennedy (1903): type locality
 - Bertoni (1914): listing sub *Bunocephalus r.* and *Dasychthys australis*
 - Bertoni (1939): listing sub *Bunocephalus r.* and *Dasychthys australis*
 - Chernoff et al. (2001): listing sub *Bunocephalus australis*
 - Friel (1994): locality
 - Friel (2003): listing
 - Vera (2005): listing sub *Bunocephalus australis*
 - Ferraris (2007): listing
 - Cardoso (2008): locality
 - Insaurralde et al. (2012): listing

Pterobunocephalus Fowler, 1943**P. depressus** (Haseman, 1911)*Bunocephalus depressus* Haseman, 1911*Bunocephalus albifasciatus* Fowler, 1943

- records
- Friel (2003): listing
 - Cardoso (2008): locality

Xyliphius Eigenmann, 1912**X. barbatus** Alonso de Arámburu & Arámburu, 1962*Xyliphius barbatus* Alonso de Arámburu & Arámburu, 1962*Xyliphius lombarderoi* Risso & Risso, 1964

- records
- Carvalho et al. (2017): locality

[info](#)

family

Trichomycteridae

subfamily

Stegophilinae

Homodiaetus Eigenmann & Ward, 1907**H. anisitsi** Eigenmann & Ward, 1907*Homodiaetus anisitsi* Eigenmann & Ward, 1907*Homodiaetus vazferreirai* Devincenzi, 1939

- type locality *anisitsi*: Villa Rica
- records
- Eigenmann et al. (1907): type locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Koch (2002): locality
 - de Pinna & Wosiacki (2003): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Neris et al. (2010): listing

[info](#)**Ochmacanthus** Eigenmann, 1912**O. batrachostoma** (Miranda Ribeiro, 1912)*Gyrinurus batrachostoma* Miranda Ribeiro, 1912)

- records
- Neto (2014): locality
 - Neto & de Pinna (2016): locality

Pseudostegophilus Eigenmann & Eigenmann, 1889**P. maculatus** (Steindachner, 1879)*Stegophilus maculatus* Steindachner, 1879

- records
- Azpelicueta et al. (2001): locality sub *Homodiaetus m.*
 - Koch (2002): locality
 - Vera (2005): listing sub *Parastegophilus m.*

subfamily Trichomycterinae

Ituglanis Costa & Bockmann, 1993

I. eichhorniarum (Miranda Ribeiro, 1912)

Trichomycterus eichhorniarum Miranda Ribeiro, 1912

remarks *eichhorniarum* was corrected to *eichhorniarum* by Koerber & Azpelicueta (2014)

records

- o Fernández (2001): locality
- o Ferrer et al. (2015): locality

Trichomycterus Valenciennes, 1832

T. boylei (Nichols, 1956)

Pygidium boylei Nichols, 1956

records

- o Fernández (2001): locality

subfamily Tridentinae

Tridentinae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Tridentopsis cahuali Azpelicueta, 1990 | listed sub *Tridentopsis pearsoni* in Ramlow (1989) and Mandelburger et al. (1996), and sub *Tridentopsis cahuali* in Vera (2005)

subfamily Vandelliinae

Paravandellia Miranda Ribeiro, 1912

P. oxyptera Miranda Ribeiro, 1912

Paravandellia oxyptera Miranda Ribeiro, 1912

Branchioica bertonii Eigenmann, 1917

Pleurophysus hydrostaticus Miranda Ribeiro, 1918

Vandellia hematophaga Guimaraes, 1935

Parabranchoica teaguei Devincenzi & Vaz-Ferreira, 1939

type locality *bertonii*: Puerto Bertoni

records

- o Eigenmann (1917d): type locality of synonym *Branchioica bertonii*
- o Bertoni (1939): listing sub *Parabranchoica bertonii*
- o de Pinna & Wosiacki (2003): listing
- o Vera (2005): listing
- o Ferraris (2007): listing

family **Callichthyidae**

subfamily Callichthyinae

Callichthys Scopoli, 1777

C. callichthys (Linnaeus, 1758)

Silurus callichthys Linnaeus, 1758

Callichthys asper Quoy & Gaimard, 1824

Cataphractus depressus Swainson, 1839

Callichthys asper Valenciennes, 1840

Callichthys caelatus Valenciennes, 1840

Callichthys laeviceps Valenciennes, 1840

Callichthys loricatus Gronow, 1854

Callichthys kneri Gill, 1858

Callichthys affinis Guenther, 1864

Callichthys tamoata Bleeker, 1864

Callichthys arcifer Hensel, 1868

Callichthys hemiphractus Hensel, 1868

Callichthys callichthys bolteni Hoedeman, 1952

Callichthys callichthys demararae Hoedeman, 1952

- records
- Boulenger (1895a): locality sub *C. asper*
 - Boulenger (1896): listing sub *C. asper*
 - Kerr (1898b): listing sub *C. asper*
 - Eigenmann & Kennedy (1903): locality sub *C. callichthys haemaphractus*
 - Eigenmann et al. (1907): locality
 - Bertoni (1914): listing
 - Carter & Beadle (1931): listing
 - Bertoni (1939): listing
 - Drennen (1986): locality
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Weber et al. (1992): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Reis (2003c): listing
 - Lehmann & Reis (2004): distribution map
 - Vera (2005): listing
 - Knaack (2008): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2013): listing

Hoplosternum Gill, 1858

H. littorale (Hancock, 1828)

- Callichthys littoraris* Hancock, 1828
Callichthys laevigatus Valenciennes, 1834
Callichthys albidus Valenciennes, 1840
Callichthys subulatus Valenciennes, 1840
Callichthys chiquitos Castelnau, 1855
Hoplosternum stevardii Gill, 1858
Callichthys melampтерus Cope, 1872
Hoplosternum schreineri Miranda Ribeiro, 1911
Cascadura maculocephala Ellis, 1913
Hoplosternum shirui Fowler, 1940
Hoplosternum littorale daillyi Hoedeman, 1952
Hoplosternum thoracatum cayennae Hoedeman, 1961

- records
- Kerr (1898b): listing sub *C. littoralis*
 - Eigenmann & Kennedy (1903): locality
 - Eigenmann et al. (1907): locality
 - Bertoni (1914): listing
 - Carter & Beadle (1931): listing
 - Bertoni (1939): listing sub *H. littorale* and *H. melanoptерum*
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Weber et al. (1992): listing
 - Mandelburger et al. (1996): listing
 - Reis (1997): distribution map
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Reis (2003c): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

Lepthoplosternum Reis, 1997

L. pectorale (Boulenger, 1895)

- Callichthys pectoralis* Boulenger, 1895
type locality Chaco, Monte Sociedad
records
- Boulenger (1895b): type locality
 - Boulenger (1896): listing sub *Callichthys p.*
 - Eigenmann et al. (1907): locality sub *Hoplosternum pectoralis*
 - Carter & Beadle (1931): listing sub *Hoplosternum p.*
 - Mandelburger et al. (1996): listing sub *Hoplosternum p.*
 - Reis (1997): distribution map
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Reis (2003c): listing
 - Vera (2005): listing

- Knaack (2006): redefintion of type locality
- Ferraris (2007): listing
- Neris et al. (2008): listing
- Vera-Alcaraz (2013): locality

subfamily

Corydoradinae

Corydoras Lacepède, 1803**C. aeneus** (Gill, 1858)*Hoplosoma aeneum* Gill, 1858*Corydoras microps* Eigenmann & Kennedy, 1903*Corydoras venezuelanus* Ihering, 1911*Corydoras macrosteus* Regan, 1912*Corydoras schultzei* Holly, 1940

records

- Eigenmann & Kennedy (1903): paratype locality of synonym *C. microps*
- Eigenmann et al. (1907): locality sub *C. microps*
- Bertoni (1914): listing sub *C. microps*
- Bertoni (1939): listing sub *C. microps*
- Mahnert (1987): listing
- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Chernoff et al. (2001): listing
- Reis (2003c): listing
- Chernoff et al. (2004): listing
- Neris et al. (2008): listing
- Vera-Alcaraz (2013): locality sub *C. aeneus microps*

C. aurofrenatus Eigenmann & Kennedy, 1903*Corydoras aurofrenatus* Eigenmann & Kennedy, 1903

type locality Aguada near Arroyo Trementina

records

- Eigenmann & Kennedy (1903): type locality
- Eigenmann et al. (1907): locality
- Bertoni (1914): listing
- Bertoni (1939): listing
- Nijssen & Isbruecker (1980): locality
- Reis (2003c): listing
- Knaack (2004a): locality
- Vera (2005): listing
- Ferraris (2007): listing
- Neris et al. (2010): listing
- Tencatt & Pavanelli (2015): locality
- Tencatt & Ohara (2016): locality

C. britskii (Nijssen & Isbruecker, 1983)*Brochis britskii* Nijssen & Isbruecker, 1983

records

- Azpelicueta et al. (2001): locality sub *Brochis b.*
- Neris et al. (2010): listing sub *Brochis b.*

C. diphyes Axenrot & Kullander, 2003*Corydoras diphyes* Axenrot & Kullander, 2003

type locality Caaguazú, arroyo at Estancia María Belén, 8 km from Colonel Patricio Colman

records

- Axenrot & Kullander (2003): type locality
- Knaack (2004b): locality
- Ferraris (2007): listing
- Vera-Alcaraz (2013): locality
- Tencatt & Pavanelli (2015): locality
- Tencatt & Ohara (2016): locality

C. ellisae Gosline, 1940*Corydoras ellisae* Gosline, 1940

type locality Arroyo Poná, Sapucay

records

- Gosline (1940): type locality
- Nijssen & Isbruecker (1980): locality
- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Chernoff et al. (2001): listing sub *C. cf. ellisae*
- Reis (2003c): listing
- Knaack (2003a, 2003b): locality

- Knaack (2004a): locality
- Vera (2005): listing
- Ferraris (2007): listing
- Neris et al. (2008): listing
- Vera-Alcaraz (2013): locality

C. hastatus Eigenmann & Eigenmann, 1888*Corydoras hastatus* Eigenmann & Eigenmann, 1888*Corydoras australe* Eigenmann & Ward, 1907

- records
- Eigenmann et al. (1907): paratype locality of synonym *C. australe*
 - Bertoni (1914): listing sub *C. australis*
 - Bertoni (1939): listing sub *C. australis*
 - Nijssen & Isbruecker (1980): locality
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Vera (2005): listing
 - Neris et al. (2010): listing
 - Insaurralde et al. (2012): listing
 - Vera-Alcaraz (2013): locality sub *C. hastatus australe*

C. polystictus Regan, 1912*Corydoras polystictus* Regan, 1912*Corydoras virescens* Miranda Ribeiro, 1912

- records
- Axenrot & Kullander (2003): locality
 - Neris et al. (2010): listing

Scleromystax Guenther, 1864**S. macropterus** (Regan, 1913)*Corydoras macropterus* Regan, 1913*Corydoras bertoni* Eigenmann, 1942type locality *bertoni*: Puerto Bertoni

- records
- Eigenmann & Allen (1942): type locality of synonym *Corydoras bertoni*
 - Nijssen & Isbruecker (1980): listing
 - Ferraris (2007): listing

Callichthyidae - unconfirmed listings from Paraguay requiring a verification based on voucher material*Callichthys paleatus* Jenyns, 1842 | listed sub *Corydoras paleatus* in Bertoni (1914, 1939), Reis (2003c), and Insaurralde et al. (2012, 2013)*Corydoras flaveolus* Ihering, 1911 | listed in Vera-Alcaraz (2013)*Corydoras undulatus* Regan, 1912 | listed in Neris et al. (2010)**Callichthyidae - species considered not to be distributed in Paraguay***Callichthys thoracatus* Valenciennes, 1840 | Chernoff et al. (2001) and Vera (2005) sub *Megalechis thoracata* | Reis et al. (2005)

family

Loricariidae

subfamily

Hypoptopomatinae

Hisonotus Eigenmann & Eigenmann, 1889**H. maculipinnis** (Regan, 1912)*Otocinclus maculipinnis* Regan, 1912

- records
- Mandelburger et al. (1996): listing sub *Microlepidogaster* m.
 - Axenrot & Kullander (2003): listing
 - Carvalho (2008): locality

Hypoptopoma Guenther, 1868**H. inexpectatum** (Holmberg, 1893)*Aristommata inexpectata* Holmberg, 1893*Hypoptopoma guentheri* Boulenger, 1895

- records
- Perugia (1897): locality sub *H. guentheri*
 - Bertoni (1914): listing sub *Oxyropsis i.*

- Bertoni (1939): listing sub *Oxyropsis i.*
- Weber et al. (1992): listing
- Mandelburger et al. (1996): listing
- Azpelicueta et al. (2001): locality sub *H. guntheri*
- Chernoff et al. (2001): listing sub *H. cf. inexpectata*
- Schaefer (2003a): listing
- Chernoff et al. (2004): listing sub *H. cf. inexpectata*
- Vera (2005): listing
- Aquino & Schaefer (2010): locality
- Neris et al. (2010): listing
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing sub *H. gulare*

Otocinclus Cope, 1871***O. arnoldi*** Regan, 1909*Otocinclus arnoldi* Regan, 1909

records

- Schaefer (1997): locality sub *O. flexilis*
- Axenrot & Kullander (2003): locality sub *O. flexilis*
- Neris et al. (2008): listing sub *O. flexilis*

O. mimulus Axenrot & Kullander, 2003*Otocinclus mimulus* Axenrot & Kullander, 2003

type locality Caaguazú, arroyo at Estancia María Belén, 8 km from Colonel Patricio Colman

records

- Axenrot & Kullander (2003): type locality
- Ferraris (2007): listing
- Lehmann et al. (2010): locality

O. vestitus Cope, 1872*Otocinclus vestitus* Cope, 1872

records

- Schaefer (1997): locality
- Chernoff et al. (2001): listing
- Schaefer (2003a): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing

O. vittatus Regan, 1904*Otocinclus vittatus* Regan, 1904*Rhinolepis paraguensis* Borodin, 1927type locality *paraguensis*: Paraguay [no precise locality]

records

- Eigenmann et al. (1907): locality
- Bertoni (1914): listing
- Fowler (1918): locality
- Bertoni (1939): listing
- Borodin (1927): type locality of synonym *R. paraguensis*
- Mahnert (1987): listing
- Weber et al. (1992): listing
- Mandelburger et al. (1996): listing
- Schaefer (1997): locality
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Schaefer (2003a): listing
- Chernoff et al. (2004): listing
- Vera (2005): listing
- Ferraris (2007): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing
- Miquelarena et al. (2012) locality

Otothyropsis Ribeiro, Carvalho & Melo, 2005***O. dialeukos*** Calegari, Gill Morlis & Reis, 2017*Otothyropsis dialeukos* Calegari, Gill Morlis & Reis, 2017

type locality Alto Paraná, Hernandarias, Arroyo Itá at Paso Itá, near to Embalse de Acaray, ca. 8 km from road between Hernandarias and Ciudad del Este

records

- Calegari et al. (2017): type locality

O. piribebuy Calegari, Lehmann & Reis, 2011*Otothyropsis piribebuy* Calegari, Lehmann & Reis, 2011

- type locality Cordillera, Río Piribebuy, a tributary to the rio Manduvirá, Eusebio Ayala
- records
- Calegari et al. (2011): type locality
 - Martins & Langeani (2012): locality
 - Calegari et al. (2017): locality

Hypoptopomatinae - species considered not to be distributed in Paraguay*Hypoptopoma gulare* Cope, 1878 | Insaurrealde et al. (2012, 2013) | Aquino & Schaefer (2010)*Otocinclus flexilis* Cope, 1894 | Neris et al. (2008) | Lehmann et al. (2010)*Otocinclus mariae* Fowler, 1940 | Chernoff et al. (2001, 2004) | Schaefer (2003a)

subfamily Hypostominae

tribus Ancistrini

Ancistrus Kner, 1854***A. dubius*** Eigenmann & Eigenmann, 1889*Ancistrus cirrhosus dubius* Eigenmann & Eigenmann, 1889remarks Fisch-Muller (1999) assigned part of the records of *A. cirrhosus* from Paraguay to *A. dubius*.

- records
- Boulenger (1896): listing sub *Chaetostomus cirrhosus*
 - Eigenmann (1910): listing sub *Xenocara gymnorhynchus*
 - Bertoni (1914): listing sub *Ancistrus cirrhosus* and *Xenocara gymnorhynchus*
 - Bertoni (1939): listing sub *Chaetostomus cirrhosum* and *Xenocara gymnorhynchus*
 - Schaefer (1987): locality sub *Ancistrus cirrhosus*
 - Ramlow (1989): listing sub *Ancistrus cirrhosus*
 - Mandelburger et al. (1996): listing sub *Ancistrus cirrhosus*
 - Fisch-Muller (1999): locality
 - Fisch-Muller (2003): listing
 - Insaurrealde et al. (2012): listing sub *Ancistrus cirrhosus*

A. hoplogenyis (Guenther, 1864)*Chaetostomus hoplogenyis* Guenther, 1864*Chaetostomus alga* Cope, 1872*Chaetostomus tectirostris* Cope, 1872*Chaetostomus cirrhosus punctata* Steindachner, 1881

- records
- Bertoni (1914): listing
 - Bertoni (1939): listing sub *Chaetostoma h.?*
 - Mandelburger et al. (1996): listing
 - Fisch-Muller (1999): locality
 - Fisch-Muller (2003): listing

A. pirareta Muller, 1989*Ancistrus pirareta* Muller, 1989

type locality Cordillera, Salto Pirareta

- records
- Muller (1989): type locality
 - Weber et al. (1992): locality
 - Chernoff et al. (2001): listing sub *A. cf. pirareta*
 - Fisch-Muller (2003): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Neris et al. (2008): listing
 - Neris et al. (2010): listing
 - Neumann (2011): type catalog
 - Miquelarena et al. (2012) locality

A. piriformis Muller, 1989*Ancistrus piriformis* Muller, 1989

type locality Río Acaray, downstream the lake behind the dam, 25°23'S, 54°42'W, Alto Paraná

- records
- Muller (1989): type locality
 - Weber et al. (1992): listing
 - Gill Morlis (1994): listing
 - Chernoff et al. (2001): listing sub *A. cf. piriformis*
 - Fisch-Muller (2003): listing
 - Vera (2005): listing
 - Ferraris (2007): listing

- Neris et al. (2010): listing
- Miquelarena et al. (2012) locality

tribus

Hypostomini

Hypostomus Lacepède, 1803**H. albopunctatus** (Regan, 1906)*Plecostomus albopunctatus* Regan, 1906

records

- Weber (1986b): locality
- Weber (1987): locality
- Weber et al. (1992): listing
- Weber (2003): listing with ? for Paraguay
- Insaurralde et al. (2012): listing
- Insaurralde et al. (2013): listing

H. boulengeri (Eigenmann & Kennedy, 1903)*Plecostomus boulengeri* Eigenmann & Kennedy, 1903

type locality Asunción [or Matto Grosso]

records

- Eigenmann & Kennedy (1903): type locality
- Weber (1986b): locality
- Weber et al. (1992): locality
- Weber (2003): listing
- Vera (2005): listing
- Neris et al. (2010): listing
- Bueno Villafaña & Núñez (2013): locality
- Cardoso et al. (2016): locality

H. cochliodon Kner, 1854*Hypostomus cochliodon* Kner, 1854*Cochliodon hypostomus* Kner, 1854 [not available]*Loricaria melanoptera* Kner, 1854 [not available]

records

- Eigenmann & Kennedy (1903): locality sub *Cochliodon c.*
- Bertoni (1914): listing sub *Cochliodon c.*
- Bertoni (1939): listing sub *Cochliodon c.*
- Weber (1986b): locality sub *Cochliodon c.*
- Weber et al. (1992): locality
- Weber & Montoya-Burgos (2002): locality
- Armbruster (2003): locality
- Weber (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Tencatt et al. (2014): locality

H. commersonii Valenciennes, 1836*Hypostomus commersonii* Valenciennes, 1836*Plecostomus spiniger* Hensel, 1870*Plecostomus limosus* Eigenmann & Eigenmann, 1888

records

- Boulenger (1896): listing sub *Plecostomus c.*
- Perugia (1897): locality sub *Plecostomus c.*
- Bertoni (1914): listing sub *Plecostomus c.*
- Bertoni (1939): listing sub *Plecostomus c.*
- Weber et al. (1992): listing
- Weber (2003): listing
- Neris et al. (2008): listing

H. derbyi (Haseman, 1911)*Plecostomus derbyi* Haseman, 1911

records

- Weber (1986b): locality
- Weber et al. (1992): listing
- Weber (2003): listing
- Ferraris (2007): listing
- Cardoso et al. (2016): locality

H. dlouhyi Weber, 1985*Hypostomus dlouhyi* Weber, 1985

type locality

Arm of reservoir lake at Río Yguazú

records

- Weber (1985): type locality
- Weber (1986b): locality
- Ramlow (1989): listing
- Weber et al. (1992): listing

- Gill Morlis (1994): listing
- Weber (2003): listing
- Ferraris (2007): listing
- Jerep et al. (2007): locality
- Neris et al. (2008): listing
- Kullander & Lucena (2013): locality
- Cardoso et al. (2016): locality

H. formosae Cardoso, Brancolini, Paracampo, Lizarralde, Covain & Montoya-Burgos, 2016

Hypostomus formosae Cardoso, Brancolini, Paracampo, Lizarralde, Covain & Montoya-Burgos, 2016

- records ○ Cardoso et al. (2016): paratype localities

H. latifrons Weber, 1986

Hypostomus latifrons Weber, 1986

type locality Río Aguaray-guazú, 24°22'50"S, 58°00'W

remarks Records of *Chaetostomus vittatus* are misidentifications of juvenile *H. latifrons* [Koerber & Weber (2014)]

[info](#)

- records ○ Perugia (1897): locality sub *Chaetostomus vittatus*
 ○ Bertoni (1914): listing sub *Hemiancistrus vittatus*
 ○ Bertoni (1939): listing sub *Hemiancistrus vittatus*
 ○ Weber (1986a): type locality
 ○ Weber (1986b): locality
 ○ Weber et al. (1992): listing
 ○ Weber (2003): listing
 ○ Vera (2005): listing
 ○ Ferraris (2007): listing
 ○ Jerep et al. (2007): locality
 ○ Cardoso et al. (2016): locality

H. meleagris (Marini, Nichols & La Monte, 1933)

Plecostomus meleagris Marini, Nichols & La Monte, 1933

- records ○ Weber (1986b): locality sub *H. auroguttatus*
 ○ Weber et al. (1992): listing sub *H. auroguttatus*
 ○ Weber (2003): listing

H. microstomus Weber, 1987

Hypostomus microstomus Weber, 1987

type locality Río Alta-Paraná, 15 km SE of Encarnacion, Campichuelo, 27°26'S, 55°45'W

- records ○ Weber (1987): type locality
 ○ López & Miquelarena (1991): listing
 ○ Weber (2003): listing
 ○ Jerep et al. (2007): locality
 ○ Cardoso et al. (2016): locality

H. paranensis Weyenbergh, 1877

Hypostomus paranensis Weyenbergh, 1877

Plecostomus cordovae Guenther, 1880

- records ○ Weber (1986b): locality sub *H. cf. paranensis*
 ○ Weber (2003): listing sub *H. cordovae* with ? for Paraguay

H. paulinus (Ihering, 1905)

Plecostomus paulinus Ihering, 1905

- records ○ Weber (1986b): locality
 ○ Weber et al. (1992): listing
 ○ Gill Morlis (1994): listing
 ○ Weber (2003): listing
 ○ Ferraris (2007): listing
 ○ Neris et al. (2008): listing
 ○ Cardoso et al. (2016): locality

H. peckoltoides Zawadzki, Weber & Pavanelli, 2010

Hypostomus peckoltoides Zawadzki, Weber & Pavanelli, 2010

- records ○ Bueno Villafaña & Núñez (2013): locality, explicit first record

H. piratatu Weber, 1986

Hypostomus piratatu Weber, 1986

type locality arm of the Río Tebicuary, Sapucái

- records
- Weber (1986a): type locality
 - Weber (1986b): locality
 - Weber et al. (1992): listing
 - Azpelicueta et al. (2001): locality sub *H. cf. piratatu*
 - Weber (2003): listing
 - Ferraris (2007): listing
 - Jerep et al. (2007): locality
 - Cardoso et al. (2016): locality

H. regani (Ihering, 1905)*Plecostomus regani* Ihering, 1905

- records
- Weber (1986b): locality
 - Weber et al. (1992): listing
 - Weber (2003): listing

H. ternetzi (Boulenger, 1895)*Plecostomus ternetzi* Boulenger, 1895

- type locality Paraguay
- records
- Boulenger (1895b): type locality
 - Boulenger (1896): listing sub *Plecostomus t.*
 - Regan (1904): listing sub *Plecostomus t.*
 - Bertoni (1914): listing sub *Plecostomus t.*
 - Bertoni (1939): listing sub *Plecostomus t.*
 - Weber (1986b): locality
 - Reis et al. (1990): locality
 - Weber et al. (1992): listing
 - Weber (2003): listing
 - Ferraris (2007): listing

Pterygoplichthys Gill, 1858***P. ambrosettii*** (Holmberg, 1893)*Liposarcus ambrosettii* Holmberg, 1893*Pterygoplichthys anisitsi* Eigenmann & Kennedy, 1903*Pterygoplichthys juvenis* Eigenmann & Kennedy, 1903*Ancistrus multiradiatus* var. *alternans* Regan, 1904

- type localities *anisitsi*: laguna at Asunción
juvenis : Asunción
multiradiatus var. *alternans*: Paraguayan Chaco in region of Villa Concepción

remarks *Liposarcus ambrosettii* Holmberg, 1893 is treated by some authors as a nomen oblitum, a forgotten name, and placed in the synonymy of *P. anisitsi*.

- records
- Kerr (1898b): listing sub *Liposarcus pardalis*
 - Eigenmann & Kennedy (1903): type localities of synonyms *P. anisitsi* and *P. juvenis*
 - Regan (1904): type locality of *Ancistrus multiradiatus* var. *alternans*
 - Bertoni (1914): listing sub *P. anisitsii*, *P. juvenis* and *P. multiradiatus*
 - Carter & Beadle (1931): listing sub *Ancistrus anisitsi*
 - Bertoni (1939): listing sub *P. anisitsii*, *P. juvenis* and *P. multiradiatus*
 - Weber (1986b): locality sub *P. anisitsii*
 - Mahnert (1987): listing sub *P. anisitsii*
 - Weber (1992): lectotype locality of synonym *Ancistrus multiradiatus* var. *alternans* and listing sub *Liposarcus anisitsi*
 - Mandelburger et al. (1996): listing sub *P. anisitsii*
 - Azpelicueta et al. (2001): locality sub *Liposarcus anisitsi*
 - Chernoff et al. (2001): listing sub *Liposarcus anisitsi*
 - Weber (2003): listing sub *Liposarcus anisitsi*
 - Vera (2005): listing sub *Liposarcus anisitsi*
 - Ferraris (2007): listing
 - Neris et al. (2008): listing sub *Liposarcus anisitsi*
 - Insaurralde et al. (2012): listing sub *P. anisitsi*
 - Insaurralde et al. (2013): listing sub *P. anisitsi*

tribus

Acanthicus clade

Megalancistrus Isbruecker, 1980**M. parananus** (Peters, 1881)*Pterygoplichthys parananus* Peters, 1881*Chaetostomus aculeatus* Perugia, 1891*Chaetostomus gigas* Boulenger, 1895type localities *aculeatus*: Asunción*gigas*: Paraguay

records

- Perugia (1891): type locality of synonym *Chaetostomus aculeatus*
- Boulenger (1895b): type locality of synonym *Chaetostomus gigas*
- Boulenger (1896): listing sub *Chaetostomus gigas*
- Regan (1904): locality sub *Ancistrus gigas*
- Bertoni (1914): listing sub *Pterygoplichthys gigas*
- Bertoni (1939): listing sub *Pterygoplichthys gigas*
- Weber et al. (1992): listing
- Gill Morlis (1997): listing sub *M. aculeatus*
- Fisch-Muller (2003): listing
- Vera (2005): listing
- Ferraris (2007): listing
- Neris et al. (2008): listing

Hypostominae - unconfirmed listings from Paraguay requiring a verification based on voucher material*Hypostomus alatus* Castelnau, 1855 | listed in Ramlow (1989) and Insaurrealde et al. (2012)*Hypostomus auroguttatus* Kner, 1854 | listed in Gill Morlis (1994) and sub *H. cf. auroguttatus* in Neris et al. (2010)*Plecostomus borellii* Boulenger, 1897 | listed sub *Hypostomus b.* in Insaurrealde et al. (2013)*Plecostomus laplatae* Eigenmann, 1907 | listed sub *Hypostomus l.* in Ramlow (1989) and Mandelburger et al. (1996)*Plecostomus latirostris* Regan, 1904 | listed sub *Hypostomus l.* in Weber (2003)*Plecostomus luteomaculatus* Devincenzi, 1942 | listed sub *Hypostomus l.* in Neris et al. (2010)*Plecostomus margaritifer* Regan, 1908 | listed sub *Hypostomus m.* in Weber (2003) with ? for Paraguay**Hypostominae - species considered not to be distributed in Paraguay***Acipenser plecostomus* Linnaeus, 1758 | Insaurrealde et al. (2013) sub *Hypostomus plecostomus* | Weber (2003)*Hemiancistrus niceforoi* Fowler, 1943 | Insaurrealde et al. (2013) | Weber (2003)*Hypostomus cirrhosus* Valenciennes, 1836 | Insaurrealde et al. (2012) sub *Ancistrus cirrhosus* | Fisch-Muller (2003)*Hypostomus robinii* Valenciennes, 1840 | Insaurrealde et al. (2012, 2013) | Weber (2003)

subfamily

Loricariinae

tribus

Farlowelliini

Farlowella Eigenmann & Eigenmann, 1889**F. hahni** Meinken, 1937*Farlowella hahni* Meinken, 1937

type locality Misiones, Río Paraná, about 2 km E of Ayolas

remarks As Meinken's type specimens of *F. hahni* from Corrientes in Argentina are considered lost, a neotype was designated from a nearby locality in Paraguay.

records

- Ramlow (1989): listing
- Weber et al. (1992): listing sub *F. cf. hahni*
- Mandelburger et al. (1996): listing
- Retzer & Page (1997): lectotype locality
- Ferraris (2003a): listing
- Ferraris (2007): listing
- Miquelarena et al. (2012) locality

F. paraguayensis Retzer & Page, 1997*Farlowella paraguayensis* Retzer & Page, 1997

type locality Canindeyú, 15.6 kilometers WSW of Curuguaty, Arroyo Carimbatay

records

- Retzer & Page (1997): type locality
- Chernoff et al. (2001): listing
- Ferraris (2003a): listing
- Ferraris (2007): listing

- Neris et al. (2010): listing
- Vera-Alcaraz et al. (2012): listing

Sturisoma Swainson, 1838**S. robustum** (Regan, 1904)*Oxyloricaria robusta* Regan, 1904

records

- Boulenger (1896): listing sub *Loricaria rostrata*
- Regan (1904): type locality
- Bertoni (1914): listing
- Bertoni (1939): listing
- Ramlow (1989): listing
- Weber et al. (1992): listing
- Mandelburger et al. (1996): listing
- Ferraris (2003a): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurrealde et al. (2012): listing
- Insaurrealde et al. (2013): listing

tribus

Loricariini

Loricaria Linnaeus, 1758**L. apeltogaster** Boulenger, 1895*Loricaria apeltogaster* Boulenger, 1895

type locality

Paraguay

records

- Boulenger (1895b): type locality
- Boulenger (1896): listing
- Regan (1904): listing
- Bertoni (1914): listing
- Bertoni (1939): listing
- Ferraris (2003a): listing
- Rodríguez & Miquelarena (2005): locality
- Ferraris (2007): listing
- Thomas et al. (2013): locality

L. luciae Thomas, Rodriguez, Cavallaro, Froehlich & Castro, 2013*Loricaria luciae* Thomas, Rodriguez, Cavallaro, Froehlich & Castro, 2013

records

- Thomas et al. (2013): paratype locality

L. simillima Regan, 1904*Loricaria simillima* Regan, 1904

records

- Taylor (1983): locality
- Mandelburger et al. (1996): locality
- Ferraris (2003a): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Thomas et al. (2013): locality

Loricariichthys Bleeker, 1862**L. labialis** (Boulenger, 1895)*Loricaria labialis* Boulenger, 1895

type locality

Paraguay

records

- Boulenger (1895b): type locality
- Boulenger (1896): listing sub *Loricaria l.*
- Eigenmann & Kennedy (1903): locality sub *Loricaria l.*
- Regan (1904): listing sub *Loricaria l.*
- Bertoni (1914): listing sub *Loricaria l.*
- Bertoni (1939): listing sub *Loricaria l.*
- Taylor (1983): locality
- Ramlow (1989): listing
- Weber et al. (1992): listing
- Mandelburger et al. (1996): listing
- Reis & Perreira (2000): locality
- Azpelicueta et al. (2001): locality
- Ferraris (2003a): listing
- Vera (2005): listing
- Ávila et al. (2007): listing

- Ferraris (2007): listing
- Insaurralde et al. (2012): listing
- Paixão (2012): locality
- Insaurralde et al. (2013): listing

L. platymetopon Isbruecker & Nijssen, 1979*Loricariichthys platymetopon* Isbruecker & Nijssen, 1979

type locality Lago de Ypacarai, San Bernardino, 25°16'S, 57°16'W

- records
- Isbruecker & Nijssen (1979): type locality
 - Taylor (1983): locality
 - Ramlow (1989): listing
 - Weber et al. (1992): listing
 - Mandelburger et al. (1996): listing
 - Reis & Perreira (2000): locality
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing sub *L. cf. platymetopon*
 - Ferraris (2003a): listing
 - Vera (2005): listing
 - Ferraris (2007): listing
 - Neris et al. (2008): listing
 - Neumann (2011): type catalog
 - Paixão (2012): locality

L. rostratus Reis & Pereira, 2000*Loricariichthys rostratus* Reis & Pereira, 2000

- records
- Reis & Perreira (2000): paratype locality
 - Ferraris (2003a): listing
 - Neris et al. (2010): listing

Paraloricaria Isbruecker, 1979**P. agastor** Isbruecker, 1979*Paraloricaria agastor* Isbruecker, 1979

- type locality Paraguay
- records
- Isbruecker (1979): type locality
 - Weber et al. (1992): listing
 - Ferraris (2003a): listing
 - Ferraris (2007): listing
 - Rodríguez & Miquelarena (2005): locality

Pseudohemiodon**P. laticeps** (Regan, 1904)*Loricaria laticeps* Regan, 1904

- type locality Paraguay
- records
- Boulenger (1895b): listing sub *Loricaria lamina*
 - Regan (1904): type locality
 - Bertoni (1914): listing sub *Loricaria l.*
 - Bertoni (1939): listing sub *Loricaria l.*
 - Chernoff et al. (2001): listing
 - Ferraris (2003a): listing
 - Ferraris (2007): listing
 - Neris et al. (2010): listing
 - Insaurralde et al. (2012): listing

Rineloricaria Bleeker 1862**R. aurata** (Knaack, 2002)*Hemiloricaria aurata* Knaack, 2002

- type locality Concepción, small branch of Rio Aquidaban, stretch Loreto - San Carlos, at the border to Brazil
- records
- Knaack (2002): type locality
 - Ferraris (2007): listing
 - Vera-Alcaraz et al. (2012): locality

R. lanceolata (Guenther, 1868)*Loricaria lanceolata* Guenther, 1868

- type locality
- records
- Chernoff et al. (2001): listing
 - Knaack (2002): picture
 - Vera (2005): listing

- Vera & del Castillo (2006): listing
- Neris et al. (2010): listing
- Vera-Alcaraz et al. (2012): locality

R. parva (Boulenger, 1895)*Loricaria parva* Boulenger, 1895

records

- Eigenmann et al. (1907): listing sub *Loricaria p.*
- Bertoni (1914): listing sub *Loricaria p.*
- Bertoni (1939): listing sub *Loricaria p.*
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Vera (2005): listing
- Vera & del Castillo (2006): listing
- Neris et al. (2010): listing
- Vera-Alcaraz et al. (2012): locality
- Insaurralde et al. (2013): listing

Loricariinae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Loricaria anus Valenciennes, 1836 | listed in Boulenger (1896) and Bertoni (1939)

Loricaria barbata Kner, 1853 | listed sub *Sturisoma barbatum* in Neris et al. (2010)

Loricaria macrodon Kner, 1853 | listed in Bertoni (1932)

Loricaria proluxa Isbruecker & Nijssen, 1978 | listed in Weber et al. (1992)

Loricaria vetula Valenciennes, 1836 | listed sub *Loricaria vetula* in Bertoni (1932, 1939) and sub *Paraloricaria vetula* in Insaurralde (2012, 2013)

Loricariinae - species considered not to be distributed in Paraguay

Loricaria cacerensis Miranda Ribeiro, 1912 | Neris et al. (2010) | Vera-Alcaraz et al. (2012)

Loricaria carinata Castelnau, 1855 (syn. of *Loricaria cataphracta* Linnaeus, 1758) | Insaurralde et al. (2012, 2013) | Ferraris (2003a)

Loricaria maculata Bloch, 1794 | Insaurralde et al. (2013) sub *Loricariichthys m.* | Ferraris (2003a)

Parahemiodon typus Bleeker, 1862 (syn. of *Loricaria maculata* Bloch, 1794) | Insaurralde et al. (2013) sub *Loricariichthys t.* | Ferraris (2003a)

subfamily

Rhinelepinae

Rhinelepis Agassiz, 1829**R. strigosa** Valenciennes, 1840*Rhinelepis strigosa* Valenciennes, 1840

records

- Bertoni (1932): listing sub *Rhinelepis aspera*
- Bertoni (1939): listing sub *Rhinelepis aspera*
- Weber (1986b): locality sub *R. cf. aspera*
- Weber et al. (1992): listing sub *R. aspera*
- Armbruster (1998): locality sub *R. aspera*
- Weber (2003): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing sub *R. aspera*
- Insaurralde et al. (2013): listing sub *R. aspera*

Rhinelepinae - species considered not to be distributed in Paraguay

Rhinelepis aspera Spix & Agassiz, 1829 | Insaurralde et al. (2012, 2013) | Weber (2003)

family

Scoloplacidae**Scoloplax** Bailey & Baskin, 1976**S. distolothrix** Schaefer, Weitzman & Britski, 1989*Scoloplax distolothrix* Schaefer, Weitzman & Britski, 1989

records

- Schaefer et al. (1989): locality
- Schaefer (2003b): listing

order **GYMNOTIFORMES**

family **Sternopygidae**

Eigenmannia Jordan & Evermann, 1896

E. trilineata López & Castello, 1966

Eigenmannia trilineata López & Castello, 1966

- records
- Albert (2001): locality
 - Azpelicueta et al. (2001): locality
 - Chernoff et al. (2001): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing

E. virescens (Valenciennes, 1842)

Sternarchus virescens Valenciennes, 1842

Sternopygus lineatus Mueller & Troschel, 1849

Sternopygus tumifrons Mueller & Troschel, 1849

- records
- Boulenger (1895a): locality sub *Sternopygus* v.
 - Eigenmann & Kennedy (1903): locality
 - Eigenmann & Ward (1905): listing
 - Ellis (1913): locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Ramlow (1989): listing
 - Gill Morlis (1994): listing
 - Mandelburger et al. (1996): listing
 - Gill Morlis (1997): listing
 - Albert (2003a): listing
 - Ávila et al. (2007): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing
 - Kullander & Lucena (2013): locality

Sternopygus Mueller & Troschel, 1846

S. macrurus (Bloch & Schneider, 1801)

Gymnotus macrurus Bloch & Schneider, 1801

Sternopygus marcgravii Reinhardt, 1852

? *Carapus sanguinolentus* Castelnau, 1855

Hildatia brasiliensis Fernández-Yépez, 1968

- records
- Bertoni (1914): listing
 - Bertoni (1939): listing
 - Albert (2001): locality
 - Albert (2003a): listing
 - Ávila et al. (2007): listing
 - Neris et al. (2008): listing

family **Apteronotidae**

Apteronotus Lacepède, 1800

A. albifrons (Linnaeus, 1766)

Gymnotus albifrons Linnaeus, 1766

Apteronotus passan Lacepède, 1800

Sternarchus lacepedii Castelnau, 1855

Sternarchus maximiliani Castelnau, 1855

- records
- Perugia (1891): locality sub *Sternarchus a.*
 - Eigenmann & Kennedy (1903): locality sub *Sternarchus a.*
 - Bertoni (1914): listing sub *Sternarchus a.*
 - Bertoni (1939): listing sub *Sternarchus a.*
 - Chernoff et al. (2001): listing
 - Albert (2001): locality
 - Albert (2003b): listing
 - Vera (2005): listing
 - Insaurralde et al. (2013): listing

A. brasiliensis (Reinhardt, 1852)*Sternarchus brasiliensis* Reinhardt, 1852

- records
- Bertoni (1914): listing sub *Sternarchus b.*
 - Bertoni (1939): listing sub *Sternarchus b.*
 - Albert (2001): locality sub *A. cf. brasiliensis*

A. ellisi (Arámburu, 1957)*Porotergus ellisi* Arámburu, 1957

- records
- Albert (2001): locality
 - Neris et al. (2010): listing

family

Rhamphichthyidae**Rhamphichthys** Mueller & Troschel, 1846**R. hahni** (Meinken, 1937)*Sternarchorhamphus hahni* Meinken, 1937

- records
- Ávila et al. (2007): listing
 - Neris et al. (2010): listing
 - Schaefer (2015): listing
 - Vera-Alcaraz et al. (2017): locality

Gymnorhamphichthys Ellis, 1912**G. britskii** Carvalho, Ramos & Albert, 2011*Gymnorhamphichthys britskii* Carvalho, Ramos & Albert, 2011

- records
- Ellis (1913): locality sub *G. hypostomus*
 - Neris et al. (2010): listing sub *G. hypostomus*
 - Carvalho et al. (2011): listing

Rhamphichthyidae - unconfirmed listings from Paraguay requiring a verification based on voucher material*Urumara rondoni* Miranda Ribeiro, 1920 | listed sub *Gymnorhamphichthys rondoni* in Ferraris (2003c)**Rhamphichthyidae - species considered not to be distributed in Paraguay***Gymnorhamphichthys hypostomus* Ellis, 1912 | Neris et al. (2010) | Carvalho et al. (2011)*Gymnotus rostratus* Linnaeus, 1766 | Chernoff et al. (2001), Vera (2005), Neris et al. (2010) and Insaurralde et al. (2013) sub *Rhamphichthys rostratus* | Albert (2001), Ferraris (2003c)

family

Hypopomidae**Brachyhypopomus** Mago-Leccia, 1994**B. bombilla** Loureiro & Silva, 2006*Brachyhypopomus bombilla* Loureiro & Silva, 2006

- records
- Crampton et al. (2016): locality

B. draco Giora, Malabarba & Crampton, 2008*Brachyhypopomus draco* Giora, Malabarba & Crampton, 2008

- records
- Giora et al. (2008): locality
 - Crampton et al. (2016): locality

B. gauderio Giora & Malabarba, 2009*Brachyhypopomus gauderio* Giora & Malabarba, 2009

- records
- Giora & Malabarba (2009): locality
 - Neris et al. (2010): listing
 - Crampton et al. (2016): locality

B. walteri Sullivan, Zuanon & Cox-Fernández, 2013*Brachyhypopomus walteri* Sullivan, Zuanon & Cox-Fernández, 2013

- records
- Crampton et al. (2016): locality

Hypopomidae - species considered not to be distributed in Paraguay*Rhamphichthys brevirostris* Steindachner, 1868 | Chernoff et al. (2001), Vera (2005), Insaurralde et al. (2013) sub *Hypopomus b.* | Sullivan (1997), Almirón et al. (2010), Azpelicueta & Koerber (2015), Crampton et al. (2016)*Hypopomus pinnicaudatus* Hopkins, 1991 | Albert (2001), Albert & Crampton (2003a), Vera (2005), and Neris et al. (2008) | Giora & Malabarba (2009), Crampton et al. (2016)

family **Gymnotidae****Gymnotus** Linnaeus, 1758**G. inaequilabiatus** (Valenciennes, 1839)*Carapus inaequilabiatus* Valenciennes, 1839

- records
- Albert et al. (1999): locality
 - Albert (2001): locality
 - Azpelicueta et al. (2001): locality sub *G. cf. inaequilabiatus*
 - Albert & Crampton (2003b): distribution map
 - Neris et al. (2010): listing

G. pantanal Fernandes, Albert, Daniel-Silva, Lopes, Crampton & Almeida-Toledo, 2005*Gymnotus pantanal* Fernandes, Albert, Daniel-Silva, Lopes, Crampton & Almeida-Toledo, 2005

- records
- Fernandes et al. (2005): locality
 - Cognato et al. (2008): locality

G. paraguensis Albert & Crampton, 2003*Gymnotus paraguensis* Albert & Crampton, 2003

- type locality Itapuá, Arroyo Tembey, 7.4 km SW of San Rafael
- records
- Albert & Crampton (2003b): type locality
 - Albert et al. (2005): locality
 - Cognato et al. (2008): locality
 - Neris et al. (2008): listing
 - Richer-de-Forges et al. (2009): locality

Gymnotidae - species considered not to be distributed in Paraguay

Gymnotus carapo Linnaeus, 1766 | Chernoff et al. (2001), Albert (2001), Vera (2005), Neris et al. (2008), and Insaurralde et al. (2012, 2013) | Albert & Crampton (2003b)

order **CYPRINODONTIFORMES**family **“Rivulidae”**

The stem Rivul- is preoccupied in names of the family group by the tribus Rivulini Grote, 1895 based on *Rivula*, a genus of moths. As Rivulidae, -inae, and -ini are not longer applicable for fishes, Costa (2016) proposed to include all species of Rivulidae in Aplocheilidae and all Rivulinae in Cynolebiinae. Not only that no solution was proposed how to treat the fish tribe Rivulini, also the International Code of Zoological Nomenclature in clause 55.3.1 requires that a homonymy in the family group based on the same stem of the name giving genera (as the case in *Rivul-a* and *Rivul-us*) must be presented to and can only be solved by the Commission. For the afore mentioned technical and formal reasons we prefer to continue using the conventional family group names until the Commission has been approached and has ruled.

subfamily **Cynolebiasinae**tribus **Cynolebiasini****Austrolebias** Costa, 1998**A. monstrosus** (Huber, 1995)*Cynolebias monstrosus* Huber, 1995

- type locality Boquerón, near La Serena
- records
- Huber (1995): type locality
 - Costa (2003): listing
 - Etzel (2005): listing
 - Costa (2006a): locality

A. nigripinnis (Regan, 1912)*Cynolebias nigripinnis* Regan, 1912

- records
- Costa (2003): listing
 - Loureiro (2004): locality

A. paranaensis Costa, 2006*Austrolebias paranaensis* Costa, 2006

type locality Misiones, temporary pools adjacent to río Paraná,
about 2 km E of Ayolas

records ○ Costa (2006a): type locality

A. patriciae (Huber, 1995)

Cynolebias patriciae Huber, 1995

type locality Presidente Hayes Province, about 500 m S of Río
Negro, ditch along the road to Clorinda

records ○ Huber (1995): type locality
○ Costa (2003): listing
○ Costa (2006a): locality

A. vandenbergi (Huber, 1995)

Cynolebias vandenbergi Huber, 1995

type locality Boquerón, near Fortín Toledo

records ○ Huber (1995): type locality
○ Costa (2003): listing
○ Loureiro (2004): locality
○ Etzel (2005): listing
○ Costa (2006a): locality
○ Neris et al. (2010): listing
○ García et al. (2012): locality

Spectrolebias Costa & Nielsen, 1997

S. chacoensis (Amato, 1986)

Cynolebias chacoensis Amato, 1986

type locality Charca Topógrafo Acevedo, Nueva Asunción

records ○ Amato (1986): type locality
○ Costa (1998): listing sub *Simpsonichthys c.*
○ Costa (2003): listing sub *Simpsonichthys c.*
○ Etzel (2003): listing sub *Austrolebias c.*
○ Costa (2006b): locality
○ Costa (2007): locality sub *Simpsonichthys c.*
○ Neris et al. (2010): listing sub *Simpsonichthys c.*

subfamily "Rivulinae"

tribus Neofundulini

Neofundulus Myers, 1924

N. paraguayensis (Eigenmann & Kennedy, 1903)

Fundulus paraguayensis Eigenmann & Kennedy, 1903

Neofundulus ornatipinnis Myers, 1935

type locality *ornatipinnis*: Swamp at Makthlawaiya, 60 miles W of Río
Paraguay

records *paraguayensis*: Laguna near Arroyo Trementina
○ Eigenmann & Kennedy (1903): type locality
○ Eigenmann et al. (1907): listing sub *Fundulus p.*
○ Bertoni (1914): listing sub *Fundulus b.*
○ Carter & Beadle (1931): listing sub *Rivulichthys rondoni*
○ Myers (1935): type locality of synonym *N. ornatipinnis*
○ Bertoni (1939): listing sub *Fundulus b.*
○ Hrbek & Larson (1999): locality
○ Costa (2003): listing
○ Etzel (2003): listing sub *N. ornatipinnis*
○ Neris et al. (2010): listing
○ Costa (2015): locality
○ Calviño et al. (2016): locality

Pterolebias Garman, 1895

P. longipinnis Garman, 1895

Pterolebias longipinnis Garman, 1895

Pterolebias bokermanni Travassos, 1955

Rivulichthys luelingi Meinken, 1969

records ○ Alonso de Arámburu (1961): locality

- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Costa (2003): listing sub *P. bokermanni*

Trigonectes Myers, 1925***T. aplocheiloides*** Huber, 1995*Trigonectes aplocheiloides* Huber, 1995

type locality 74 km from Mariscal Estigarribia towards Americo Picco

- records
- Huber (1995): type locality
 - Hrbek & Larson (1999): locality
 - Costa (2003): listing

T. balzanii (Perugia, 1891)*Haplochilus balzanii* Perugia, 1891*Rivulus rondoni* Miranda Ribeiro, 1920

- records
- Bertoni (1914): listing sub *Fundulus b.*
 - Bertoni (1932): listing sub *Rivulichthys rondoni*
 - Bertoni (1939): listing sub *Fundulus b.* and *Rivulichthys rondoni*
 - Hrbek & Larson (1999): locality
 - Costa (2003): listing
 - Neris et al. (2010): listing

tribus

Plesiolebiasini

Papiliolebias Costa, 1998***P. bitteri*** (Costa, 1989)*Plesiolebias bitteri* Costa, 1989

type locality 64 km N of Mariscal Estigarribia, Nueva Asunción

- records
- Costa (1989): type locality
 - Costa (1998): locality sub *Plesiolebias b.*
 - Hrbek & Larson (1999): locality sub *Plesiolebias b.*
 - Costa (2003): listing
 - Loureiro (2004): locality
 - Etzel (2005): listing
 - Azpelicueta et al. (2009): locality

tribus

"Rivulini"

Melanorivulus Costa, 2006***M. punctatus*** (Boulenger, 1895)*Rivulus punctatus* Boulenger, 1895

type locality Colonia Risso

- records
- Boulenger (1895a): type locality
 - Eigenmann (1907): listing sub *Rivulus p.*
 - Regan (1912b): locality sub *Rivulus p.*
 - Bertoni (1914): listing sub *Rivulus p.*
 - Henn (1916): locality sub *Rivulus p.*
 - Bertoni (1939): listing sub *Rivulus p.*
 - Mahnert (1987): listing sub *Rivulus p.*
 - Costa (1995): listing sub *Rivulus p.*
 - Hrbek & Larson (1999): locality sub *Rivulus p.*
 - Costa (2003): listing sub *Rivulus p.*
 - Vera (2005): listing sub *Rivulus p.*
 - Neris et al. (2008): listing sub *Rivulus p.*
 - Schindler & Etzel (2008): locality sub *Rivulus p.*
 - Costa (2011): listing
 - Etzel (2012): listing

"Rivulidae" - unconfirmed listings from Paraguay requiring a verification based on voucher material*Plesiolebias damascenoi* Costa, 1991 | listed sub *Stenolebias damascenoi* in Neris et al. (2010)*Rivulus cyanopterus* Costa, 2005 | listed in Neris et al. (2010)

family **Poeciliidae**
 subfamily Poeciliinae
 tribus Cnesterodontini

Cnesterodon Garman, 1895

C. raddai Meyer & Etzel, 2001

Cnesterodon raddai Meyer & Etzel, 2001

records

- Lucinda (2003): listing
- Lucinda (2005): locality

Phalloceros Eigenmann, 1907

P. harpagos Lucinda, 2008

Phalloceros harpagos Lucinda, 2008

records

- Eigenmann et al. (1907) sub *Girardinus caudomaculatus*
- Eigenmann (1907): locality sub *P. caudomaculatus*
- Bertoni (1914): listing sub *P. caudomaculatus*
- Henn (1916). locality sub *P. caudimaculatus*
- Fowler (1918): locality sub *P. caudimaculatus*
- Bertoni (1939): listing sub *P. caudomaculatus*
- Ramlow (1989): listing sub *P. caudimaculatus*
- Mandelburger et al. (1996): listing sub *P. caudimaculatus*
- Arias & Reznick (2000): locality sub *P. caudimaculatus*
- Lucinda (2003): listing sub *P. caudimaculatus*
- Lucinda (2008): locality
- Neris et al. (2008): listing sub *P. caudimaculatus*
- Neris et al. (2010): listing

Phallotorynus Henn, 1916

P. dispilos Lucinda, Rosa & Reis, 2005

Phallotorynus dispilos Lucinda, Rosa & Reis, 2005

type locality Caaguazú, Pueblo de Dios, arroyo crossing road from Colonia Sommerfield to Repatriación

records

- Lucinda et al. (2005): type locality

P. psittakos Lucinda, Rosa & Reis, 2005

Phallotorynus psittakos Lucinda, Rosa & Reis, 2005

type locality Arroyo Clementina, E of Santa Rosa, San Pedro

records

- Lucinda et al. (2005): type locality
- Neris et al. (2010): listing

P. victoriae Oliveros, 1983

Phallotorynus victoriae Oliveros, 1983

records

- Axenrot & Kullander (2003): listing
- Lucinda (2003): listing
- Lucinda et al. (2005): locality

tribus Poeciliini

Poecilia Bloch & Schneider, 1801

P. reticulata Peters, 1859

Poecilia reticulata Peters, 1859

remarks introduced exotic species

origin Venezuela, Guyana and Caribbean Islands

records

- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Neris et al. (2010): listing
- Lucinda (2017): locality

Poeciliidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Phallotorynus pankalos Lucinda, Rosa & Reis, 2005 | listed in Meyer & Etzel (2006), but the there mentioned specimens have most probably been poorly determined and a presence of this species in PY is unlikely (Lucinda, pers.comm.)

Poeciliidae - species considered not to be distributed in Paraguay

Girardinus caudimaculatus Hensel, 1868 | Arias & Reznick (2000), Lucinda (2003) and Neris et al. (2008) sub *Phalloceros c.* | Lucinda (2008)

order **BELONIFORMES**

family **Belonidae**

Potamorrhaphis Guenther, 1866

P. eigenmanni Miranda Ribeiro, 1915

Potamorrhaphis eigenmanni Miranda Ribeiro, 1915

records

- o Eigenmann et al. (1907) sub *P. guianensis*
- o Miranda Ribeiro (1915): paratype locality
- o Bertoni (1932): listing sub *P. guianensis*
- o Bertoni (1939): listing sub *P. guianensis eigenmanni*
- o Collette (1982): locality, revalidation of *P. eigenmanni* from synonymy with *P. guianensis*
- o Ramlow (1989): listing
- o Mandelburger et al. (1996): listing sub *P. guianensis*
- o Chernoff et al. (2001): listing
- o Lovejoy & Collette (2003): listing
- o Vera (2005): listing
- o Neris et al. (2010): listing

Pseudotylosurus Fernández-Yépez, 1948

P. angusticeps (Guenther, 1866)

Belone angusticeps Guenther, 1866

Pseudotylosurus brasiliensis Fernández-Yépez, 1948

records

- o Eigenmann & Kennedy (1903): locality sub *Tylosurus amazonicus*
- o Collette (1974): locality
- o Lovejoy & Collette (2003): listing
- o Vera (2005): listing
- o Neris et al. (2008): listing sub *Strongylura microps*
- o Neris et al. (2010): listing
- o Insaurralde et al. (2012): listing sub *Strongylura microps*
- o Insaurralde et al. (2013): listing sub *Strongylura microps*

Belonidae - species considered not to be distributed in Paraguay

Belone microps Guenther, 1866 | Neris et al. (2008) and Insaurralde et al. (2012, 2013) sub *Strongylura microps* | Collette (1974), Lovejoy & Collette (2003)

order **SYNBRANCHIFORMES**

family **Synbranchidae**

Synbranchus Bloch, 1795

S. marmoratus Bloch, 1795

? *Muraena ambigua* Walbaum, 1792

Synbranchus marmoratus Bloch, 1795

Synbranchus immaculatus Bloch, 1795

Typhlobranchus spurius Bloch & Schneider, 1801

Unibranchapertura lineata Lacépède, 1803

Synbranchus pardalis Valenciennes, 1836

Synbranchus fuliginosus Ranzani, 1839

Synbranchus vittatus Castelnau, 1855

Synbranchus doeringii Weyenbergh, 1877

Synbranchus hieronymi Weyenbergh, 1877

[info](#)

Symbranchus mercedarius Weyenbergh, 1877

Symbranchus tigrinus Weyenbergh, 1877

Falconeria aptera Larrañaga, 1923

Falconeria pinnata Larrañaga, 1923

- records
- Perugia (1891): locality
 - Boulenger (1895a): locality
 - Kerr (1898b): listing
 - Eigenmann & Kennedy (1903): locality
 - Bertoni (1914): listing
 - Carter & Beadle (1931): listing
 - Bertoni (1939): listing
 - Rosen & Rumney (1972): locality
 - Rosen & Greenwood (1976):locality
 - Drennen (1986): locality
 - Ramlow (1989): listing
 - Gill Morlis (1994): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Kullander (2003a): listing
 - Perdices et al. (2005): locality
 - Vera (2005): listing
 - Ávila et al. (2007): listing
 - Neris et al. (2008): listing

order **“PERCIFORMES”**

family **Sciaenidae**

Pachyurus Agassiz, 1831

P. bonariensis Steindachner, 1879

Pachyurus bonariensis Steindachner, 1879

Pachyurus paranensis Daneri, 1956

- records
- Eigenmann & Kennedy (1903): locality
 - Ramlow (1989): locality
 - Mandelburger et al. (1996): locality
 - Azpelicueta et al. (2001): locality
 - Casatti (2001): locality
 - Vera (2005): listing
 - Neris et al. (2010): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

Plagioscion Gill, 1861

P. ternetzi Boulenger, 1895

Plagioscion ternetzi Boulenger, 1895

Plagioscion macdonaghi Daneri, 1954

type locality ***ternetzi*: Remanso, Rio Grande**

- records
- Boulenger (1895b): type locality
 - Boulenger (1896): locality
 - Eigenmann & Kennedy (1903): locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Ramlow (1989): locality
 - Mandelburger et al. (1996): listing
 - Casatti (2003): listing
 - Casatti (2005): lectotype locality
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

[info](#)

Sciaenidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Sciaena squamosissima Heckel, 1840 | listed sub *Plagioscion squamosissimus* in Neris et al. (2008)

order **CICHLIFORMES**

family **Cichlidae**

subfamily Cichlinae

tribus Astronotini

Astronotus Swainson, 1839

A. crassipinnis (Heckel, 1840)

Acara crassipinnis Heckel, 1840

records

- Bertoni (1914): listing sub *A. ocellatus*
- Bertoni (1939): listing sub *A. ocellatus*
- Kullander (1981): locality sub *A. ocellatus*
- Kullander (1986): locality, revalidation of *A. crassipinnis* from synonymy with *A. ocellatus*
- Chernoff et al. (2001): listing
- Kullander (2003b): listing
- Vera (2005): listing
- Neris et al. (2008): listing

tribus Chaetobranchini

Chaetobranchopsis Steindachner, 1875

C. australis Eigenmann & Ward, 1907

Chaetobranchopsis australe Eigenmann & Ward, 1907

type locality

Alto Paraguay, Bahia Negra

records

- Eigenmann et al. (1907): type locality
- Bertoni (1914): listing
- Bertoni (1939): listing
- Mandelburger et al. (1996): listing sub *C. orbicularis*
- Azpelicueta et al. (2001): locality
- Chernoff et al. (2001): listing
- Kullander (2003b): listing
- Vera (2005): listing
- Neris et al. (2008): listing

tribus Cichlasomatini

Bujurquina Kullander, 1986

B. vittata (Heckel, 1840)

Acara vittatus Heckel, 1840

Aequidens paraguayensis Eigenmann & Kennedy, 1903

type locality

paraguayensis: Asunción

records

- Eigenmann & Kennedy (1903): type locality of synonym *Aequidens paraguayensis*
- Eigenmann et al. (1907): locality sub *Aequidens paraguayensis*
- Haseman (1911): locality sub *Aequidens paraguayensis*
- Bertoni (1914): listing sub *Aequidens paraguayensis* and *vittatus*
- Bertoni (1939): listing sub *Aequidens paraguayensis* and *vittatus*
- Kullander (1981): locality sub *Aequidens vittatus*
- Ramlow (1989): locality sub *Aequidens vittatus*
- Gill Morlis (1994): listing sub *Aequidens vittatus*
- Mandelburger et al. (1996): listing sub *Bujurquina vittata* and *Aequidens vittatus*
- Chernoff et al. (2001): listing
- Kullander (2003b): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing sub *Aequidens vittatus*
- Insaurralde et al. (2013): listing sub *Aequidens vittatus* and *Aequidens paraguayensis*

Cichlasoma Swainson, 1839

C. dimerus (Heckel, 1840)

Acara dimerus Heckel, 1840

Acara marginatus Heckel, 1840

Heros centralis Holmberg, 1891

records

- o Boulenger (1895a): locality sub *Acara bimaculata*
- o Kerr (1898b): listing sub *Acara tetramerus*
- o Eigenmann & Kennedy (1903): locality sub *Aequidens tetramerus*
- o Regan (1905a): locality sub *Aequidens portalegrensis* with *A. dimerus* as a possible synonym
- o Eigenmann et al. (1907): locality sub *Aequidens tetramerus*
- o Haseman (1911): locality sub *Aequidens portalegrensis*
- o Bertoni (1914): listing sub *Aequidens portalegrensis* and *A. tetramerus*
- o Bertoni (1939): listing sub *Aequidens portalegrensis* and *A. tetramerus*
- o Kullander (1983b): locality
- o Mahnert (1987): listing
- o Ramlow (1989): locality sub *Aequidens tetramerus* and *C. dimerus*
- o Mandelburger et al. (1996): listing
- o Azpelicueta et al. (2001): locality
- o Chernoff et al. (2001): listing
- o Kullander (2003b): listing
- o Chernoff et al. (2004): listing sub *Cheirodon p.*
- o Vera (2005): listing
- o Neris et al. (2008): listing

C. pusillum Kullander, 1983

Cichlasoma pusillum Kullander, 1983

type locality

Alto Paraná, Puerto Palma

records

- o Kullander (1983b): type locality
- o Mandelburger et al. (1996): listing
- o Axenrot & Kullander (2003): listing
- o Kullander (2003b): listing

Laetacara Kullander, 1986

L. dorsigera (Heckel, 1840)

Acara dorsigera Heckel, 1840

records

- o Guenther (1862): listing sub *Acara dorsigera*
- o Bertoni (1914): listing sub *Aequidens dorsigerus*
- o Bertoni (1939): listing sub *Aequidens dorsigerus*
- o Mandelburger et al. (1996): listing
- o Kullander (2003b): listing
- o Neris et al. (2008): listing
- o Vera-Alcaraz et al. (2017): locality

tribus

Cichlini

Cichla Bloch & Schneider, 1801

C. kelberi Kullander & Ferreira, 2006

Cichla kelberi Kullander & Ferreira, 2006

remarks

introduced species

records

- o Kullander & Ferreira (2006): locality

C. piquiti Kullander & Ferreira, 2006

Cichla piquiti Kullander & Ferreira, 2006

remarks

introduced species

records

- o Kullander & Ferreira (2006): locality

tribus

Geophagini

Apistogramma Regan, 1913**A. borellii** (Regan, 1906)*Heterogramma borellii* Regan, 1906*Heterogramma ritense* Haseman, 1911*Heterogramma rondoni* Miranda Ribeiro, 1918*Apistogramma aequipinnis* Ahl, 1938*Apistogramma reitzigi* Mitsch-Koenigsdoerfer, 1938*Apistogramma reitzigi* Ahl, 1939

- records
- Boulenger (1895a): locality sub *Mesops taeniatus* [in part]
 - Regan (1906): locality sub *H. borellii*
 - Haseman (1911): locality sub *H. borellii*
 - Bertoni (1914): listing sub *H. taeniatum*
 - Bertoni (1939): listing sub *H. taeniatum*
 - Kullander (1983a): locality
 - Mahnert (1987): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Kullander (2003b): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Etzel (2012): listing

A. commbrae (Regan, 1906)*Heterogramma commbrae* Regan, 1906*Heterogramma corumbae* Eigenm. & Ward, 1907

- records
- Boulenger (1895a): locality sub *Mesops taeniatus* [in part]
 - Regan (1906): locality sub *H. commbrae*
 - Eigenmann et al. (1907): type locality of synonym *H. corumbae*
 - Haseman (1911): locality sub *H. corumbae*
 - Bertoni (1914): listing sub *H. corumbae*
 - Bertoni (1939): listing sub *H. corumbae*
 - Kullander (1982a): locality
 - Kullander (1981): locality
 - Mahnert (1987): listing
 - Ramlow (1989): listing
 - Chernoff et al. (2001): listing
 - Kullander (2003b): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Neris et al. (2010): listing

A. trifasciata (Eigenmann & Kennedy, 1903)*Biotodoma trifasciatus* Eigenmann & Kennedy, 1903*Heterogramma trifasciatum maciliense* Haseman, 1911*Apistogramma trifasciatum haraldschultzi* Meinken, 1960type locality *trifasciatus*: Arroyo Chagalalina

- records
- Boulenger (1895a): locality sub *Mesops taeniatus* [in part]
 - Eigenmann & Kennedy (1903): type locality
 - Regan (1906): locality sub *H. trifasciatum*
 - Eigenmann et al. (1907): locality sub *H. trifasciatum*
 - Haseman (1911): locality sub *H. trifasciatum*
 - Bertoni (1914): listing sub *H. trifasciatum*
 - Bertoni (1939): listing sub *H. trifasciatum*
 - Kullander (1983a): locality
 - Mahnert (1987): listing
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing
 - Kullander (2003b): listing
 - Chernoff et al. (2004): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing

Crenicichla Heckel, 1840**C. gillmorlisi** Kullander & Lucena, 2013*Crenicichla gillmorlisi* Kullander & Lucena, 2013

type locality Río Acaray, dry arm below reservoir, Alto Paraná
 records ○ Kullander & Lucena (2013): type locality

C. lepidota Heckel, 1840*Crenicichla lepidota* Heckel, 1840*Crenicichla edithae* Ploeg, 1991

type locality *edithae*: Arroyo Itabu-Guazú
 records ○ Boulenger (1895a): locality sub *C. saxatilis*
 ○ Kerr (1898b): listing sub *C. saxatilis*
 ○ Eigenmann & Kennedy (1903): locality
 ○ Regan (1905b): locality
 ○ Eigenmann et al. (1907): locality
 ○ Haseman (1911): locality
 ○ Bertoni (1914): listing
 ○ Carter & Beadle (1931): listing
 ○ Schindler (1938): locality
 ○ Bertoni (1939): listing
 ○ Kullander (1981): locality
 ○ Kullander (1982b): locality
 ○ Drennen (1986): locality
 ○ Mahnert (1987): listing
 ○ Ramlow (1989): listing
 ○ Ploeg (1991): type locality of synonym *C. edithae*
 ○ Gill Morlis (1994): listing
 ○ Mandelburger et al. (1996): listing
 ○ Gill Morlis (1997): listing
 ○ Azpelicueta et al. (2001): locality
 ○ Chernoff et al. (2001): listing
 ○ Axenrot & Kullander (2003): listing
 ○ Kullander (2003b): listing
 ○ Chernoff et al. (2004): listing
 ○ Vera (2005): listing
 ○ Kullander (2009): locality
 ○ Neris et al. (2008): listing
 ○ Varella (2011): locality
 ○ Insaurralde et al. (2012): listing
 ○ Insaurralde et al. (2013): listing
 ○ Kullander & Lucena (2013): locality

C. mandelburgeri Kullander, 2009*Crenicichla mandelburgeri* Kullander, 2009

type locality Itapúa, arroyo Tembey above falls
 records ○ Kullander (2009): type locality
 ○ Neris et al. (2010): listing

C. ocellata (Perugia, 1897)*Boggiana ocellata* Perugia, 1897

type locality Puerto 14 de Mayo, Bahia Negra
 records ○ Perugia (1897): type locality
 ○ Bertoni (1914): listing sub *Batrachops ocellatus*
 ○ Bertoni (1939): listing sub *Batrachops ocellatus*
 ○ Kullander (2003b): listing sub *C. semifasciata*

C. semifasciata (Heckel, 1840)*Batrachops semifasciatus* Heckel, 1840*Acharnes chacoensis* Holmberg, 1891*Crenicichla simoni* Haseman, 1911

records ○ Eigenmann & Kennedy (1903): listing sub *C. saxatilis*
 ○ Eigenmann et al. (1907): listing sub *Batrachops semifasciatus*
 ○ Haseman (1911): paratype locality of synonym *C. simoni*
 ○ Bertoni (1914): listing sub *Batrachops semifasciatus* and *Cichla chacoensis*
 ○ Bertoni (1939): listing sub *Batrachops semifasciatus* and *Cichla chacoensis*
 ○ Kullander (2003b): listing
 ○ Vera (2005): listing
 ○ Neris et al. (2010): listing
 ○ Kullander & Lucena (2013): locality

C. vittata Heckel, 1840*Crenicichla vittata* Heckel, 1840

- type locality Paraguay
- records
- Heckel (1840): type locality
 - Haseman (1911): locality
 - Bertoni (1914): listing
 - Bertoni (1939): listing
 - Kullander (1982b): locality
 - Ploeg (1991): lectotype locality
 - Mandelburger et al. (1996): listing
 - Chernoff et al. (2001): listing sub *C. cf. vittata*
 - Kullander (2003b): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing

Gymnogeophagus Miranda Ribeiro, 1918**G. balzanii** (Perugia, 1891)*Geophagus balzanii* Perugia, 1891*Geophagus duodecimspinosus* Boulenger, 1895*Gymnogeophagus cyanopterus* Miranda Ribeiro, 1918

- type locality *duodecimspinosus*: Paraguay
- records
- Boulenger (1895b): type locality of synonym *Geophagus duodecimspinosus*
 - Boulenger (1896): listing sub *Geophagus duodecimspinosus*
 - Eigenmann & Kennedy (1903): locality sub *Geophagus duodecimspinosus*
 - Regan (1906): locality sub *Geophagus b.*
 - Bertoni (1914): listing sub *Geophagus b.* and *Satanoperca b.*
 - Bertoni (1939): listing sub *Geophagus b.* and *Satanoperca b.*
 - Gosse (1976): locality
 - Reis & Malabarba (1988): locality
 - Ramlow (1989): listing
 - Mandelburger et al. (1996): listing
 - Kullander (2003b): listing
 - Vera (2005): listing
 - Neris et al. (2008): listing
 - Insaurralde et al. (2012): listing
 - Insaurralde et al. (2013): listing

G. caaguazuensis Staeck, 2006*Gymnogeophagus caaguazuensis* Staeck, 2006

type locality Caaguazú, tributary to río Tebicuary, at route no. 7, about 25 km E of Cnel. Oviedo

- records
- Staeck (2006): type locality
 - Kullander (2009): locality sub *G. cf. caaguazuensis*

G. setequedas Reis, Malabarba & Pavanelli, 1992*Gymnogeophagus setequedas* Reis, Malabarba & Pavanelli, 1992

type locality Alto Paraná, Río Iguazú reservoir at Juan E. O'Leary

- records
- Kullander (1981): locality sub *G. cf. australis*
 - Reis & Malabarba (1988): locality sub *G. rhabdotus*
 - Ramlow (1989): listing sub *G. cf. australis*
 - Reis et al. (1992): type locality
 - Mandelburger et al. (1996): listing
 - Kullander (2003b): listing
 - Neris et al. (2010): listing
 - Kullander & Lucena (2013): locality

Satanoperca Guenther, 1862**S. pappaterra** (Heckel, 1840)*Geophagus pappaterra* Heckel, 1840

- records
- Eigenmann & Kennedy (1903): locality sub *Geophagus p.*
 - Eigenmann et al. (1907): locality sub *Geophagus jurupari* with *Geophagus p.* as synonym
 - Bertoni (1914): listing sub *Geophagus jurupari*
 - Bertoni (1939): listing sub *Geophagus jurupari*
 - Mandelburger et al. (1996): listing

- Gill Morlis (1997): listing sub *Geophagus p.*
- Kullander (2003b): listing
- Neris et al. (2008): listing

tribus Heroini

Australoheros Řičan & Kullander, 2006

A. guarani Řičan & Kullander, 2008

Australoheros guarani Řičan & Kullander, 2008

type locality Caaguazú, Río Guyray-gua, km 197 on road from Asunción to Puerto Stroessner

- records
- Bertoni (1932): listing sub *Cichlasoma facetum*
 - Bertoni (1939): listing sub *Cichlasoma facetum*
 - Řičan & Kullander (2006): listing sub *Australoheros* sp. "Paraguay"
 - Řičan & Kullander (2008): type locality, "so far the only *Australoheros* species known from Paraguay"

Mesonauta Guenther, 1862

M. festivus (Heckel, 1840)

Heros festivus Heckel, 1840

- records
- Eigenmann & Kennedy (1903): locality
 - Bertoni (1914): listing sub *Cichlasoma festivum*
 - Bertoni (1939): listing sub *Cichlasoma festivum*
 - Mahnert (1987): listing
 - Ramlow (1989): listing sub *Cichlasoma festivum*
 - Kullander & Silfvergrip (1991): locality
 - Mandelburger et al. (1996): listing
 - Kullander (2003b): listing

subfamily Pseudocrenilabrinae

Coptodon Gervais, 1853

C. rendalli (Boulenger, 1897)

Chromis rendalli Boulenger, 1897

remarks introduced exotic species

origin Africa

- records
- Kullander (1981): locality sub *Tilapia r.*
 - Ramlow (1989): listing sub *Tilapia r.*
 - Mandelburger et al. (1996): listing sub *Tilapia r.*

Cichlidae - unconfirmed listings from Paraguay requiring a verification based on voucher material

Aequidens plagiozonatus Kullander, 1984 | listed in Neris et al. (2010)

Chromys proxima Castelnau, 1855 | listed sub *Geophagus proximus* in Neris et al. (2010) as introduced exotic species

Crenicichla britskii Kullander, 1982 | listed in Neris et al. (2010)

Perca nilotica Linnaeus, 1758 | listed sub *Oreochromis niloticus* in Neris et al. (2008) and Insaurralde et al. (2013) as introduced exotic species

Cichlidae - species considered not to be distributed in Paraguay

Acara tetramerus Heckel, 1840 | Insaurralde et al. (2013) sub *Aequidens tetramerus* | Kullander (1986, 2003b)

Acharnes niederleini Holmberg, 1891 | Kullander (2003b) sub *Crenicichla niederleini* | Varela (2011)

Cycla lacustris Castelnau, 1855 | Insaurralde et al. (2012, 2013) sub *Crenicichla lacustris* | Kullander & Lucena (2006)

Heros temporalis Guenther, 1862 | Insaurralde et al. (2013) sub *Cichlasoma temporalis* | Kullander (1986, 2003b)

order **PLEURONECTIFORMES**

family **Achiridae**

Catathyridium Chabanaud, 1928

C. jenynsii (Guenther, 1862)

Solea jenynsii Guenther, 1862

Achirus trichospilus Berg, 1895

? *Achirus errans* Miranda Ribeiro, 1915

records

- Boulenger (1896): listing sub *Solea j.*
- Eigenmann & Kennedy (1903): locality sub *Achirus j.*
- Bertoni (1914): listing sub *Achirus j.*
- Bertoni (1932): listing sub *Achirus j.*
- Bertoni (1939): listing sub *Achirus j.* and *A. errans*
- Ramos (1998): locality
- Ramos (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing
- Insaurralde et al. (2012): listing sub *Achirus j.*

C. lorentzii (Weyenbergh, 1877)

Achirus lorentzii Weyenbergh, 1877

Hypoclinemus paraguayensis Chabanaud, 1928

records

- Ramos (1998): locality
- Ramos (2003): listing.

Achiridae - species considered not to be distributed in Paraguay

Pleuronectes lineatus Linnaeus, 1758 | Insaurralde et al. (2013) sub *Achirus lineatus* | Ramos (2003), Ramos et al. (2009)

SARCOPTERYGII

order **CERATODONTIFORMES**

family **Lepidosirenidae**

Lepidosiren Fitzinger, 1837

L. paradoxa Fitzinger, 1837

Lepidosiren paradoxa Fitzinger, 1837

Lepidosiren dissimilis Castelnau, 1855

Lepidosiren giglioliana Barbosa Rodriguez, 1886

Lepidosiren articulata Ehlers, 1894

type localities *articulata*: Asunción

paradoxa: Paraguay [and other localities]

records

- Fitzinger (1837): syntype locality
- Ehlers (1894): type locality of synonym *L. articulata*
- Lankaster (1896): listing
- Kerr (1898a): listing
- Kerr (1898b): listing
- Bertoni (1914): listing
- Carter & Beadle (1931): listing
- Bertoni (1939): listing
- Ramlow (1989): listing
- Mandelburger et al. (1996): listing
- Chernoff et al. (2001): listing
- Arratia (2003): listing
- Vera (2005): listing
- Neris et al. (2008): listing

References

- Abell, R., M. Thieme, C. Revenga, M. Bryer, M. Kottelat, N. Bogutskaya, B. Coad, N. Mandrak, S. Contreras-Balderas, W. Bussing, M.L.J. Stiassny, P. Skelton, G.R. Allen, P. Unmack, A. Naseka, R. Ng, N. Sindorf, J. Robertson, E. Armijo, J. Higgins, T.J. Heibel, E. Wikramanayake, D. Olson, H.L. López, R.E. Reis, J.G. Lundberg, M.H. Sabaj Perez & P. Petry (2008): Freshwater ecoregions of the world: A new map of biogeographic units for freshwater biodiversity conservation. *BioScience* 58 (5): 403-414
- Aguilera, G. & M. Azpelicueta (2015): First record of *Pimelodella mucosa* Eigenmann & Ward, 1907 (Siluriformes: Heptapteridae) in Formosa, Argentina and comments on the geographical distribution of *P. howesi* Fowler, 1940. *CheckList* 11 (5/1757): 1-3
- Ahl, E. (1922): *Serrasalmo spilopleura* Kner. *Blaetter fuer Aquarien- und Terrarienkunde* 33 (5): 65-67
- Ahl, E. (1923a): Eine Revision der Characiniden-Gattung *Metynnis*. *Ichthyologische Mitteilungen I. Mitteilungen aus dem Zoologischen Museum in Berlin* 11 (1): 15-31
- Ahl, E. (1923b): Einige neue Characiniden der Gattung *Aphyocharax*. *Ichthyologische Mitteilungen II. Mitteilungen aus dem Zoologischen Museum in Berlin* 11 (1): 32-35
- Akama, A. (2004): Revisão sistemática dos gêneros *Parauchenipterus* Bleeker, 1862 e *Trachelyopterus* Valenciennes, 1840 (Siluriformes, Auchenipteridae). PhD thesis, Universidade de São Paulo. 333 p.
- Albert, J.S. (2001): Species diversity and phylogenetic systematics of American knifefishes (Gymnotiformes, Teleostei). *Miscellaneous Publications, Museum of Zoology, University of Michigan* 190: 1-127
- Albert, J.S. (2003a): Family Sternopygidae (Glass knifefishes, rattail knifefishes). 488-492. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre.* 729 p.
- Albert, J.S. (2003b): Family Apterontidae (Ghost knifefishes). 498-503. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre.* 729 p.
- Albert, J.S. & W.G.R. Crampton (2003a): Family Hypopomidae (Bluntnose knifefishes). 495-497. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre.* 729 p.
- Albert, J.S. & W.G.R. Crampton (2003b): Seven new species of the Neotropical electric fish *Gymnotus* (Teleostei, Gymnotiformes) with a redescription of *G. carapo* (Linnaeus). *Zootaxa* 287: 1-54
- Albert, J.S., W.G.R. Crampton, D.H. Thorsen & N.R. Lovejoy (2005): Phylogenetic systematics and historical biogeography of the Neotropical electric fish *Gymnotus* (Teleostei: Gymnotidae). *Systematics and Biodiversity* 2 (4): 375-417
- Albert, J.S., M.C. Fernandes-Matioli & L.F. Almeida-Toledo (1999): New species of *Gymnotus* (Gymnotiformes, Teleostei) from southeastern Brazil: toward the deconstruction of *Gymnotus carapo*. *Copeia* 87 (2): 410-421
- Allan, J.D., R. Abell, Z. Hogan, C. Revenga, B.W. Taylor, R.L. Welcomme & K. Winemiller (2005): Overfishing in inland waters. *Bioscience* 55: 1041-1051
- Almirón, A., J. Casciotta, L. Ciotek, P. Giorgis, P. Soneira & F. Ruiz Díaz (2010): Pisces, Gymnotiformes, Hypopomidae, *Brachyhypopomus* Mago-Leccia, 1994: First country record of three species of the genus, Argentina. *Checklist* 6 (4): 572-575
- Alonso de Arámburu, A.S. (1961): La presencia de *Pterolebias longipinnis* Garman, 1895 en aguas argentinas (Actinopterygii, Cyprinodontiformes). *Neotrópica* 7 (23): 59-64
- Amato, L.H. (1986): Seis especies nuevas del género *Cynolebias* Steindachner, 1876, de Uruguay y Paraguay (Cyprinodontiformes, Rivulidae). *Comunicaciones Zoológicas del Museo de Historia Natural de Montevideo* 11 (162): 1-27
- Aquino, A.E. & S.A. Schaefer (2010): Systematics of the genus *Hypoptopoma* Guenther, 1868 (Siluriformes, Loricariidae). *Bulletin of the American Museum of Natural History* 336: 1-110
- Araújo, M.L.G., P. Charvet-Almeida, M. Pinto Almeida & H. Pereira (2004): Freshwater Stingrays (Potamotrygonidae): status, conservation and management challenges. *Cites – 20th meeting of the Animals Committee, Johannesburg (South Africa), 29.Mar-2.Apr 2004. Information document* 8. 6 p.
- Arias, A.L. & D. Reznick (2000): Life history of *Phalloceros caudimaculatus*: A novel variation on the theme of livebearing in the family Poeciliidae. *Copeia* 88 (3): 792-798
- Armbruster, J.W. (1998): Phylogenetic relationships of the suckermouth armored catfishes of the *Rhinelepis* group (Loricariidae: Hypostominae). *Copeia* 86 (3): 620-636
- Armbruster, J.W. (2003): The species of the *Hypostomus cochliodon* group (Siluriformes: Loricariidae). *Zootaxa* 249: 1-60
- Arratia, G. (2003): Family Lepidosirenidae (Aestivating lungfishes). 671-672. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre.* 729 p.
- Ávila, R.I., A. Weiler & H. Vera (2007): Estudio de la actividad reproductiva de los peces del riacho San Francisco, dpto. Central, Paraguay. *Investigaciones y estudios de la UNA* 3: 23-28
- Axenrot, T.E. & S.O. Kullander (2003): *Corydoras diphyes* (Siluriformes: Callichthyidae) and *Otocinclus mimulus* (Siluriformes: Loricariidae), two new species of catfishes from Paraguay, a case of mimetic association. *Ichthyological Exploration of Freshwaters* 14 (3): 249-272

- Azpelicueta, M. (1998): A new species of *Pimelodus* (Siluriformes: Pimelodidae) from the Paraguay and lower Paraná rivers. *Neotrópica* 44 (111/112): 87-94
- Azpelicueta, M. & H.A. Britski (2012): *Iheringichthys syi* (Siluriformes: Pimelodidae), a new pimelodid species from upper Paraná basin, Brazil. *Neotropical Ichthyology* 10 (1): 45-52
- Azpelicueta, M., C. Butí & G. García (2009): *Papiliolebias hatinne*, a new fish species (Cyprinodontiformes: Rivulidae) from Salta, Argentina. *Revue Suisse de Zoologie* 116 (3-4): 313-323
- Azpelicueta, M. & S. Koerber (2015): On some freshwater fish species reported by Perugia (1891) from Argentina. *Aqua - Journal of Ichthyology and Aquatic Biology* 21 (1): 39-46
- Azpelicueta, M., J.M. Mirande & G. Aguilera (2001): Evaluación ecológica rápida para el Parque Nacional Río Negro, Alto Paraguay, Paraguay. Guyra Paraguay. (Possibly unpublished data, but cited by Vera-Alcaraz 2005)
- Baigun, C.R.M., D. Colautti, H.L. López, P.A. van Damme & R.E. Reis (2012): Application of extinction risk and conservation criteria for assessing fish species in the lower La Plata River basin, South America. *Aquatic Conservation: Marine and Freshwater Ecosystems* 22: 181-197
- Barbero, A. (1923): Migración de peces en el río Paraguay. *Revista de la Sociedad Científica del Paraguay* 1: 55
- Barletta, M., A.J. Jauregizar, C. Baigun, N.F. Fontoura, A.A. Agostinho, V.M.F. Almeida-Val, A.L. Val, R.A. Torres, L.F. Jimenes-Segura, T. Giarrizzo, N.N. Fabre, V.S. Batista, C. Lasso, D.C. Taphorn, M.F. Costa, P.T. Chaves, J.P. Vieira & M.F.M. Correa (2010): Fish and aquatic habitat conservation in South America: a continental overview with emphasis on neotropical systems. *Journal of Fish Biology* 76: 2118-2176
- Barreira Mendonça, M., L.A.W. Peixoto, G.M. Dutra & A.L. Netto-Ferreira (2016): A new miniature of Xenobryconini (Characiformes: Characidae) from the rio Tapajós basin, Brazil. *Neotropical Ichthyology* 14 (1): 45-52
- Barros, V., L. Chamorro, G. Coronel & J. Baez (2004): The major discharge events in the Paraguay River: Magnitudes, source regions, and climate forcings. *Journal of Hydrometeorology* 5 (6): 1161-1170
- Benine, R. (2003): Genera incertae sedis in Characidae: *Moenkhausia*. 145-150. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Benine, R. & L. Casatti (2003): Genera incertae sedis in Characidae: *Psellogrammus*. p. 154. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Benine, R.C., B.F. Melo, R.M. C. Castro & C. Oliveira (2015): Taxonomic revision and molecular phylogeny of *Gymnocorymbus Eigenmann*, 1908 (Teleostei, Characiformes, Characidae). *Zootaxa* 3956 (1): 1-28
- Bertoni, A. (1914): Fauna Paraguaya. Catálogos sistemáticos de los vertebrados del Paraguay. Peces, batráquios, reptiles, aves y mamíferos conocidos hasta 1913. Asunción. 83 p.
- Bertoni, A. (1923): Migración de peces en el río Paraguay. *Revista de la Sociedad Científica del Paraguay* 1: 55
- Bertoni, A. (1928): Notas Zoológicas. El género *Brachyplatystoma* Bleeker en los ríos Paraná, y Paraguay. *Revista de la Sociedad Científica del Paraguay* 2: 185
- Bertoni, A. (1932): Peces nuevos para el Paraguay. *Revista de la Sociedad Científica del Paraguay* 3 (3): 103-104
- Bertoni, A. (1939): Catálogos sistemáticos de los vertebrados del Paraguay. *Revista de la Sociedad Científica del Paraguay* 4 (4): 1-60
- Bifi, A.G. (2013): Revisão taxonômica das espécies do grupo *Hoplias malabaricus* (Bloch, 1794) (Characiformes: Erythrinidae) da bacia do rio da Prata. PhD thesis, Universidade Estadual de Maringá. 51 p.
- Birindelli, J.L.O. & H.A. Britski (2013): Two new species of *Leporinus* (Characiformes: Anostomidae) from the Brazilian Amazon, and redescription of *Leporinus striatus* Kner, 1858. *Journal of Fish Biology* 83 (5): 1128-1160
- Birindelli, J.L.O. & M.H. Sabaj Pérez (2011): *Ossancora*, a new genus of thorny catfish (Teleostei: Siluriformes: Doradidae) with description of one new species. *Proceedings of the Academy of Natural Sciences of Philadelphia* 161: 117-152
- Bockmann, F.A. & G.M. Guazzelli (2003): Family Heptapteridae (Heptapterids). 406-431. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Boehlke, J. (1954): Studies on fishes of the family Characidae. 6. A synopsis of the Iguanodectinae. *Annals and Magazine of Natural History (Series 12)* 7 (15): 97-104
- Bonetto, A.A., D. Roldán, & M.E. Oliver (1978): Estudios limnológicos de la cuenca del Riachuelo (Corrientes, Argentina). I. Poblaciones de peces en ambientes leníticos y lóticos. *Ecosur* 5 (9): 1-15
- Borodin, N.A. (1927): Some new catfishes from Brazil. *American Museum Novitates* 266: 1-7
- Boulenger, G.A. (1895a): Viaggio del dottor Alfredo Borelli nella Repubblica Argentina e nel Paraguay. XII. Poissons. *Bollettino dei Musei di Zoologia ed Anatomia Comparata della R. Università di Torino* 10 (196): 1-3
- Boulenger, G.A. (1895b): Abstract of a report on a large collection of fishes formed by Dr. C. Ternetz in Matto Grosso and Paraguay, with descriptions of new species. *Proceedings of the Zoological Society of London* 1895 (3): 523-529
- Boulenger, G.A. (1896): On a collection of fishes from the Rio Paraguay. *Transactions of the Zoological Society of London* 14 (2): 25-39
- Boulenger, G.A. (1902): Descriptions of new fishes and reptiles discovered by Dr. F. Silvestri in South America. *Annals and Magazine of Natural History (Series 7)* 9 (52/47): 284-288
- Britski, H.A. & J.L.O. Birindelli (2008): Description of a new species of the genus *Leporinus* Spix (Characiformes: Anostomidae) from the rio Araguaia, Brazil, with comments on the taxonomy and distribution of *L. parae* and *L. lacustris*. *Neotropical Ichthyology* 6 (1): 45-51

- Britski, H.A., J.L.O. Birindelli & J.C. Garavello (2012): A new species of *Leporinus* Agassiz, 1829 from the upper Rio Paraná basin (Characiformes, Anostomidae) with redescription of *L. elongatus* Valenciennes, 1850 and *L. obtusidens* (Valenciennes, 1837). *Papéis Avulsos de Zoologia* 52 (37): 441-475
- Britski, H.A., & J.C. Garavello (2007): Família Anostomidae. 23-27. *In*: Buckup, P.A., N.A. Menezes & M. Sant'Anna Ghazzi (eds.): Catálogo das espécies de peixes de água doce do Brasil. Museu Nacional, Rio de Janeiro. 195 p.
- Buckup, P.A. (1992): Redescription of *Characidium fasciatum*, type species of the Characidiinae (Teleostei, Characiformes). *Copeia* 80 (4): 1066-1073
- Buckup, P.A. (1993): Phylogenetic interrelationships and reductive evolution in Neotropical characidiin fishes (Characiformes, Ostariophysi). *Cladistics* 9 (3): 305-341
- Buckup, P.A. (2003a): Genera incertae sedis in Characidae: *Astyanax*. 107-113. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Buckup, P.A. (2003b): Family Crenuchidae (South American darters). 87-95. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Buehrnheim, C.M. (2006): Sistemática de *Odontostilbe* Cope, 1870 com a proposição de uma nova tribo Odontostilbini e redefinição dos gêneros incertae sedis de Cheirodontinae (Ostariophysi: Characiformes: Characidae). PhD thesis, PUCRS. 315 p.
- Bueno Villafañe, D. & K. Núñez (2013): First record of *Hypostomus peckoltoides* (Siluriformes: Loricariidae) in Paraguay with comments on variations. *Boletín del Museo Nacional de Historia Natural del Paraguay* 17 (1): 67-71
- Buitrago-Suárez, U.A. (2006): Anatomía comparada y evolución de las especies de *Pseudoplatystoma* Bleeker 1862 (Siluriformes: Pimelodidae). *Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales* 30 (114): 117-141
- Buitrago-Suárez, U.A. & B.M. Burr (2007): Taxonomy of the catfish genus *Pseudoplatystoma* Bleeker (Siluriformes: Pimelodidae) with recognition of eight species. *Zootaxa* 1512: 1-38
- Burns, J.R., S.H. Weitzman & L.R. Malabarba (1997): Insemination in eight species of cheirodontine fishes (Teleostei: Characidae: Cheirodontinae). *Copeia* 85 (2): 433-438
- Calegari, B.B., W. Gill Morlis & R.E. Reis (2017): A new species of *Otothyropsis* (Siluriformes: Loricariidae) from the upper Río Paraná basin, Paraguay, with a discussion of the limits between *Otothyropsis* and *Hisonotus*. *Zootaxa* 4244 (2): 231-245
- Calegari, B.B., P. Lehmann & R.E. Reis (2011): A new species of *Otothyropsis* (Siluriformes: Loricariidae) from the rio Paraguay basin, Paraguay. *Neotropical Ichthyology* 9 (2): 253-260
- Calviño, P., D.O. Nadalin, M.J. Serio & H.L. López (2016): Colección ictiológica del Museo de la Plata: la familia Rivulidae. *ProBiota - serie técnica y didáctica* 36: 1-21
- Cardoso, A.R. (2008): Filogenia da família Aspredinidae Adams, 1854 e revisão taxonômica de Bunocephalinae Eigenmann & Eigenmann, 1888 (Teleostei: Siluriformes: Aspredinidae). PhD thesis. PUCRS. 259 p.
- Cardoso, A.R. (2010): *Bunocephalus erondinae*, a new species of banjo catfish from southern Brazil (Siluriformes: Aspredinidae). *Neotropical Ichthyology* 8 (3): 607-613
- Cardoso, Y.P., F. Brancolini, A. Paracampo, M. Lizarralde, R. Covain & J.I. Montoya-Burgos (2016): *Hypostomus formosae*, a new catfish species from the Paraguay river basin with redescription of *H. boulengeri* (Siluriformes: Loricariidae). *Ichthyological Exploration of Freshwaters* 27 (1): 9-23
- Carter, G.S. & L.C. Beadle (1931): The fauna of the swamps of the Paraguayan Chaco in relation to its environment. 2. Respiratory adaptations in the fishes. *Journal of the Linnean Society of London, Zoology* 37: 327-368
- Carvalho, F.R. (2011): Sistemática de *Hyphessobrycon* Durbin, 1908 (Ostariophysi: Characidae). PhD thesis. PUCRS. 340 p.
- Carvalho, F.R., V.A. Bertaco & F.C. Jerep (2010): *Hemigrammus tocantinsi*: a new species from the upper rio Tocantins basin, central Brazil (Characiformes: Characidae). *Neotropical Ichthyology* 8 (2): 247-254
- Carvalho, M.R., N.R. Lovejoy & R.S. Rosa (2003): Family Potamotrygonidae (River stingrays). 22-28. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Carvalho, F.R. & L.R. Malabarba (2015): Redescription and osteology of *Hyphessobrycon compressus* (Meek) (Teleostei: Characidae), type species of the genus. *Neotropical Ichthyology* 13 (3): 513-540
- Carvalho, F.R., R.E. Reis & M.H. Sabaj (2017): Description of a new blind and rare species of *Xylophius* (Siluriformes: Aspredinidae) from the Amazon basin using high-resolution computed tomography. *Copeia* 105 (1): 14-28
- Carvalho, T.P. (2008): Revisão taxonômica das espécies de *Hisonotus* Eigenmann & Eigenmann (Siluriformes: Loricariidae) da bacia do rio Uruguai e sistema da laguna dos Patos. MSc thesis, PUCRS. 260 p.
- Carvalho, T.P., C.S. Ramos & J.S. Albert (2011): A new species of *Gymnorhamphichthys* (Gymnotiformes: Rhamphichthyidae) from the Paraná-Paraguay basin. *Copeia* 99 (3): 400-406
- Casatti, L. (2001): Taxonomia do gênero Sul-Americano *Pachyurus* Agassiz, 1831 (Teleostei: Perciformes: Sciaenidae) e descrição de duas novas espécies. *Comunicações do Museu de Ciências da PUCRS* 14 (2): 133-178

- Casatti, L. (2003): Family Sciaenidae (Drums or croakers). 599-602. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Casatti, L. (2005): Revision of the South American freshwater genus *Plagioscion* (Teleostei, Perciformes, Sciaenidae). *Zootaxa* 1080: 39-64
- Castex, M.N. (1963): Breves noticias del genero *Potamotrygon* en la cuenca del Rio Paraguay y hallazgo de una nueva especie: el *Potamotrygon alba*. *In*: El género *Potamotrygon* en el Paraná medio. Anales del Museo Provincial de Ciencias Naturales "Florentino Ameghino," Sante Fe, Zoología 2 (1): 53-55
- Castex, M.N. (1968): Sanchez Labrador - Peces y aves del Paraguay Natural Ilustrado, 1767. Compañía General Fabril Editora, Buenos Aires. 511 p.
- Castex, M.N. & D.R. Yagolkowski (1970): Note on two fresh-water sting-rays species (Condrichthyes, Potamotrygonidae): a. Redescription of *Potamotrygon schroederi* Yopez, 1957. b. Designation of two paratypes of *P. pauckei* Castex, 1963 and their description. *Acta Scientifica, Universidad del Salvador* 9: 1-26
- Castro, R.M.C. & R.P. Vari (2003): Prochilodontidae (Fannel mouth characiforms). 65-70. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Castro, R.M.C. & R.P. Vari (2004): Detritivores of the South American fish family Prochilodontidae (Teleostei: Ostariophysi; Characiformes). A phylogenetic and revisionary study. *Smithsonian Contributions to Zoology* 622: 1-189
- Chernoff, B., D. Mandelburger, M. Medina, M. Toledo-Piza & J. Sarmiento (2001): List of fishes and the subregions where they were collected during the AquaRAP expedition to Departamento Alto Paraguay, Paraguay, in September 1997. Appendix 13. 143-147. *In*: Chernoff, B., P.W. Willink & J.R. Montambault (eds.): A biological assessment of the aquatic ecosystems of the Río Paraguay basin, Alto Paraguay, Paraguay. RAP Bulletin of Biological Assessment 19: 1-156
- Chernoff, B., P.W. Willink & A. Machado Allison (2004): Spatial partitioning of fishes in the río Paraguay, Paraguay. *Interciencia* 29 (4): 183-192
- Cognato, D., M.M. Richer-de-Forges, J.S. Albert & W.G.R. Crampton (2008): *Gymnotus chimarrao*, a new species of electric fish (Gymnotiformes: Gymnotidae) from southern Brazil. *Ichthyological Exploration of Freshwaters* 18 (4): 375-382
- Collette, B.B. (1974): South American freshwater needlefishes (Belonidae) of the genus *Pseudotyllosurus*. *Zoologische Mededelingen (Leiden)* 48 (16): 169-186
- Collette, B.B. (1982): South American freshwater needlefishes of the genus *Potamorhaphis* (Beloniformes: Belonidae). *Proceedings of the Biological Society of Washington* 95 (4): 714-747
- Compagno, L.J.V. & S.F. Cook (1995): The exploitation and conservation of freshwater elasmobranchs: status of taxa and prospects for the future. *In*: Oetinger, M.I. & G.D. Zorzi (eds.): The biology of freshwater elasmobranchs, a symposium to honor Thomas B. Thorson. *Journal of Aquaculture & Aquatic Sciences* 7: 62-90
- Costa, W.J.E.M. (1989): Descrição de um gênero e duas espécies novas de peixes anuais do centro da América do sul (Cyprinodontiformes, Rivulinae). *Comunicações do Museu de Ciências de PUCRS* 2 (10): 191-202
- Costa, W.J.E.M. (1995): Revision of the *Rivulus punctatus* species-complex (Cyprinodontiformes: Rivulidae). *Ichthyological Exploration of Freshwaters* 6 (3): 207-226
- Costa, W.J.E.M. (1998): Revision of the neotropical annual fish genus *Plesiolebias* (Cyprinodontiformes: Rivulidae). *Ichthyological Exploration of Freshwaters* 8 (4): 313-334
- Costa, W.J.E.M. (2003): Family Rivulidae (South American annual fishes). 526-548. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Costa, W.J.E.M. (2006a): The South American annual killifish genus *Austrolebias* (Teleostei: Cyprinodontiformes: Rivulidae): phylogenetic relationships, descriptive morphology and taxonomic revision. *Zootaxa* 1213: 1-162
- Costa, W.J.E.M. (2006b): Descriptive morphology and phylogenetic relationships among species of the Neotropical annual killifish genera *Nematolebias* and *Simpsonichthys* (Cyprinodontiformes: Aplocheiloidei: Rivulidae). *Neotropical Ichthyology* 4 (1): 1-26
- Costa, W.J.E.M. (2007): Taxonomic revision of the seasonal South American killifish genus *Simpsonichthys* (Teleostei: Cyprinodontiformes: Aplocheiloidei: Rivulidae). *Zootaxa* (1669): 1-134
- Costa, W.J.E.M. (2011): Phylogenetic position and taxonomic status of *Anablepsoides*, *Atlantirivulus*, *Cynodonichthys*, *Laimosemion*, and *Melanorivulus* (Cyprinodontiformes: Rivulidae). *Ichthyological Exploration of Freshwaters* 22 (3): 233-249
- Costa, W.J.E.M. (2015): Taxonomy of the seasonal killifish genus *Neofundulus* in the Brazilian Pantanal (Cyprinodontiformes: Rivulidae). *Vertebrate Zoology* 65 (1): 15-25
- Costa, W.J.E.M. (2016): Comparative morphology and classification of South American cynopoeciline killifishes (Cyprinodontiformes: Aplocheilidae), with notes on family-group names used for aplocheiloids. *Vertebrate Zoology* 66 (2): 125-140
- Crampton, W.G.R., C.D. de Santana, J.C. Waddell & N.R. Lovejoy (2016): A taxonomic revision of the Neotropical electric fish genus *Brachyhyppopomus* (Ostariophysi: Gymnotiformes: Hypopomidae), with descriptions of 15 new species. *Neotropical Ichthyology* 14 (4): 639-790

- Dagosta, F.C.P., M.M.F. Marinho & P. Camelier (2014): A new species of *Hyphessobrycon* Durbin (Characiformes: Characidae) from the middle rio São Francisco and upper and middle rio Tocantins basins, Brazil, with comments on its biogeographic history. *Neotropical Ichthyology* 12 (2): 365-375
- Dagosta, F.C.P., M.M.F. Marinho & R.C. Benine (2015): A new species of *Moenkhausia* Eigenmann (Characiformes: Characidae) from the upper rio Juruena basin, Central Brazil. *Zootaxa* 4032 (4): 417-425
- De Pinna, M.C.C & W. Wosiacki (2003): Family Trichomycteridae (Pencil or parasitic catfishes). 270-290. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- DeCelles, P.G., & W. Cavazza (1999): A comparison of fluvial megafans in the Cordilleran (Upper Cretaceous) and modern Himalayan foreland basin systems. *Geological Society of America Bulletin* 111 (9): 1315-1334
- Drennen, D. (1986): Peces del Arroyo Mina (Parque Nacional Ybycuí). *Boletín del Museo Nacional de Historia Natural del Paraguay* 8: 2
- Driver, C.S. (1919): On the Luciopimelodinae, a new subfamily of the South American Siluridae. *Proceedings of the American Philosophical Society* 58 (7): 448-456
- Ehlers, E. (1894): Ueber *Lepidosiren paradoxa* Fitz. und *articulata* n. sp. aus Paraguay. *Nachrichten von der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen* 1894 (2): 84-91
- Eigenmann, C.H. (1907): The poeciliid fishes of Rio Grande do Sul and the La Plata Basin. *Proceedings of the United States National Museum* 32 (1532): 425-433
- Eigenmann, C.H. (1908): Preliminary descriptions of new genera and species of tetragonopterid characins. *Bulletin of the Museum of Comparative Zoology* 52 (6): 91-106
- Eigenmann, C.H. (1910): Catalogue of the fresh-water fishes of tropical and south temperate America. *In*: Reports of the Princeton University expeditions to Patagonia 1896-1899. *Zoology*. 3 (4): 375-511
- Eigenmann, C.H. (1915a): The Serrasalminae and Mylinae. *Annals of the Carnegie Museum* 9 (3-4): 226-272
- Eigenmann, C.H. (1915b): The Cheirodontinae, a subfamily of minute characid fishes of South America. *Memoirs of the Carnegie Museum* 7 (1): 1-99
- Eigenmann, C.H. (1916): On *Apareiodon*, a new genus of characid fishes. *Annals of the Carnegie Museum* 10 (1-2): 71-76
- Eigenmann, C.H. (1917a): The American Characidae. Part 1. *Memoirs of the Museum of Comparative Zoology* 43 (1): 1-102
- Eigenmann, C.H. (1917b): New and rare species of South American Siluridae in the Carnegie Museum. *Annals of the Carnegie Museum* 11 (3-4): 398-404
- Eigenmann, C.H. (1917c): *Pimelodella* and *Typhlobagrus*. *Memoirs of the Carnegie Museum* 7 (4): 229-258
- Eigenmann, C.H. (1917d): Descriptions of sixteen new species of Pygidiidae. *Proceedings of the American Philosophical Society* 56: 690-703
- Eigenmann, C.H. (1918): The American Characidae. Part 2. *Memoirs of the Museum of Comparative Zoology* 43 (2): 103-208
- Eigenmann, C.H. (1921): The American Characidae. Part 3. *Memoirs of the Museum of Comparative Zoology* 43 (3): 209-310
- Eigenmann, C.H. (1925): A review of the Doradidae, a family of South American Nematognathi, or catfishes. *Transactions of the American Philosophical Society (New Series)* 22 (5): 280-365
- Eigenmann, C.H. (1927): The American Characidae. Part 4. *Memoirs of the Museum of Comparative Zoology* 43 (4): 311-428
- Eigenmann, C.H. & W.R. Allen (1942): Fishes of Western South America. I. The intercordilleran and Amazonian lowlands of Peru. II. The high pampas of Peru, Bolivia, and Northern Chile. With a revision of the Peruvian Gymnotidae, and of the genus *Orestias*. University of Kentucky. 494 p.
- Eigenmann, C.H. & R.S. Eigenmann (1889): A review of the Erythrininae. *Proceedings of the California Academy of Sciences (Series 2)* 2: 100-116
- Eigenmann, C.H. & R.S. Eigenmann (1891): A catalogue of the fresh-water fishes of South America. *Proceedings of the United States National Museum* 14 (842): 1-81
- Eigenmann, C.H. & H.G. Fisher (1917): On some species of *Rhamdia*, a genus of South American Siluridae, in the Carnegie Museum. *Annals of the Carnegie Museum* 11 (3/4): 394-397
- Eigenmann, C.H. & C.H. Kennedy (1903): On a collection of fishes from Paraguay, with a synopsis of the American genera of cichlids. *Proceedings of the Academy of Natural Sciences of Philadelphia* 55: 497-537
- Eigenmann, C.H., W.L. McAtee & D.P. Ward (1907): On further collections of fishes from Paraguay. *Annals of the Carnegie Museum* 4 (2): 110-157
- Eigenmann, C.H. & G.S. Myers (1929): The American Characidae. Part 5. *Memoirs of the Museum of Comparative Zoology* 43 (5): 429-558
- Eigenmann, C.H. & F. Ogle (1907): An annotated list of characin fishes in the United States National Museum and the Museum of Indiana University, with descriptions of new species. *Proceedings of the United States National Museum* 33 (1556): 1-36
- Eigenmann, C.H. & D.P. Ward (1905): The Gymnotidae. *Proceedings of the Washington Academy of Science*. 7: 159-188

- Ellis, M.D. (1911): On the species of *Hasemania*, *Hyphessobrycon*, and *Hemigrammus* collected by J. D. Haseman for the Carnegie Museum. *Annals of the Carnegie Museum* 8 (1/2): 148-163
- Ellis, M.M. (1913): The gymnotid eels of tropical America. *Memoirs of the Carnegie Museum* 6 (3): 109-195
- Eschmeyer, W.N. & J.D. Fong (2011): Pisces. 26-38. *In*: Zhang, Z.Q. (ed.): *Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness*. *Zootaxa* 3148: 1-237
- Eschmeyer, W.N., R. Fricke & R. van der Laan (2016): *Catalog of Fishes*. Version of 29.09.2016. <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>
- Etzel, V. (2003): Faszination Chaco - *Austrolebias chacoensis* im natuerlichen Lebensraum. *Aquaristik aktuell* 11 (1): 34-36
- Etzel, V. (2005): Naturerlebnis Chaco - Mit Freund Hessfeld auf der Suche nach dem Mennoniten-Faecherfisch *Austrolebias vanderbergi*. *DKG-Journal* 37 (6): 163-175.
- Etzel, V. (2012): Versuche zur Klaerung verwandtschaftlicher Beziehungen von unterschiedlichen Populationen und Anmerkungen zu Temperaturanspruechen von *Melanorivulus punctatus* aus Paraguay. *DKG-Journal* 44 (3): 74-79
- Fernandes, F.M.C., J.S. Albert, M. de F.Z. Daniel-Silva, C.E. Lopes, W.G.R. Crampton & L.F. Almeida-Toledo (2005): A new *Gymnotus* (Teleostei: Gymnotiformes: Gymnotidae) from the Pantanal Matogrossense of Brazil and adjacent drainages: continued documentation of a cryptic fauna. *Zootaxa* 933: 1-14
- Fernández, L. (2001): Nuevos registros de *Trichomycterus Valenciennes e Ituglanis* Costa y Bockmann (Teleostei: Siluriformes) en Argentina, Paraguay y Bolivia. *Neotrópica* 47: 103-105
- Ferraris, C.J. (2003a): Subfamily Loricariinae (Armored catfishes). 330-350. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): *CLOFFSCA - Check list of the freshwater fishes of South and Central America*. Edipucrs, Porto Alegre. 729 p.
- Ferraris, C.J. (2003b): Family Auchenipteridae (Driftwood catfishes). 471-483. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): *CLOFFSCA - Check list of the freshwater fishes of South and Central America*. Edipucrs, Porto Alegre. 729 p.
- Ferraris C.J. (2003c): Family Ramphichthyidae (Sand knifefishes). 493-494. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): *CLOFFSCA - Check list of the freshwater fishes of South and Central America*. Edipucrs, Porto Alegre. 729 p.
- Ferraris, C.J. (2007): Checklist of catfishes, recent and fossil (Osteichthyes: Siluriformes), and catalogue of siluriform primary types. *Zootaxa* 1418: 1-628
- Ferraris, C.J. & R.P. Vari (1999): The South American catfish genus *Auchenipterus* Valenciennes, 1840 (Ostariophysi: Siluriformes: Auchenipteridae): monophyly and relationships, with a revisionary study. *Zoological Journal of the Linnean Society* 126 (4): 387-450
- Ferreira, K.M. & F.C.T. Lima (2006): A new species of *Knodus* (Characiformes: Characidae) from the Rio Tiquié, Upper Rio Negro system, Brazil. *Copeia* 94 (4): 630-639
- Ferrer, J., L.M. Donin & L.R. Malabarba (2015): A new species of *Ituglanis* Costa & Bockmann, 1993 (Siluriformes: Trichomycteridae) endemic to the Tramandaí-Mampituba ecoregion, southern Brazil. *Zootaxa* 4020 (2): 375-389
- Fink, W.L. (1993): Revision of the piranha genus *Pygocentrus* (Teleostei, Characiformes). *Copeia* 81 (3): 665-687
- Fisch-Muller, S. (1999): *Systématique du genre Ancistrus* Kner (Teleostei: Loricariidae): approches morphologique et génétique. PhD thesis, University of Genève. 300 p.
- Fisch-Muller, S. (2003): Subfamily Ancistrinae (Armored catfishes). 373-400. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): *CLOFFSCA - Check list of the freshwater fishes of South and Central America*. Edipucrs, Porto Alegre. 729 p.
- Fisher, H.G. (1917): A list of the Hypophthalmidae, the Diplomystidae and of some unrecorded species of Siluridae in the collections of the Carnegie Museum. *Annals of the Carnegie Museum* 11 (3-4): 405-427
- Fitzinger, L.J.F.J. (1837): Vorlaeufiger Bericht ueber eine hoechst interessante Entdeckung Dr. Natterers in Brasil. *Isis* 30 (5): 379-380
- Fowler, H.W. (1918): A new characin from Paraguay. *Proceedings of the Academy of Natural Sciences of Philadelphia* 70: 141-143
- Fraser-Brunner, A. (1950): A revision of the fishes of the family Gasteropelecidae. *Annals and Magazine of Natural History (Series 12)* 3 (35/87): 959-970
- Friel, J.P. (1994): A phylogenetic study of the Neotropical banjo catfishes (Teleostei: Siluriformes: Aspredinidae). PhD thesis, Duke University. 256 p.
- Friel, J.P. (2003): Family Aspredinidae (Banjo catfishes). 261-267 *In*: Reis, R., S.O. Kullander & C.J. Ferraris jr. (eds.): *CLOFFSCA - Check list of the freshwater fishes of South and Central America*. Edipucrs, Porto Alegre, 729 p.
- Friel, J.P. & T.P. Carvalho (2016): A new species of *Amaralia* Fowler (Siluriformes: Aspredinidae) from the Paraná-Paraguay river basin. *Zootaxa* 4088 (4): 531-546
- Fúster de Plaza, M.L. (1962): Una nueva especie de anchoa de las aguas argentinas *Lycengraulis simulator* (Pisces: Engraulidae). *Physis* 23 (64): 1-9
- Garavello, J.C. & H.A. Britski (1990): Duas novas espécies do gênero *Schizodon* Agassiz da bacia do alto Paraná, Brasil, América do Sul (Ostariophysi, Anostomidae). *Naturalia* 15: 153-170

- Garavello, J.C. & H.A. Britski (2003): Family Anostomidae (Headstanders). 71-84. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- García, G., V. Gutiérrez, J. Vergara, P. Calviño, A. Duarte & M. Loureiro (2012): Patterns of population differentiation in annual killifishes from the Paraná-Uruguay-La Plata basin: the role of vicariance and dispersal. *Journal of Biogeography* 39 (9): 1707-1719, appendix S1
- Garutti, V. (2003): Revalidação de *Astyanax rupununi* Fowler, 1914 (Teleostei, Characidae) e descrição de duas espécies novas para o gênero. *Papéis Avulsos de Zoologia* 43 (1): 1-9
- Garutti, V. & H.A. Britski (2000): Descrição de uma espécie nova de *Astyanax* (Teleostei: Characidae) da bacia do Alto Rio Paraná e considerações sobre as demais espécies do gênero na bacia. *Comunicações do Museu de Ciências e Tecnologia da PUCRS, Sér. Zoologia* 13: 65-88
- Garutti, V. & F. Langeani (2009): Redescription of *Astyanax goyacensis* Eigenmann, 1908 (Ostariophysi: Characiformes: Characidae). *Neotropical Ichthyology* 7 (3): 371-376
- Garutti, V. & P.C. Venere (2009): *Astyanax xavante*, a new species of characid from middle rio Araguaia in the Cerrado region, Central Brazil (Characiformes: Characidae). *Neotropical Ichthyology* 7 (3): 377-383
- Géry, J. (1986): Notes de Characologie néotropical 1. Progrès dans la systématique des genres *Colossoma* et *Piaractus*. *Revue française d'Aquariologie Herpétologie* 12 (4): 97-102
- Géry, J. & V. Mahnert (1992): Notes sur quelques *Brycon* des bassins de l'Amazone, du Parana-Paraguay et du SudEst brésilien (Pisces, Characiformes, Characidae). *Revue suisse de Zoologie* 99 (4): 793-819
- Géry, J. & V. Mahnert (1993): *Hyphessobrycon pytai*, n. sp., une nouvelle espèce endémique du bassin du Rio Monday au Paraguay (Pisces, Ostariophysi, Characidae). *Revue française d'Aquariologie Herpétologie* 20 (2): 33-36
- Géry, J., V. Mahnert & C. Dlouhy (1987): Poissons Characoides non Characidae du Paraguay (Pisces, Ostariophysi). *Revue suisse de Zoologie* 94 (2): 357-464
- Gill Morlis, W.A. (1994): Ictiofauna del río Acaray. *Biota* 1: 1-13
- Gill Morlis, W.A. (1997): Peces del embalse de Itaipú. *Catálogo de species. Itaipú Binacional. Ciudad del Este, Paraguay.* 41 p.
- Giora, J. & L.R. Malabarba (2009): *Brachyhypopomus gauderio*, new species, a new example of underestimated species diversity of electric fishes in the southern South America (Gymnotiformes: Hypopomidae). *Zootaxa* 2093: 60-68
- Giora, J., L.R. Malabarba & W.G.R. Crampton (2008): *Brachyhypopomus draco*, a new sexually dimorphic species of Neotropical electric fish from southern South America (Gymnotiformes: Hypopomidae). *Neotropical Ichthyology* 6 (2): 159-168
- Gómez, S.E., C.A. Bentos & J.A. Ramirez (2004): Humans attacked by piranhas (Pisces: Serrasalminidae) in Buenos Aires Province, Argentina. *Aqua - Journal of Ichthyology and Aquatic Biology* 9 (1): 25-28
- Gosline, W.A. (1940): A revision of the Neotropical catfishes of the family Callichthyidae. *Stanford Ichthyological Bulletin* 2 (1): 1-29
- Gosse, J. P. (1976): Révision du genre *Geophagus* (Pisces Cichlidae). *Académie Royal des Sciences d'Outre-Mer, Classe des Sciences Naturelles et Médicales (N. S.)* 19 (3): 1-173
- Guentert, H. (1942): Beschreibung einiger zum Teil noch unbekannter suedamerikanischer Siluriden aus dem Naturhistorischen Museum in Basel. *Zoologischer Anzeiger* 138 (1/2): 27-40
- Guenther, A. (1862): Catalogue of the Acanthopterygii, Pharyngognathi and Anacanthini in the collection of the British Museum. *British Museum, London. Catalogue of the fishes in the British Museum* 4: 1-534
- Guenther, A. (1874): Descriptions of new species of fishes in the British Museum. *Annals and Magazine of Natural History (Series 4)* 14 (84/55): 453-455
- Haseman, J.D. (1911): An annotated catalog of the cichlid fishes collected by the expedition of the Carnegie Museum to central South America, 1907-10. *Annals of the Carnegie Museum* 7 (3-4/18): 329-373
- Heckel, J.J. (1840): Johann Natterer's neue Flussfische Brasiliens nach den Beobachtungen und Mittheilungen des Entdeckers beschrieben (Erste Abtheilung, Die Labroiden). *Annalen des Wiener Museums der Naturgeschichte* 2: 325-471
- Henn, A.W. (1916): On various South American poeciliid fishes. *Annals of the Carnegie Museum* 10 (1-2/9): 93-142
- Holmberg, E.L. (1891): Sobre algunos peces nuevos ó poco conocidos de la República Argentina. *Revista Argentina de Historia Natural* 1: 180-193
- Howes, G.J. (1982): Review of the genus *Brycon* (Teleostei: Characoidei). *Bulletin of the British Museum (Natural History) Zoology* 43 (1): 1-47
- Hrbek, T. & A. Larson (1999): The Evolution of diapause in the killifish family Rivulidae (Atherinomorpha, Cyprinodontiformes): A molecular phylogenetic and biogeographic perspective. *Evolution* 53 (4): 1200-1216
- Huber, J.H. (1995): Nouvelles collections de cyprinodontes paraguayens, avec description de 4 espèce rivulines inédites et redécouverte d'une espèce à la localité typique jusqu'alors indéterminée. *Killi-Contact - Périodique bimestriel Spec. publ.*: 1-25
- Hubert, N., & J.F. Renno (2006): Historical biogeography of South American freshwater fishes. *Journal of Biogeography* 33 (8): 1414-1436

- Insaurralde, M., M. Barreto & A. Frutos (2012): Comunidad de especies de peces en ríos interiores del Paraguay. *Compendio de Ciencias Veterinarias* 2 (2): 16-21
- Insaurralde, M., E. Balbuena & A. Frutos (2013): Variedades de peces del lago Ypacarai. *Compendio de Ciencias Veterinarias* 3 (2): 13-21
- ICZN - International Commission of Zoological Nomenclature (1999): International code of zoological nomenclature. Fourth edition. The International Trust for Zoological Nomenclature. 306 p.
- Iriondo, M. (1993): Geomorphology and late quaternary of the Chaco (South America). *Geomorphology* 7 (4): 289-303
- Iriondo, M., F. Colombo & D. Kroehling (2000): El abanico aluvial del Pilcomayo, Chaco (Argentina-Bolivia-Paraguay): características y significado sedimentario. *Geogaceta* 28: 79-82
- Iriondo, M.H. & A.R. Paira (2007): Physical geography of the basin. 7-31. *In: Iriondo, M.H., J.C. Paggi & M.J. Parma (eds): The Middle Paraná River. Springer Verlag. 382 p.*
- Isbruecker, I.J.H. (1979): Descriptions préliminaires de nouveaux taxa de la famille des Loricariidae, poissons-chats cuirassés néotropicaux, avec un catalogue critique de la sous-famille nominale (Pisces, Siluriformes). *Revue française d'Aquariologie Herpétologie* 5 (4): 86-117
- Isbruecker, I.J.H. & H. Nijssen (1979): Three new South American mailed catfishes of the genera *Rineloricaria* and *Loricariichthys* (Pisces, Siluriformes, Loricariidae). *Bijdragen tot de Dierkunde* 48 (2): 191-211
- IUCN (2010): IUCN Red List categories. Version 3.1. IUCN, Gland, Switzerland, and Cambridge, United Kingdom
- Jarduli, L.R. & O.A. Shibatta (2013): Description of a new species of *Microglanis* (Siluriformes: Pseudopimelodidae) from the Amazon basin, Amazonas State, Brazil. *Neotropical Ichthyology* 11 (3): 507-512
- Jégu, M. (2003): Subfamily Serrasalminae (Pacus and piranhas). 182-196. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.*
- Jégu, M. & G.M. dos Santos (2001): Mise au point à propos de *Serrasalmus spilopleura* Kner, 1858 et réhabilitation de *S. maculatus* Kner, 1858 (Characidae: Serrasalminae). *Cybiurn* 25 (2): 119-143
- Jerep, F.C. & L.R. Malabarba (2014): A new species of *Serrapinnus* Malabarba, 1998 (Characidae: Cheirodontinae) from Rio Grande do Norte State, northeastern Brazil. *Neotropical Ichthyology* 12 (2): 301-308
- Jerep, F.C., O.A. Shibatta & C.H. Zawadzki (2007): A new species of *Hypostomus* Lacépède, 1803 (Siluriformes: Loricariidae) from the upper rio Paraná basin, southern Brazil. *Neotropical Ichthyology* 5 (4): 435-442
- Kerr, J.G. (1898a): Notes on the dry-season habits of *Lepidosiren*. *Proceedings of the Zoological Society of London* 1898 (1): 42-44
- Kerr, J.G. (1898b): Exhibition of specimens of *Lepidosiren* and other fishes collected in the Gran Chaco of Paraguay. *Proceedings of the Zoological Society of London* 1898 (3): 492
- Knaack, J. (2002): Ein neuer Prachthexenwels aus Paraguay: *Hemiloricaria aurata* n. sp. (Pisces, Siluriformes, Loricariidae). *Aquaristik Aktuell* 11 (1): 56-61
- Knaack, J. (2003a): *Corydoras ellisae* Gosline, 1940: Ueber das Vorkommen und Verbreitung des Langschnauzigen Zweipunkt-Panzerwelses im suedoestlichen Paraguay. *Das Aquarium* 37 (1/403): 6-13
- Knaack, J. (2003b): Anmerkungen von Dr. Joachim Knaack zum Diskussionsbeitrag von Koerber & Litz. *Das Aquarium* 37 (5/407): 16-18
- Knaack, J. (2004a): Beschreibung von sechs neuen Arten der Gattung *Corydoras* La Cépède, 1803 (Teleostei: Siluriformes: Callichthyidae). *Zoologische Abhandlungen* 54: 55-105.
- Knaack, J. (2004b): Ergaenzende Bemerkungen zu *Corydoras diphyes* Axenrot & Kullander, 2003 (Teleostei: Siluriformes: Callichthyidae) aus Paraguay. *Zoologische Abhandlungen* 54: 107-135
- Knaack, J. (2006): Beitrage zur Kenntnis der Callichthyidae (Teleostei: Siluriformes). I. Ergaenzende Beschreibung von *Lepthoplosternum pectorale* (Boulenger, 1895). Teil 1. *Zoologische Abhandlungen* 56: 49-80
- Knaack, J. (2008): Beitrage zur Kenntnis der Callichthyidae (Teleostei: Siluriformes). V. Festlegung des Neotypus und des locus typicus von *Callichthys callichthys* (Linnaeus, 1758). *Vertebrate Zoology* 58 (1): 21-31
- Koch, W.R. (2002): Revisão taxonômica do gênero *Homodiaetus* (Teleostei, Siluriformes, Trichomycteridae). *Iheringia, Série Zoologia* 92 (3): 33-46
- Koerber, S. & M. Azpelicueta (2014): Correction of the spelling of *Trichomycterus eichhorniarum* Miranda Ribeiro, 1912 (Siluriformes: Trichomycteridae). *Zootaxa* 3852 (5): 599-600
- Kullander, S.O. (1981): Cichlid fishes from the La Plata basin. Part I. Collections from Paraguay in the Muséum d'Histoire naturelle de Genève. *Revue suisse de Zoologie* 88 (3): 675-692
- Kullander, S.O. (1982a): Cichlid fishes from the La Plata basin. Part II. *Apistogramma commbrae* (Regan, 1906). *Revue suisse de Zoologie* 89 (1): 33-48
- Kullander, S.O. (1982b): Cichlid fishes from the La Plata basin. Part III. The *Crenicichla lepidota* species group (Teleostei: Cichlidae). *Revue suisse de Zoologie* 89 (3): 627-661
- Kullander, S.O. (1983a): Cichlid fishes from the La Plata basin. Part IV. Review of the *Apistogramma* species, with description of a new species (Teleostei, Cichlidae). *Zoologica Scripta* 11 (4): 307-313
- Kullander, S.O. (1983b): A revision of the South American cichlid genus *Cichlasoma* (Teleostei: Cichlidae). *Naturhistoriska Riksmuseet, Stockholm*, 296 p.
- Kullander, S.O. (1986): Cichlid fishes of the Amazon River drainage of Peru. *Swedish Museum of Natural History*. 431 p.

- Kullander, S.O. (2003a): Family Synbranchidae (Swamp-eels). 594-595. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Kullander, S.O. (2003b): Family Cichlidae (cichlids). 605-654. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Kullander, S.O. (2009): *Crenicichla mandelburgeri*, a new species of cichlid fish (Teleostei: Cichlidae) from the Paraná River drainage in Paraguay. *Zootaxa* 2006: 41-50
- Kullander, S.O. & E.J.G. Ferreira (2006): A review of the South American cichlid genus *Cichla*, with descriptions of nine new species (Teleostei: Cichlidae). *Ichthyological Exploration of Freshwaters* 17 (4): 289-398
- Kullander, S.O. & C.A.S. Lucena (2006): A review of the species of *Crenicichla* (Teleostei: Cichlidae) from the Atlantic coastal rivers of southeastern Brazil from Bahia to Rio Grande do Sul states, with descriptions of three new species. *Neotropical Ichthyology* 4 (2): 127-146
- Kullander, S.O. & C.A.S. Lucena (2013): *Crenicichla gillmorlisi*, a new species of cichlid fish (Teleostei: Cichlidae) from the Paraná river drainage in Paraguay. *Zootaxa* 3641 (2): 149-164
- Kullander, S.O. & A.M.C. Silfvergrip (1991): Review of the South American cichlid genus *Mesonauta* Guenther (Teleostei, Cichlidae) with descriptions of two new species. *Revue suisse de Zoologie* 98 (2): 407-448
- Langeani, F. (2003): Family Hemiodontidae (Hemiodontids). 96-100. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Langeani, F., Z.M.S. Lucena, J.L. Pedrini & F.J. Tarelho-Pereira (2005): *Bryconamericus turiuba*, a new species from the upper Rio Paraná system (Ostariophysi: Characiformes). *Copeia* 93 (2): 386-392
- Lankester, E.R. (1896): On the *Lepidosiren* of Paraguay, and on the external characters of *Lepidosiren* and *Protopterus*. *Transactions of the Zoological Society of London* 14 (1): 11-24
- Lehmann A.P, F. Mayer & R.E. Reis (2010): Re-validation of *Otocinclus arnoldi* Regan and reappraisal of *Otocinclus* phylogeny (Siluriformes: Loricariidae). *Neotropical Ichthyology* 8 (1): 57-68
- Lehmann, P.C. & R.E. Reis (2004): *Callichthys serralabium*, a new species of neotropical catfish from the upper Orinoco and Negro Rivers (Siluriformes: Callichthyidae). *Copeia* 92 (2): 336-343
- Lima, F.C.T. (2003a): Genera incertae sedis in Characidae: *Piabarchus*. 153-154. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Lima, F.C.T. (2003b): Genera incertae sedis in Characidae: *Salminus*. p. 156. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Lima, F.C.T. (2003c): Subfamily Bryconinae (Characins, tetras). 174-181. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Lima, F.C.T. (2017): A revision of the cis-andean species of the genus *Brycon* Mueller & Troschel (Characiformes: Characidae). *Zootaxa* 4222 (1): 1-189
- Lima, F.C.T. & L.R. Malabarba (2003): Genera incertae sedis in Characidae: *Hyphessobrycon*. 134-141. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Lima, F.C.T. & O.T. Oyakawa (2003): Genera incertae sedis in Characidae: *Hemigrammus*. 130-134. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Lima, F.C.T. & L.M. Sousa (2009): A new species of *Hemigrammus* from the upper rio Negro basin, Brazil, with comments on the presence and arrangement of anal-fin hooks in *Hemigrammus* and related genera (Ostariophysi: Characiformes: Characidae). *Aqua - International Journal of Ichthyology* 15 (3): 153-168
- Littmann, M.W. (2007): Systematic review of the Neotropical shovelnose catfish genus *Sorubim* Cuvier (Siluriformes: Pimelodidae). *Zootaxa* 1422: 1-29
- Littmann, M.W., M. Azpelicueta, J.A. Vanegas-Rios & J.G. Lundberg (2015): Holotype-based validation, redescription and continental-scale range extension of the South American catfish species *Hypophthalmus oremaculatus* Nani and Fuster, 1947, with additional information on *Hypophthalmus edentatus* Spix and Agassiz, 1829 (Siluriformes, Pimelodidae). *Proceedings of the Academy of Natural Sciences of Philadelphia* 164 (1):159-176
- Loboda, T.S. (2016): New records of two ocellated species of the genus *Potamotrygon* Garman, 1877 (Chondrichthyes: Myliobatiformes: Potamotrygonidae) for Paraguay and Bolivia. *Ichthyological Contributions of PecesCriollos* 45: 1-8
- López, H.L. & A.M. Miquelarena (1991): Los Hypostominae (Pisces, Loricariidae) de Argentina. *Profadu* 40 (2): 1-64
- Loureiro, M. (2004): Sistemática y biogeografía de los peces anuales de la subtribu Cynolebiatina (Cyprinodontiformes: Rivulidae: Cynolebiatinae). PhD thesis. PEDECIBA, Uruguay. 119 p.
- Lovejoy, N.R. & B.B. Collette (2003): Family Belontiidae (Needlefishes). 586-588. *In*: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.

- Lucena, C.A.S. (1987): Revisão e redefinição do gênero neotropical *Charax* Scopoli, 1777 com a descrição de quatro espécies novas (Pisces; Characiformes; Characidae). *Comunicações do Museu de Ciências da PUCRS* 40: 1-124
- Lucena, C.A.S. (2003): Revisão taxonômica e relações filogenéticas das espécies de *Roeboides* grupo-*microlepis* (Ostariophysi, Characiformes, Characidae). *Iheringia, Série Zoologia* 93 (3): 283-308
- Lucena, C.A.S. (2007): Revisão taxonômica das espécies do gênero *Roeboides* grupo-*affinis* (Ostariophysi, Characiformes, Characidae). *Iheringia, Zoologia* 97 (2): 117-136
- Lucena, C.A.S. & N.A. Menezes (2003): Subfamily Characinae (Characins, tetras). 200-208. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.*
- Lucena, C.A.S. & H.G. Soares (2016): Review of species of the *Astyanax bimaculatus* "caudal peduncle spot" subgroup sensu Garutti & Langeani (Characiformes, Characidae) from the río de la Plata and rio São Francisco drainages and coastal systems of southern Brazil and Uruguay. *Zootaxa* 4072 (1): 101-125
- Lucifora, L.O., S.A. Barbini, S. Llamazares Vegh, P.A. Scarabotti, F. Vargas, A. Solari, E. Mabragna & J.M. Díaz de Astarloa (2015): Geographic distribution of the short-tailed river stingray (*Potamotrygon brachyura*): assessing habitat loss and fishing as threats to the world's largest obligate freshwater elasmobranch. *Marine and Freshwater Research*, published online first, 16 p., <http://dx.doi.org/10.1071/MF15003>
- Lucinda, P.H.F. (2003): Family Poeciliidae (Livebearers). 555-581. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.*
- Lucinda, P.H.F. (2005): Systematics of the genus *Cnesterodon* Garman, 1895 (Cyprinodontiformes: Poeciliidae: Poeciliinae). *Neotropical Ichthyology* 3 (2): 259-270
- Lucinda, P.H.F. (2008): Systematics and biogeography of the genus *Phalloceros* Eigenmann, 1907 (Cyprinodontiformes: Poeciliidae: Poeciliinae), with the description of twenty-one new species. *Neotropical Ichthyology* 6 (2): 113-158
- Lucinda, P.H.F. (2017): First confirmed records of the guppy, *Poecilia reticulata*, from Paraguay. *Ichthyological Contributions of PecesCriollos* 51: 1-4
- Lucinda, P.H.F., R.S. Rosa & R.E. Reis (2005): Systematics and biogeography of the genus *Phallotorynus* Henn, 1916 (Cyprinodontiformes: Poeciliidae: Poeciliinae), with description of three new species. *Copeia* 93 (3): 609-631
- Lucinda, P.H.F. & R.P. Vari (2009): New *Steindachnerina* species (Teleostei: Characiformes: Curimatidae) from the Rio Tocantins Drainage. *Copeia* 97 (1): 142-147
- Lujan, N.K., J.W. Armbruster, N.R. Lovejoy & H. López-Fernández (2015): Multilocus molecular phylogeny of the suckermouth armored catfishes (Siluriformes: Loricariidae) with a focus on subfamily Hypostominae. *Molecular Phylogenetics and Evolution* 82 (A): 269-288
- Lundberg, J.G. & W.M. Dahdul (2008): Two new cis-Andean species of the South American catfish genus *Megalonema* allied to trans-Andean *Megalonema xanthum*, with description of a new subgenus (Siluriformes: Pimelodidae). *Neotropical Ichthyology* 6 (3): 439-454
- Lundberg, J.G. & M.W. Littmann (2003): Family Pimelodidae (Long-whiskered catfishes). 432-446. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.*
- Mahnert, V. (1987): Paraguay - das wiederentdeckte Fischparadies. *Das Aquarium* 21 (11/221): 564-570
- Mahnert, V. & J. Géry (1984): Poissons Characoides (Characoidea) du Paraguay. I: *Xenobrycon macropus* Myers et Miranda Ribeiro. *Revue suisse de Zoologie* 91 (2): 497-513
- Mahnert, V. & J. Géry (1987): Deux nouvelles espèces du genre *Hypessobrycon* (Pisces, Ostariophysi, Characidae) du Paraguay: *H. guarani* n. sp. et *H. procerus* n. sp. *Bonner Zoologische Beitrage* 38 (4): 307-314
- Mahnert, V. & J. Géry (1988): Les genres *Piabarchus* Myers et *Creagrutus* Gunther du Paraguay, avec la description de deux nouvelles especes (Pisces, Ostariophysi, Characidae). *Revue Francaise d'Aquariologie Herpetologie* 15 (1): 1-8
- Makrakis, M.C., L.E. Miranda, S. Makrakis, D.R. Fernandez, J.O. Garcia & J.H.P. Dias (2007): Movement patterns of armado, *Pterodoras granulosus*, in the Paraná river basin. *Ecology of Freshwater Fish* 16 (3): 410-416
- Malabarba, L.R. (1998): Monophyly of the Cheirodontinae, characters and major clades (Ostariophysi: Characidae). 193-233. *In: Malabarba, L.R., R.E. Reis, R.P. Vari, Z.M.S. de Lucena & C.A.S. Lucena (eds): Phylogeny and classification of Neotropical fishes. Edipucrs, Porto Alegre. 603 p.*
- Malabarba, L.R. (2003a): Genera incertae sedis in Characidae: *Mixobrycon*. p. 145. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.*
- Malabarba, L.R. (2003b): Genera incertae sedis in Characidae: *Prionobrama*. p. 154. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.*
- Malabarba, L.R. (2003c): Subfamily Cheirodontinae (Characins, tetras). 215-221. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.*

- Malabarba, L.R. & F.C. Jerep (2014): Review of the species of the genus *Serrapinnus* Malabarba, 1998 (Teleostei: Characidae: Cheirodontinae) from the rio Tocantins-Araguaia basin, with description of three new species. *Zootaxa* 3847 (1): 57-79
- Malabarba, M.C.S.L. (2004): Revision of the neotropical genus *Triportheus* Cope, 1872 Characiformes: Characidae). *Neotropical Ichthyology* 2 (4): 167-204
- Malabarba, M.C.S.L. & F.C.T. Lima (2003): Genera incertae sedis in Characidae: *Triportheus*. 157-158. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Mandelburger, D., M. Medina & O. Romero Martínez (1996): Los peces del inventario biológico nacional. 285-330. In: Romero Martínez, O. (ed.): Colecciones de flora y fauna del Museo Nacional de Historia Natural del Paraguay. MNHNP, Asunción. 573 p.
- Martins, F.O. & F. Langeani (2012): *Hisonotus piraicanjuba*, a new species of Hypoptopomatinae (Siluriformes: Loricariidae) from the rio Paranaíba, upper rio Paraná system, central Brazil. *Ichthyological Exploration of Freshwaters* 23 (1): 29-36
- Melo, F.A.G. de & P.A. Buckup (2006): *Astyanax henseli*, a new name for *Tetragonopterus aeneus* Hensel, 1870 from southern Brazil (Teleostei: Characiformes). *Neotropical Ichthyology* 4 (1): 45-52
- Menezes, N.A. (1976): On the Cynopotaminae, a new subfamily of Characidae (Osteichthyes, Ostariophysi, Characoidei). *Arquivos de Zoologia* 28 (2): 1-91
- Menezes, N.A. (1987a): Três espécies novas de *Oligosarcus* Guenther, 1864 e redefinição taxonômica das demais espécies do gênero (Osteichthyes, Teleostei, Characidae). *Boletim de Zoologia* 11: 1-39
- Menezes, N.A. (1987b): Three new species of the characid genus *Cynopotamus* Valenciennes, 1849, with remarks on the remaining species (Pisces, Characiformes). *Beaufortia* 37 (1): 1-9
- Menezes, N.A. (1992): Redefinição taxonômica das espécies de *Acestrorhynchus* do grupo *lacustris* com a descrição de uma espécie (Osteichthyes, Characiformes, Characidae). *Comunicações do Museu de Ciências de PUCRS* 5: 39-54
- Menezes, N.A. (2003): Genera incertae sedis in Characidae: *Oligosarcus*. 151-152. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Menezes, N.A. & C.A.S. de Lucena (2014): A taxonomic review of the species of *Charax* Scopoli, 1777 (Teleostei: Characidae: Characinae) with description of a new species from the rio Negro bearing superficial neuromasts on body scales, Amazon basin, Brazil. *Neotropical Ichthyology* 12 (2): 193-228
- Menezes, N.A. & S.H. Weitzman (1990): Two new species of *Mimagoniates* (Teleostei: Characidae: Glandulocaudinae), their phylogeny and biogeography and a key to the glandulocaudin fishes of Brazil and Paraguay. *Proceedings of the Biological Society of Washington* 103 (2): 380-426
- Menezes, N.A. & S.H. Weitzman (2009): Systematics of the Neotropical fish subfamily Glandulocaudinae (Teleostei: Characiformes: Characidae). *Neotropical Ichthyology* 7 (3): 295-370
- Meyer, M.K. & V. Etzel (2006): Studies on *Phallotorynus fasciolatus* Henn, 1916 and *P. victoriae* Oliveros, 1983, with remarks on additional recognized species and ecology of the genus (Teleostei: Cyprinodontiformes: Poeciliidae). *Zoologische Abhandlungen* 56: 81-89
- Miquelarena, A.M. & H.L. López (2006): *Hyphessobrycon togoi*, a new species from the La Plata basin (Teleostei: Characidae) and comments about the distribution of the genus in Argentina. *Revue suisse de Zoologie* 113 (4): 817-828
- Miquelarena, A.M. & H.L. López (2010): *Hyphessobrycon nicolasi* (Teleostei: Characidae) a new species from the Uruguay River basin in the Mesopotamian Region, Argentina. *Neotropical Ichthyology* 8 (1): 1-6
- Miquelarena, A.M., L.C. Protogino, J. Ponte Gómez & H.L. López (2012): Catálogo de la colección ictiológica del Instituto de Limnología "Dr. Raúl A. Ringuelet". Part 2. *Biología Acuática* 28: 1-114
- Miranda Ribeiro, A. (1913-1915): Fauna brasiliense. Peixes. Tomo V. [Eleutherobranchios aspirophoros]. *Physoclisti*. *Arquivos do Museu Nacional de Rio de Janeiro* 17: 1-679
- Mirande J.M. (2010): Phylogeny of the family Characidae (Teleostei: Characiformes) from characters to taxonomy. *Neotropical Ichthyology* 8 (3): 385-568
- Mirande, J.M. (2016): Combined phylogeny of ray-finned fishes (Actinopterygii) and the use of morphological characters in large-scale analyses. *Cladistics* (early view online 11.Aug.2016): 1-18. doi: 10.1111/cla.12171
- Mirande, J.M., G. Aguilera & M. Azpelicueta (2007): A new species of *Astyanax* (Characiformes: Characidae) from the endorheic Río Salí basin, Tucumán, northwestern Argentina. *Zootaxa* 1646: 31-39
- Mirande, J.M., M. Azpelicueta & G. Aguilera (2006): Redescription of *Astyanax correntinus* (Holmberg, 1891) (Teleostei: Characiformes: Characidae), more than one hundred years after original description. *Zoologische Abhandlungen* 55: 9-15
- Mirande, J.M. & S. Koerber (2015): On some species of *Astyanax* reported erroneously from Argentina. *Ichthyological Contributions of PecesCriollos* 35: 1-8
- Mol, J.H., R.P. Vari, R. Covain, P.W. Willink & S. Fisch-Muller (2012): Annotated checklist of the freshwater fishes of Suriname. *Cybum* 36 (1): 263-292
- Moreira, C. (2002): Relações filogenéticas em Iguanodectinae (Teleostei; Characiformes; Characidae). PhD thesis, Universidade de São Paulo, Brazil. 276 p.

- Moreira, C. (2003): Subfamily Iguanodectinae (Characins, tetras). 172-173. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Muller, S. (1989): Description de deux nouvelles espèces paraguayennes du genre *Ancistrus* Kner, 1854 (Pisces, Siluriformes, Loricariidae). *Revue suisse de Zoologie* 96 (4): 885-904
- Myers, G.S. (1935): Four new fresh-water fishes from Brazil, Venezuela and Paraguay. *Proceedings of the Biological Society of Washington* 48: 7-14
- Nakagawa, R.K. (2012): O gênero *Triportheus* Cope 1872 (Teleostei; Characiformes; Characidae): aspectos taxonômicos, distribuição geográfica e estudo da musculatura cefálica. PhD thesis, Universidade de São Paulo. 133 p.
- Neris, N., C. Koehn, F. Villalba, G. Ruiz Díaz & G. Franco (2008): Guía ilustrada de los peces más comunes del Paraguay. Ed. Zamphiropolos, Asunción. 252 p.
- Neris, N., F. Villalba, D. Kamada & S. Viré (2010): Guía de peces del Paraguay. Itaipú Binacional / natura vita, Asunción, Paraguay. 299 p.
- Neto, C.S. (2014): Sistemática do genero *Ochmacanthus*: um grupo de bagres neotropicais lepidófagos (Teleostei: Siluriformes: Trichomycteridae). MSc thesis, University of Sao Paulo. 221 p.
- Neto, C.S. & M. de Pinna (2016): Redescription of *Ochmacanthus batrachostoma* (Miranda-Ribeiro, 1912) (Siluriformes: Trichomycteridae): a possible case of incipient paedomorphism. *Neotropical Ichthyology* 14 (1): 27-36
- Neumann, D. (2011): Type catalogue of the ichthyological collection of the Zoologische Staatssammlung Muenchen. Part II. Fish types inventoried after 25 April 1944. *Spixiana* 34 (2): 231-286
- Nijssen, H. & I.J.H. Isbruecker (1980): A review of the genus *Corydoras* Lacépède, 1803 (Pisces, Siluriformes, Callichthyidae). *Bijdragen tot de Dierkunde* 50 (1): 190-220
- Norman, J.R. (1929): The South American characid fishes of the subfamily Serrasalmoninae, with a revision of the genus *Serrasalmus*, Lacepède. *Proceedings of the Zoological Society of London* 98 (4/52): 781-829
- Ortí, G., A. Sivasundar, K. Dietz & M. Jégu (2008): Phylogeny of the Serrasalminae (Characiformes) based on mitochondrial DNA sequences. *Genetics and Molecular Biology* 31 (1, suppl.): 343-351
- Ota, R.P., F.C.T. Lima & C.S. Pavanelli (2014): A new species of *Hemigrammus* Gill, 1858 (Characiformes: Characidae) from the rio Madeira and rio Paraguai basins, with a redescription of *H. lunatus*. *Neotropical Ichthyology* 12 (2): 265-279
- Ota, R.P., F.C.T. Lima & C.S. Pavanelli (2015): A new species of *Hemigrammus* Gill, 1858 (Characiformes: Characidae) from the central and eastern Amazon and rio Paraná-Paraguai basins. *Zootaxa* 3948 (2): 218-232
- Ota, R.P., L.H. Rapp Py-Daniel & M. Jégu (2016): A new Silver Dollar species of *Metynnis* Cope, 1878 (Characiformes: Serrasalminae) from Northwestern Brazil and Southern Venezuela. *Neotropical Ichthyology* 14 (4): 803-814
- Oyakawa, O.T. (2003): Family Erythrinidae (Trahiras). 238-140. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Paixão, A.C. (2012): Revisão taxonômica e filogenia do gênero *Loricariichthys* Bleeker, 1862 (Ostariophysi: Siluriformes: Loricariidae). PhD thesis, Universidade de São Paulo. 289 p.
- Pavanelli, C.S. (1999): Revisão taxonômica da família Parodontidae (Ostariophysi: Characiformes). PhD thesis, Universidad Federal de Sao Carlos. 332 p.
- Pavanelli, C.S. (2003a): Family Parodontidae (Parodontids). 46-50. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Pavanelli, C.S. (2003b): Genera incertae sedis in Characidae: *Markiana*. p. 144. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Pavanelli, C.S. & A.G. Bifi (2009): A new *Tatia* (Ostariophysi: Siluriformes: Auchenipteridae) from the rio Iguçu basin, Paraná state, Brazil. *Neotropical Ichthyology* 7 (2): 199-204
- Perdices, A., I. Doadrio & E. Bermingham (2005): Evolutionary history of synbranchid eels (Teleostei: Synbranchidae) in Central America and the Caribbean islands inferred from their molecular phylogeny. *Molecular Phylogenetics and Evolution* 37: 460-473
- Perugia, A. (1891): Appunti sopra alcuni pesci sud-americani conservati nel Museo Civico di Storia Naturale di Genova. *Annali del Museo Civico di Storia Naturale di Genova (Serie 2)* 10: 605-657
- Perugia, A. (1897): Di alcuni pesci raccolti nell' alto Paraguay dal Cav. Guido Boggiani. *Annali del Museo Civico di Storia Naturale di Genova (Serie 2)* 18: 147-150
- Pezzi da Silva, J.F. (2003a): Genera incertae sedis in Characidae: *Bryconamericus*. 115-119. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Pezzi da Silva, J.F. (2003b): Genera incertae sedis in Characidae: *Knodus*. 143-144. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Piorski, N.M., J.C. Garavello, M. Arce & M.H. Sabaj Pérez (2008): *Platydoras brachylecis*, a new species of thorny catfish (Siluriformes: Doradidae) from northeastern Brazil. *Neotropical Ichthyology* 6 (3): 481-494

- Ploeg, A. (1991): Revision of the South American cichlid genus *Crenicichla* Heckel, 1840, with description of fifteen new species and consideration on species groups, phylogeny and biogeography (Pisces, Perciformes, Cichlidae). PhD thesis, University of Amsterdam. 153 p.
- Ramlow, J. (1989): Lista de peces y sitios de colección de la sección de ictiología del Inventario Biológico Nacional/ MNHNP Junio 1980-Diciembre 1988. Boletín del Museo Nacional de Historia Natural del Paraguay 9: 2-38
- Ramos, R.T.C. (1998): Estudo filogenético da família Achiridae (Teleostei: Pleuronectiformes: Pleuronectoidei), com a revisão das formas de água doce da América do Sul cisandina e a reavaliação do monofiletismo de Soleomorpha ("Soleoidei"). PhD thesis, Universidade de São Paulo. 160 p.
- Ramos, R.T.C. (2003): Family Achiridae (American soles). 666-669. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Ramos, R.T.C., T.P.A. Ramos & P.R.D. Lopes (2009): New species of *Achirus* (Pleuronectiformes: Achiridae) from northeastern Brazil. Zootaxa 2113: 55-62
- Regan, C.T. (1904): A monograph of the fishes of the family Loricariidae. Transactions of the Zoological Society of London 17 (3/1): 191-350
- Regan, C.T. (1905a): A revision of the fishes of the South-American cichlid genera *Acara*, *Nannacara*, *Acaropsis*, and *Astronotus*. Annals and Magazine of Natural History (Series 7) 15 (88): 329-347
- Regan, C.T. (1905b): A revision of the fishes of the South-American cichlid genera *Crenacara*, *Batrachops*, and *Crenicichla*. Proceedings of the Zoological Society of London 1905 (1): 152-168
- Regan, C.T. (1906): A revision of the South-American cichlid genera *Retroculus*, *Geophagus*, *Heterogramma*, and *Biotoecus*. Annals and Magazine of Natural History (Series 7) 17 (97): 49-66
- Regan, C.T. (1907): Descriptions of two new characinid fishes from South America. Annals and Magazine of Natural History (Series 7) 20 (119/52): 402-403
- Regan, C.T. (1912a): A revision of the South American characid fishes of the genera *Chalceus*, *Pyrrhulina*, *Copeina*, and *Pogonocharax*. Annals and Magazine of Natural History (Series 8) 10 (58): 387-395
- Regan, C.T. (1912b): A revision of the poeciliid fishes of the genera *Rivulus*, *Pterolebias* and *Cynolebias*. Annals and Magazine of Natural History (Series 8) 10 (59): 494-508
- Reis, R.E. (1989): Systematic revision of the neotropical characid subfamily Stethaprioninae (Pisces, Characiformes). Comunicações do Museu de Ciências de PUCRS 2 (6): 3-86
- Reis, R.E. (1997): Revision of the Neotropical catfish genus *Hoplosternum* (Ostariophysi: Siluriformes: Callichthyidae), with the descriptions of two new genera and three new species. Ichthyological Exploration of Freshwaters 7 (4): 299-326
- Reis, R.E. (2003a): Subfamily Stethaprioninae (Silver dollar tetras). 209-211. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Reis, R.E. (2003b): Subfamily Tetragonopterinae (Characins, tetras). p. 212. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Reis, R.E. (2003c): Family Callichthyidae (Armored catfishes). 291-309. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Reis, R.E. (2013): Conserving the freshwater fishes of South America. International Zoo Yearbook 47: 65-70
- Reis, R.E., J.S. Albert, F. Di Dario, M.M. Mincarone, P. Petry & L.A. Rocha (2016): Fish biodiversity and conservation in South America. Journal of Fish Biology 89: 12-47
- Reis, R.E. & L.R. Malabarba (1988): Revision of the neotropical cichlid genus *Gymnogeophagus* Ribeiro, 1918, with descriptions of two new species (Pisces, Perciformes). Revista Brasileira de Zoologia 4 (4): 259-305
- Reis, R.E., L.R. Malabarba & C.S. Pavanelli (1992): *Gymnogeophagus setequeadas*, a new cichlid species (Teleostei: Labroidei) from middle rio Paraná system, Brazil and Paraguay. Ichthyological Exploration of Freshwaters 3 (3): 265-272
- Reis, R.E. & E.H.L. Pereira (2000): Three new species of the loricariid catfish genus *Loricariichthys* (Teleostei: Siluriformes) from southern South America. Copeia 88 (4): 1029-1047
- Reis, R.E., C. Weber & L.R. Malabarba (1990): Review of the genus *Hypostomus* Lacepède, 1803 from southern Brazil, with descriptions of three new species (Pisces: Siluriformes: Loricariidae). Revue suisse de Zoologie 97 (3): 729-766
- Reis, R.E., P.Y. Le Bail & J.H.A. Mol (2005): New arrangement in the synonymy of *Megalechis* Reis, 1997 (Siluriformes: Callichthyidae). Copeia 93 (3): 678-682
- Retzer, M.E. & L.M. Page (1997): Systematics of the stick catfishes, *Farlowella* Eigenmann & Eigenmann (Pisces, Loricariidae). Proceedings of the Academy of Natural Sciences of Philadelphia 147: 33-88
- Ribeiro, F.R.V. (2011): Sistemática do gênero *Ageneiosus* La Cépède (Siluriformes; Auchenipteridae). PhD thesis, Instituto Nacional de Pesquisas da Amazônia. 355 p.
- Ribeiro, A.C. & N.A. Menezes (2015): Phylogenetic relationships of the species and biography of the characid genus *Oligosarcus* Guenther, 1864 (Ostariophysi, Characiformes, Characidae). Zootaxa 3949 (1): 41-81

- Ribeiro, F.R.V., L.H. Rapp Py-Daniel & S.J. Walsh (2017): Taxonomic revision of the South American catfish genus *Ageneiosus* (Siluriformes: Auchenipteridae) with the description of four new species. *Cladistics* (early view online 09.Feb.2017): 1-91. doi: 10.1111/jfb.13246
- Říčan, O. & S.O. Kullander (2006): Character- and tree-based delimitation of species in the '*Cichlasoma*' *facetum* group (Teleostei, Cichlidae) with the description of a new genus. *Journal of Zoological Systematics and Evolutionary Research* 44: 136-152
- Říčan, O. & S.O. Kullander (2008): The *Australoheros* (Teleostei: Cichlidae) species of the Uruguay and Paraná River drainages. *Zootaxa* 1724: 1-51
- Richer-de-Forges, M.M., W.G.R. Crampton & J.S. Albert (2009): A new species of *Gymnotus* (Gymnotiformes, Gymnotidae) from Uruguay: description of a model species in neurophysiological research. *Copeia* 97 (3): 538-544
- Rodríguez, M.S. & A.M. Miquelarena (2005): Una nueva especie de *Loricaria* (Siluriformes, Loricariidae) para la cuenca del río San Francisco, Jujuy, Argentina. *Anales de la Academia Nacional de Ciencias Exactas, Físicas y Naturales Buenos Aires* 55: 139-149
- Rosa, R.S. (1985): A systematic revision of the South American freshwater stingrays (Chondrichthyes: Potamotrygonidae). PhD thesis, The College of William and Mary, Williamsburg. 523 p.
- Rosen, D.E. & P.H. Greenwood (1976): A fourth neotropical species of synbranchid eel and the phylogeny and systematics of synbranchiform fishes. *Bulletin of the American Museum of Natural History* 157 (1): 1-69
- Rosen, D.E. & A. Rumney (1972): Evidence of a second species of *Synbranchus* (Pisces, Teleostei) in South America. *American Museum Novitates* 2497: 1-45
- Sabaj, M.H. (2002): Taxonomy of the Neotropical thorny catfishes (Siluriformes: Doradidae) and revision of genus *Leptodoras*. PhD thesis, University of Illinois at Urbana-Champaign. 424 p.
- Sabaj, M.H., O. A. Aguilera S. & J.G. Lundberg (2007): Fossil catfishes of the families Doradidae and Pimelodidae (Teleostei: Siluriformes) from the Miocene Urumaco formation of Venezuela. *Proceedings of the Academy of Natural Sciences of Philadelphia* 156 (1): 157-194
- Sabaj, M.H. & C.J. Ferraris (2003): Family Doradidae (Thorny catfishes). 457-470. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris* (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Sabaj, M.H., D.C. Taphorn & O.E. Castillo G. (2008): Two new species of thicklip thornycats, genus *Rhinodoras* (Teleostei: Siluriformes: Doradidae). *Copeia* 96 (1): 209-226
- Sanchez Labrador, F.J. (1767): El libro de los peces. *In: Castex, M.N.* (1968): Sanchez Labrador - Peces y aves del Paraguay Natural Ilustrado, 1767. Compañía General Fabril Editora, Buenos Aires. 511 p.
- Sarmiento-Soares, L.M. & R.F. Martins-Pinheiro (2008): A systematic review of *Tatia* (Siluriformes: Auchenipteridae: Centromochlinae). *Neotropical Ichthyology* 6 (3): 495-542
- Schaefer, F. (2015): Aquafauna: *Rhamphichthys hahni*. *Aquaristik-Fachmagazin* 47 (4/244): 89-90
- Schaefer, S.A. (1987) Osteology of *Hypostomus plecostomus* (Linnaeus), with a phylogenetic analysis of the loricariid subfamilies (Pisces: Siluroidei). *Contributions in Science* 394: 1-31
- Schaefer, S.A. (1997): The neotropical cascudinhos: systematics and biogeography of the *Otocinclus* catfishes (Siluriformes: Loricariidae). *Proceedings of the Academy of Natural Sciences of Philadelphia* 148: 1-120
- Schaefer, S.A. (2003a): Family Hypoptopomatinae (Armored catfishes). 321-329. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris* (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Schaefer, S.A. (2003b): Family Scoloplacidae (Spiny dwarf catfishes). 310-311. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris* (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Schaefer, S.A., S.H. Weitzman & H.A. Britski (1989): Review of the neotropical catfish genus *Scoloplax* (Pisces: Loricarioidea: Scoloplacidae) with comments on reductive characters in phylogenetic analysis. *Proceedings of the Academy of Natural Sciences of Philadelphia* 141: 181-211
- Schindler, I. & V. Etzel (2008): Re-description and distribution of *Rivulus punctatus* Boulenger, 1895 (Teleostei: Rivulidae) and its habitats in Paraguay. *Vertebrate Zoology* 58 (1): 33-43
- Schindler, O. (1937): Eine neue Fischart (Characidae) aus Nordostparaguay. *Anzeiger der Akademie der Wissenschaften in Wien* 74 (13): 106-107
- Schindler, O. (1938): Ueber die Fischebeute der 3. Suedamerika-Expedition Prof. Kriegs. *Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin* 1938 (8-10): 268-302
- Schultz, L.P. (1950): Review of thirteen genera of South American fishes in the subfamilies Cynodontinae, Hepsetinae, and Characinae, with the description of a new *Cyrtocharax*. *Studies honoring Trevor Kincaid*. Seattle, Washington. 44-73
- Serra, J.P. & F. Langeani (2006): Redescricao e osteologia de *Bryconamericus exodon* Eigenmann, 1907 (Ostariophysi, Characiformes, Characidae). *Biota Neotrópica* 6 (3): 1-14
- Severi, W. & N.F. Verani (2006): Morphological development of *Pellona flavipinnis* post-yolk-sac larvae and juveniles (Clupeiformes: Pristigasteridae). *Zootaxa* 1126: 21-33
- Shibatta, O.A. (2003): Family Pseudopimelodidae (Bumblebee catfishes, dwarf marbled catfishes). 401-405. *In: Reis, R.E., S.O. Kullander & C.J. Ferraris* (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.

- Shibatta, O.A. (2016): A new species of bumblebee catfish of the genus *Microglanis* (Siluriformes: Pseudopimelodidae) from the upper rio Paraguay basin, Brazil. *Neotropical Ichthyology* 14 (3): 525-531
- Sidlauskas, B.L., J.C. Garavello & J. Jellen (2007): A new *Schizodon* (Characiformes: Anostomidae) from the Río Orinoco system, with a redescription of *S. isognathus* from the Río Paraguay system. *Copeia* 95 (3): 711-725
- Sidlauskas, B.L. & R.P. Vari (2008): Phylogenetic relationships within the South American fish family Anostomidae (Teleostei, Ostariophysi, Characiformes). *Zoological Journal of the Linnean Society* 154: 70-210
- Sidlauskas, B.L. & R.P. Vari (2012): Diversity and distribution of anostomoid fishes (Teleostei: Characiformes) throughout the Guianas. *Cybio* 36 (1): 71-103
- Silfvergrip, A.M.C. (1996): A systematic revision of the neotropical catfish genus *Rhamdia* (Teleostei, Pimelodidae). Stockholm. 156 p.
- Soneira, P., J.R. Casciotta, A.E. Almirón, L. Ciotek & P. Giorgis (2010): Redescription of *Astyanax erythropterus* (Holmberg, 1891) (Teleostei: Characiformes: Characidae) from La Plata basin in Argentina. *Neotropical Ichthyology* 8 (4): 779-785
- Souza-Lima, R. (2003a): Subfamily Aphyocharacinae (Characins). 197-199. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Souza-Lima, R. (2003b): Revisao taxonômica do genero *Aphyocharax* Guenther, 1868 (Aphyocharacinae, Characidae, Ostariophysi). PhD thesis. Universidade de Sao Paulo. 282 p.
- Staack, W. (2006): *Gymnogeophagus caaguazuensis* sp. n. - a new species of cichlid fish (Teleostei: Perciformes: Cichlidae) from the drainage of the lower rio Paraguay in Paraguay. *Zoologische Abhandlungen* 56: 99-105
- Stevaux, J.C. (1994): The upper Paraná River (Brazil): Geomorphology, sedimentology, and paleoclimatology. *Quaternary International* 21: 143-161
- Sullivan, J.P. (1997): A phylogenetic study of the neotropical hypopomid electric fishes (Gymnotiformes: Rhamphichthyoidea). PhD thesis. Duke University. 336 p.
- Tagliacollo, V.A. (2011): Sistemática filogenética da subfamília Aphyocharacinae (Characiformes, Characidae). PhD thesis. Universidade Estadual Paulista. 61 p.
- Taylor, J.N. (1983): Field observations on the reproductive ecology of three species of armored catfishes (Loricariidae: Loricariinae) in Paraguay. *Copeia* 71 (1): 257-259
- Tencatt, L.F.C. & W.M. Ohara (2016): Two new species of *Corydoras* Lacépède, 1803 (Siluriformes: Callichthyidae) from the rio Madeira basin, Brazil. *Neotropical Ichthyology* 14 (1): 139-154
- Tencatt L.F.C. & C.S. Pavanelli (2015): Redescription of *Corydoras guapore* Knaack, 1961 (Siluriformes: Callichthyidae), a midwater Corydoradinae species from the rio Guaporé basin. *Neotropical Ichthyology* 13 (2): 287-296
- Tencatt, L.F.C., C.H. Zawadzki & O. Froehlich (2014): Two new species of the *Hypostomus cochliodon* group (Siluriformes: Loricariidae) from the rio Paraguay basin, with a redescription of *Hypostomus cochliodon* Kner, 1854. *Neotropical Ichthyology* 12 (3): 585-602
- Thomas, M.R., M.S. Rodrigues, M.R. Cavallaro, G. Froehlich & R. Macedo Corrêa e Castro (2013): *Loricaria luciae*, a new species of whiptail catfish (Siluriformes: Loricariidae) from the Paraguay and lower Paraná River basins of southeastern South America. *Zootaxa* 3745 (3): 365-378
- Toledo-Piza, M. (2000): The Neotropical fish subfamily Cynodontinae (Teleostei: Ostariophysi: Characiformes): a phylogenetic study and a revision of *Cynodon* and *Rhaphiodon*. *American Museum Novitates* 3286: 1-88
- Toledo-Piza, M. (2003): Family Cynodontidae (Cynodontids). 234-237. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Tortonese, E. (1942): Ricerche ed osservazioni sui Caracidi delle sottofamiglie Tetragonopterinae, Glandulocaudinae e Stethaprioninae (Teleostei Plectospondyli). *Bollettino dei Musei di Zoologia e di Anatomia comparata della reale Università di Torino* (Ser. 4) 49 (117): 11-86
- Uj, A. (1987): Les Cheirodontinae (Characidae, Ostariophysi) du Paraguay. *Revue suisse de Zoologie* 94 (1): 129-175
- Uj, A. & J. Géry (1989): Deux nouvelles espèces de tetras (poissons characoïdes, Characidae auct., Tetragonopterinae) du Paraguay: *Hyphessobrycon arianae* n. sp. et *Hemigrammus mahnerti* n. sp. *Revue suisse de Zoologie* 96 (1): 147-15
- Vanegas-Ríos, J.A. (2016): Taxonomic review of the Neotropical genus *Gephyrocharax* Eigenmann, 1912 (Characiformes, Characidae, Stevardiinae). *Zootaxa* 4100 (1): 1-92
- Varella, H.R. (2011): Revisão taxonômica das espécies de *Crenicichla* Heckel das bacias dos rios Paraná e Paraguai (Teleostei: Cichlidae). MSc thesis, University of São Paulo. 194 p.
- Vari, R.P. (1982): *Curimatopsis myersi*, a new curimatid characiform fish (Pisces: Characiformes) from Paraguay. *Proceedings of the Biological Society of Washington* 95 (4): 788-792
- Vari, R.P. (1984): Systematics of the neotropical characiform genus *Potamorhina* (Pisces: Characiformes). *Smithsonian Contributions to Zoology* 400: 1-36
- Vari, R.P. (1989): Systematics of the neotropical characiform genus *Psectrogaster* Eigenmann and Eigenmann (Pisces: Characiformes). *Smithsonian Contributions to Zoology* 481: 1-43
- Vari, R.P. (1991): Systematics of the neotropical characiform genus *Steindachnerina* Fowler (Pisces, Ostariophysi). *Smithsonian Contributions to Zoology* 507: 1-118

- Vari, R.P. (1992a): Systematics of the neotropical characiform genus *Curimatella* Eigenmann and Eigenmann (Pisces, Ostariophysi), with summary comments on the Curimatidae. Smithsonian Contributions to Zoology 533: 1-48
- Vari, R.P. (1992b): Systematics of the neotropical Characiform genus *Cyphocharax* Fowler (Pisces, Ostariophysi). Smithsonian Contributions to Zoology 529: 1-137
- Vari, R.P. (2003): Family Curimatidae (Toothless characiforms). 51-64. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Vari, R.P. & C.J. Ferraris (1998): The neotropical catfish genus *Epapterus* Cope (Siluriformes: Auchenipteridae): a reappraisal. Proceedings of the Biological Society of Washington 111 (4): 992-1007
- Vari, R.P. & C.J. Ferraris (2003): Family Cetopsidae (Whale catfishes). 257-260. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Vari, R.P., C.J. Ferraris & M.C.C. de Pinna (2005): The neotropical whale catfishes (Siluriformes: Cetopsidae: Cetopsinae), a revisionary study. Neotropical Ichthyology 3 (2): 127-238
- Vari, R.P. & A.S. Harold (2001): Phylogenetic study of the neotropical fish genera *Creagrutus* Guenther and *Piabina* Reinhardt (Teleostei: Ostariophysi: Characiformes), with revision of the Cis-Andean species. Smithsonian Contributions to Zoology 613: 1-239
- Vari, R.P. & A. Harold (2003a): Genera incertae sedis in Characidae: *Creagrutus*. 121-126. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Vari, R.P. & A. Harold (2003b): Genera incertae sedis in Characidae: *Piabina*. p. 154. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Vari, R.P., S.L. Jewett, D.C. Taphorn & C.R. Gilbert (1984): A new catfish of the genus *Epapterus* (Siluriformes: Auchenipteridae) from the Orinoco River basin. Proceedings of the Biological Society of Washington 97 (2): 462-472
- Vari, R.P. & A.M. Williams (1987): Headstanders of the neotropical anostomid genus *Abramites* (Pisces: Characiformes: Anostomidae). Proceedings of the Biological Society of Washington 100 (1): 89-103
- Vera, H. (2005): Ictiofauna del río Paraguay. 25-39. In: Luna, L., A. Yanosky, R.P. Clay & C. Morales (eds): Conocimiento de la biodiversidad paraguaya en el río Paraguay. Transbarga Navegación / Asociación Guyra Paraguay. Asunción. 111 p.
- Vera, H. & H. del Castillo (2006): Peces del Río Paraguay. 40-58. In: Morales, C., A. Yanoski, L. Luna, E. Cabrera & S. Centrón (eds.). Biodiversidad del Río Paraguay. Asunción, Guyra Paraguay-Transbarga Navegación. 122 p.
- Vera-Alcaraz, H.S. (2013): Phylogenetic systematics of armored catfishes of the family Callichthyidae (Siluriformes, Loricariodea). PhD thesis, PUCRS. 362 p.
- Vera-Alcaraz, H.S., W.J. da Graça & O.A. Shibatta (2008): *Microglanis carlae*, a new species of bumblebee catfish (Siluriformes: Pseudopimelodidae) from the río Paraguay basin in Paraguay. Neotropical Ichthyology 6 (3): 425-432
- Vera-Alcaraz, H.S. & J.D. Emhart Vuletich (2016): Records of clupeiform fishes from Paraguay. Ichthyological Contributions of PecesCriollos 46: 1-6
- Vera-Alcaraz, H.S., C.S. Pavanelli & C.H. Zawadzki (2012): Taxonomic revision of the *Rineloricaria* species (Siluriformes: Loricariidae) from the Paraguay River basin. Neotropical Ichthyology 10 (2): 285-311
- Vera-Alcaraz, H.S., G. Rios & J.D. Emhart Vuletich (2017): Confirmation of the occurrence for seven fish species in Paraguay. Ichthyological Contributions of PecesCriollos 49: 1-9
- Walsh, S.J. (1990): A systematic revision of the neotropical catfish family Ageneiosidae (Teleostei: Ostariophysi: Siluriformes). PhD thesis. University of Florida. 364 p.
- Weber, C. (1985): *Hypostomus dlouhyi*, nouvelle espèce de poisson-chat cuirassé du Paraguay (Pisces, Siluriformes, Loricariidae). Revue suisse de Zoologie 92 (4): 955-968
- Weber, C. (1986a): Revision de *Hypostomus boulengeri* (Eigenmann & Kennedy), et deux espèces nouvelles de poissons-chats du Paraguay (Pisces, Siluriformes, Loricariidae). Revue suisse de Zoologie 93 (4): 979-1007
- Weber, C. (1986b): Les poissons-chats cuirassés de la sous-famille des Hypostominae du Paraguay. MSc thesis, University of Nancy. 95 p.
- Weber, C. (1987): *Hypostomus microstomus* sp. nov. et autres poissons-chats cuirassés du Río Paraná (Pisces, Siluriformes, Loricariidae). Archives des Sciences (Geneva) 40 (3): 273-284
- Weber, C. (1992): Révision du genre *Pterygoplichthys* sensu lato (Pisces, Siluriformes, Loricariidae). Revue française d'Aquariologie Herpétologie 19 (1-2): 1-36
- Weber, C. (2003): Subfamily Hypostominae (Armored catfishes). 351-372 In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.) Check list of the freshwater Fishes of South and Central America. Edipucrs, Porto Alegre, 729 p.
- Weber, C. & J.I. Montoya-Burgos (2002): *Hypostomus fonchii* sp. n. (Siluriformes: Loricariidae) from Peru, a key species suggesting the synonymy of *Cochliodon* with *Hypostomus*. Revue Suisse de Zoologie 109 (2): 355-368
- Weber, C., S. Muller & V. Mahnert (1992): Harnischwelse Paraguays. 10-13. In: Stawikowski, R. (ed.): DATZ - Sonderheft Harnischwelse [DATZ special issue Loricariids].

- Weiss, F.E. (2013): Sistemática e taxonomia de *Hyphessobrycon luetkenii* (Boulenger, 1887) (Characiformes: Characidae). PhD thesis, Universidade Federal do Rio Grande do Sul. 211 p.
- Weitzman, M.J. (1985): *Hyphessobrycon elachys*, a new miniature characid from eastern Paraguay (Pisces: Characiformes). Proceedings of the Biological Society of Washington 98 (4): 799-808
- Weitzman, M. & S.H. Weitzman (2003): Family Lebiasinidae (Pencil fishes). 241-251. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Weitzman, S.H. (1960): Further notes on the relationships and classification of the South American characid fishes of the subfamily Gasteropelecinae. Stanford Ichthyological Bulletin 7 (4): 217-239
- Weitzman, S.H. (2003): Subfamily Glandulocaudinae (Characins, tetras). 222-230. In: Reis, R.E., S.O. Kullander & C.J. Ferraris (eds.): CLOFFSCA - Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre. 729 p.
- Weitzman, S.H. & J.R. Burns (1997): The miniature glandulocaudine tetras, tribe Xenurobryconini. Tropical Fish Hobbyist 45 (6): 136-149
- Weitzman, S.H. & S.V. Fink (1985): Xenurobryconin phylogeny and putative pheromone pumps in glandulocaudine fishes (Teleostei: Characidae). Smithsonian Contributions to Zoology 421: 1-121
- Weitzman, S.H., N.E. Menezes & J.E. Burns (1996): Species of the glandulocaudine tetra tribe Glandulocaudini: The genus *Mimagoniates*. Part 1. Tropical Fish Hobbyist 44 (6/480): 184-194 | Part 2. 44 (8/482): 179-194 | Part 3. 44 (9/483): 195-210
- Weitzman, S.H., N.A. Menezes, H.G. Evers & J.R. Burns (2005): Putative relationships among inseminating and externally fertilizing characids, with a description of a new genus and species of Brazilian inseminating fish bearing an anal-fin gland in males (Characiformes: Characidae). Neotropical Ichthyology 3 (3): 329-360
- Weitzman, S.H. & L. Palmer (1997): A new species of *Hyphessobrycon* (Teleostei: Characidae) from the Neblina region of Venezuela and Brazil, with comments on the putative 'rosy tetra clade'. Ichthyological Exploration of Freshwaters 7 (3): 209-242
- Zarske, A. (2003): Geschichtliche Entwicklung und vorläufige, kritische kommentierte Typusliste der ichthyologischen Sammlung der Staatlichen Naturhistorischen Sammlungen Dresden, Museum fuer Tierkunde. Zoologische Abhandlungen 53: 5-36
- Zarske, A. (2012a): Das Typusmaterial der Characiformes des Museums fuer Naturkunde zu Berlin. Teil 2a (3) Suedamerikanische Characiformes im weiteren Sinne (Teleostei: Ostariophysi: Characiformes: Parodontidae, Curimatidae, Prochilodontidae, Anostomidae, Chilodontidae, Crenuchidae, Hemiodontidae). Vertebrate Zoology 61 (1): 19-77
- Zarske, A. (2012b): Das Typusmaterial der Characiformes des Museums fuer Naturkunde zu Berlin. Teil 2b (3) Suedamerikanische Characiformes im weiteren Sinne (Teleostei: Ostariophysi: Characiformes: Serrasalminidae, Acestrorhynchidae, Erythrinidae, Lebiasinidae). Vertebrate Zoology 62 (3): 297-356
- Zarske, A. & J. Géry (1999): Revision der neotropischen Gattung *Metynnis* Cope, 1878. 1. Evaluation der Typusexemplare der nominellen Arten (Teleostei: Characiformes: Serrasalminidae). Zoologische Abhandlungen 50 (13): 170-216
- Zarske, A. & J. Géry (2001a): *Pyrrhulina elongata* sp. n. - ein neuer Salmier aus dem Einzugsgebiet des Rio Tapajós in Brasilien (Teleostei: Characiformes: Lebiasinidae). Zoologische Abhandlungen 51 (2): 15-21
- Zarske, A. & J. Géry (2001b): Beschreibung von drei neuen Arten der Gattung *Characidium* Reinhardt, 1866 aus Bolivien und Paraguay (Teleostei: Characiformes: Characidiidae). Zoologische Abhandlungen 51 (16): 229-246
- Zarske, A. & J. Géry (2004): Zur Variabilität von *Pyrrhulina australis* Eigenmann & Kennedy, 1903 (Teleostei: Characiformes: Lebiasinidae). Zoologische Abhandlungen 54: 39-54

recommended form for reference:

Koerber, S., H.S. Vera-Alcaraz & R.E. Reis (2017): Checklist of the Fishes of Paraguay (CLOFPY). Ichthyological Contributions of PecesCriollos 53: 1-99 available as pdf-file at www.pecescrilloos.de since 19.April.2017