

Fish fauna from Río Pilcomayo National Park and Ramsar Site and its surroundings, Formosa, Argentina

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ABSTRACT: The first list of fish species from the Río Pilcomayo National Park and Ramsar Site (RPNP), located in the Wet Chaco plains of Northern Argentina is presented here. Samplings were carried out bimonthly from December 2006 to January 2008 in sites representative of the different landscapes, in both dry and wet seasons. A total of 77 species were collected, belonging to 23 families and eight orders and covering 54% of the province ichthyofauna. New records to the Province of Formosa are *Brachyhyppopomus gauderio* Giora & Malabarba, 2009; *Cyanocharax* sp. and *Hypophthalmus edentatus* Spix & Agassiz, 1829.

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INTRODUCTION

The northeastern corner of Formosa province belongs to the wet plains of the Great Chaco region, whose fish fauna is well known for their particular adaptations to seasonal environments (Carter and Beadle 1931). Its ichthyological composition was summarized by Menni (2004), but none of the previous studies has taken into account differences in landscape structure and seasonality. The main objective of this paper is to document the fish fauna of the Río Pilcomayo National Park and Ramsar Site, based on year round inventories which involved different landscape patterns and hydrological conditions.

MATERIALS AND METHODS

Study Area

The Río Pilcomayo National Park and Ramsar Site (RPNP) is located in the northeastern corner of Formosa province, northern Argentina (Figure 1), comprising 55,000 ha in the Wet Chaco ecoregion (Burkart *et al.* 1999; Abell *et al.* 2008) and in the Great Rivers Province (López *et al.* 2008). The RPNP area comprises a mosaic of different wetland types of fluvial origin within the Lower Pilcomayo River basin. All wetland types are connected by local flooding of the Lower Pilcomayo or by surface runoff during the rainy season, most aquatic environments are isolated or even dry out during the dry season (Bucher and Chani 1998).

Wetland landscapes

Six different landscapes representative of the wetland environments of the RPNP and its neighbouring areas were identified by means of satellite image interpretation, and checked in the field (Figure 2).

The following landscapes were found within the National Park borders:

Río Pilcomayo (L1): Corresponds to the main channel of the Lower Pilcomayo River, its current meander belt with backwaters, and its short tributary creeks. High water season takes place generally in the summer with water levels increasing between 5–8 m, overflowing to neighboring landscapes. Dense gallery forests cover the levees and provide shadow during the day. *Panicum repens* L. covers the meander ledges forming extensive floating mats when the river waters are high. The substrate is formed by fine gravel, sand, and silt, the proportion of silt increases towards the shores.

Swamps and wet prairies (L2): Includes tropical swamps and wet prairies located inside the Park. The general landscape corresponds to palm savannas, with tall graminoids, Maranthaceae, and reeds present in the central part of the swamps. Woodland patches are present in the higher mounds and the substrate is generally firm in all areas. Swamps present black waters and a layer of organic mud with vegetation debris. Wet prairies completely dry out in late winter while swamps can hold water till early spring. Wildfires are frequent.

Permanent Lakes (L3): Corresponds to the large permanent shallow lakes Laguna Blanca, Blanca-í, and Vera-í, and their wetland fringe. They present open waters, with mean depths near 1.5 m or less and sandy silt bottom. The wetland fringe presents dense floating mats of *Eichhornia crassipes* (Mart.) Solms, *E. azurea* (Kunth) Solms, *Salvinia biloba* Raddi, and *Nymphoides indica* (L.) Kuntze. During the wet season water levels increase at least 1 m due to rainfall and surface draining from neighboring areas. They are connected to each other by

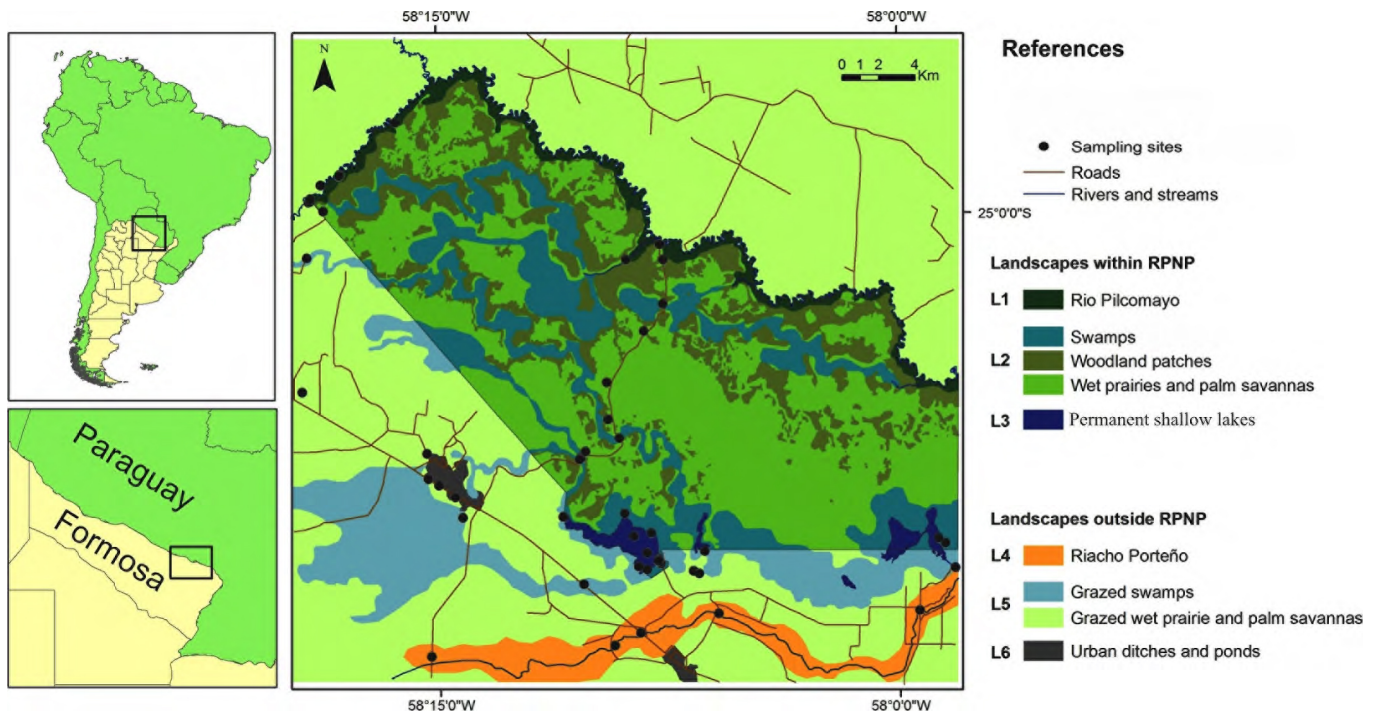


FIGURE 1. Map of the Río Pilcomayo National Park, Province of Formosa, Argentina, showing wetland landscape characterization and main places sampled in the area.

swamp areas. Laguna Blanca lake presents turbid waters due to the northern winds.

Outside the National Park, land is subject to different uses: urban, annual crops (cotton), fruit orchards (grapefruit and bananas), and cattle ranching. We sampled water bodies 1-2 km outside the Park boundary which correspond to the following landscapes:

Riacho Porteño (L4): This small river is a tributary of the Lower Pilcomayo River, which joins just before reaching the Paraguay River. It drains the main agricultural area and its channeled hydrology is heavily modified by the presence of weirs and locks to retain water during the dry season, and ditches to drain excess water to nearby swamps in the wet season. Most gallery forests have been replaced by crops that are cultivated organically.

Grazed swamps (L5): Landscapes outside the National Park from the city of Laguna Blanca are usually palm savannas they are heavily grazed throughout the year. The swamp Estero Sastrow is located between the west margin of the Riacho Porteño and the National Park, receives urban and highway rainwater drainages and is fragmented in half by Provincial Highway 86. Estero Balcalda is located near the easternmost corner of the National Park; it presents small dirt weirs to retain water when the dry season starts. Fires during the spring season are frequent and are set up by ranchers.

Urban ditches and ponds (L6): In the city of Laguna Blanca there is an extensive network of manmade ditches and open water bodies which could offer habitat to many species. Large ponds resulting from road construction are used to collect rainwater for municipal use while shallow ditches drain rainwater to nearby swamps and wet prairies.

Data collection

Samplings were carried out bimonthly from December 2006 to January 2008 in 20 different sites representative

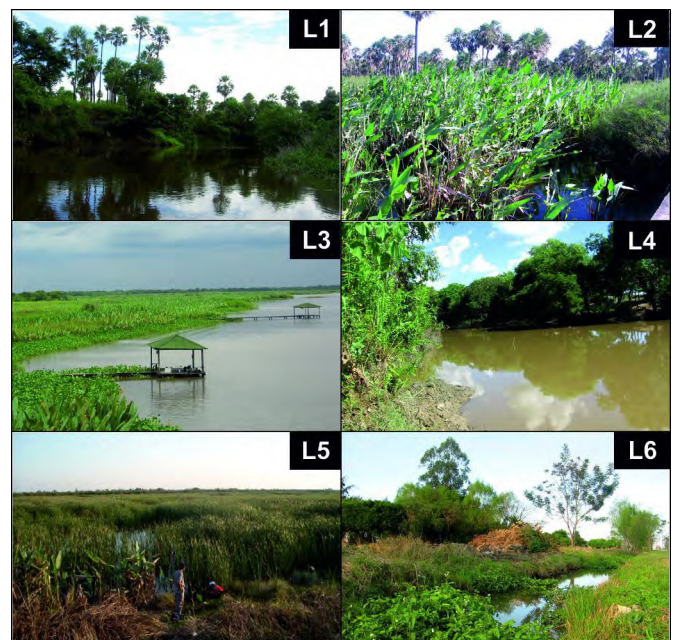


FIGURE 2. Landscape characterization of the Río Pilcomayo National Park: L1, Río Pilcomayo; L2, Swamps and wet prairies; L3, Permanent lakes; L4: Riacho Porteño; L5: Grazed swamps and L6, Urban ditches and ponds.

of the six landscapes characterized above. Samples were taken during daylight and night using different fishing gear (beach seine, cast nets, hand scoop nets, sieves, traps, fishing line, backpack electro fishing, gillnets, trammel nets and funnel traps) with standardized effort to cover a variety of habitats, water depths and species sizes. Samples were fixed in 10% formaldehyde and stored in 70% ethyl alcohol. Fish identification were determined to the species level whenever possible, recognition were made using the following references: López and Castello (1966), Ringuelet *et al.* (1967), Géry (1977), Reis *et al.* (1990), Azpelicueta and Braga (1991), Azpelicueta and Yanosky (1992), López and Miquelarena (1991), Lucena



and Kullander (1992), Braga (1993, 1994), Mago-Leccia (1994), Lucena (2003), Malabarba and Weitzman (2003), Malabarba (2004), Azpelicueta 2005, Miquelarena and Menni (2005), Almirón et al. (2005), Kullander and Lucena (2006), Mirande et al. (2006), Lucena (2007), Miquelarena et al. (2008), Brancolini et al. (2011) and Casciotta et al. (2012). Fish classification follows Eschmeyer (2014). Samples of fishes were deposited in the following fish collections from Argentina (Appendix 1): Instituto de Limnología “Dr. Raúl A. Ringuelet” (ILPLA), La Plata, Buenos Aires; Museo Argentino de Ciencias Naturales

“Bernardino Rivadavia” (MACN), Ciudad Autónoma de Buenos Aires; Fundación de Historia Natural “Félix de Azara” (CFA), Ciudad Autónoma de Buenos Aires. Additional material were analyzed from the Museu de Ciências e Tecnologia da PUCRS (MCP), Porto Alegre, Rio Grande do Sul, Brazil; Museo de La Plata (MLP), La Plata, Buenos Aires, Argentina and the Smithsonian National Museum of Natural History (USNM), Washington D.C, United States of America. Fishes were collected under local regulations and permits obtained from the RPNP and National Park Administration (NEA 291/498 SIB).

TABLE 1. List of Fishes from the Río Pilcomayo National Park and Ramsar Site (RPNP) organized by taxonomic classification and landscape characterization, with coded information on their temporal occurrence. P: Permanent, S: Semipermanent, W: Wet, D: Dry and O: Ocasional.

TAXON	LANDSCAPE						OCCURRENCE
	L1	L2	L3	L4	L5	L6	
Order Myliobatiformes							
Family Potamotrygonidae							
<i>Potamotrygon motoro</i> (Müller & Henle, 1841)		■					O
Order Characiformes							
Family Curimatidae							
<i>Psectrogaster curviventris</i> Eigenmann & Kennedy, 1903		■					O
<i>Steindachnerina brevipinna</i> (Eigenmann & Eigenmann, 1889)					■		O
<i>Steindachnerina conspersa</i> (Holmberg, 1891)		■		■	■		P
Family Prochilodontidae							
<i>Prochilodus lineatus</i> (Valenciennes, 1836)			■		■		P
Family Anostomidae							
<i>Leporinus lacustris</i> Amaral Campos, 1945				■	■		P
<i>Schizodon borellii</i> (Boulenger, 1900)		■		■	■		S
Family Erythrinidae							
<i>Hoplerythrinus unitaeniatus</i> (Spix & Agassiz, 1829)		■	■	■			P
<i>Hoplias malabaricus</i> (Bloch, 1794)		■	■	■	■		P
Family Lebiasinidae							
<i>Pyrrhulina australis</i> Eigenmann & Kennedy, 1903		■	■	■	■		S
Family Acestrorhynchidae							
<i>Acestrorhynchus pantaneiro</i> Menezes, 1992		■	■	■	■		P
Family Serrasalminidae							
<i>Pygocentrus nattereri</i> Kner, 1858		■	■	■	■		P
<i>Serrasalmus maculatus</i> Kner, 1858		■	■	■	■		P
<i>Serrasalmus marginatus</i> Valenciennes, 1837		■		■	■		P
Family Characidae							
<i>Aphyocharax anisitsi</i> Eigenmann & Kennedy, 1903		■	■	■	■	■	P
<i>Aphyocharax dentatus</i> Eigenmann & Kennedy, 1903		■	■	■	■	■	P
<i>Aphyocharax nattereri</i> (Steindachner, 1882)		■	■	■	■		S
<i>Charax leticiae</i> Lucena, 1987		■	■	■			S
<i>Roeboides descalvadensis</i> Fowler, 1932		■	■	■			P
<i>Roeboides microlepis</i> (Reinhardt, 1851)		■	■			■	P
<i>Tetragonopterus argenteus</i> Cuvier, 1816					■		O
<i>Cheirodon interruptus</i> (Jenyns, 1842)					■		O
<i>Odontostilbe pequirá</i> (Steindachner, 1882)		■			■	■	S
<i>Serrapinnus calliurus</i> (Boulenger, 1900)		■		■	■	■	S
<i>Serrapinnus kriegi</i> (Schindler, 1937)		■	■	■	■	■	P
<i>Serrapinnus microdon</i> (Eigenmann, 1915)		■	■	■	■	■	P
<i>Astyanax asuncionensis</i> Géry, 1972		■	■	■	■	■	D
<i>Astyanax cf. fasciatus</i> (Cuvier, 1894)				■	■		O
<i>Astyanax pelegrii</i> Eigenmann, 1907		■					O
<i>Cyanocharax</i> sp.				■			O
<i>Gymnocorymbus ternetzi</i> (Boulenger, 1895)		■					O
<i>Hypressobrycon luetkenii</i> (Boulenger, 1887)			■	■			O
<i>Markiana nigripinnis</i> (Perugia, 1891)		■	■	■	■	■	P
<i>Moenkhausia dichroua</i> (Kner, 1858)		■					O
<i>Psellogrammus kennedyi</i> (Eigenmann, 1903)		■	■	■	■	■	P
<i>Prionobrama paraguayensis</i> (Eigenmann, 1914)		■	■			■	P
Family Bryconidae							
<i>Salminus brasiliensis</i> (Cuvier, 1816)					■		O



TABLE 1. Continued.

TAXON	LANDSCAPE						OCCURRENCE
	L1	L2	L3	L4	L5	L6	
Family Triportheidae							
<i>Triportheus pantanensis</i> Malabarba, 2004	■	■	■	■		■	P
Order Siluriformes							
Family Doradidae							
<i>Anadoras weddellii</i> (Castelnaud, 1855)			■	■			0
Family Auchenipteridae							
<i>Auchenipterus osteomystax</i> Miranda Ribeiro, 1918	■						0
<i>Trachelyopterus striatulus</i> (Steindachner, 1877)			■	■			0
Family Pimelodidae							
<i>Hypophthalmus edentatus</i> Spix & Agassiz, 1829			■				0
<i>Pimelodus albicans</i> (Valenciennes, 1840)	■		■	■			P
<i>Pimelodus ornatus</i> Kner, 1858	■						0
<i>Pseudoplatystoma corruscans</i> (Spix & Agassiz, 1829)				■			0
<i>Pseudoplatystoma reticulatum</i> (Eigenmann & Eigenmann, 1889)	■						0
<i>Sorubim lima</i> (Bloch & Schneider, 1801)				■			0
Family Heptapteridae							
<i>Pimelodella gracilis</i> (Valenciennes, 1835)	■	■	■	■			P
<i>Pimelodella laticeps</i> Eigenmann, 1917	■		■	■			P
<i>Rhamdia quelen</i> (Quoy & Gaimard, 1824)	■		■	■		■	S
Family Trichomycteridae							
<i>Tridentopsis cahuali</i> Azpelicueta, 1990		■					0
Family Callichthyidae							
<i>Callichthys callichthys</i> (Linnaeus, 1758)	■						0
<i>Corydoras hastatus</i> Eigenmann & Eigenmann, 1888	■		■				D
<i>Hoplosternum littorale</i> (Hancock, 1828)	■	■	■	■	■	■	P
<i>Lepthoplosternum pectorale</i> (Boulenger, 1895)	■	■	■			■	S
Family Loricariidae							
<i>Otocinclus vittatus</i> Regan, 1904				■			S
<i>Loricaria simillima</i> Regan, 1904			■	■			S
<i>Loricariichthys platymetopon</i> Isbrücker & Nijssen, 1979	■	■	■	■			S
<i>Rineloricaria parva</i> (Boulenger, 1895)				■			S
<i>Sturisoma robustum</i> (Regan, 1904)				■			0
<i>Hypostomus</i> sp.1		■					0
<i>Hypostomus</i> sp.2			■				0
<i>Pterygoplichthys anisitsi</i> (Eigenmann & Kennedy, 1903)	■	■	■	■		■	S
Order Gymnotiformes							
Family Sternopygidae							
<i>Eigenmannia trilineata</i> López & Castello, 1966		■	■		■		P
Family Rhamphichthyidae							
<i>Rhamphichthys hahni</i> (Meinken, 1937)			■				0
Family Hypopomidae							
<i>Brachyhypopomus gauderio</i> Giora & Malabarba, 2009	■	■	■				0
Family Gymnotidae							
<i>Gymnotus inaequilabiatus</i> (Valenciennes, 1839)		■	■	■			P
Order Cyprinodontiformes							
Family Rivulidae							
<i>Pterolebias bokermanni</i> Travassos 1955		■					0
<i>Trigonectes balzanii</i> (Perugia, 1891)	■	■	■			■	0
Order Synbranchiformes							
Family Synbranchidae							
<i>Synbranchus marmoratus</i> Bloch, 1795		■	■				S
Order Perciformes							
Family Cichlidae							
<i>Apistogramma borellii</i> (Regan, 1906)	■		■				0
<i>Bujurquina vittata</i> (Heckel, 1840)				■			0
<i>Cichlasoma dimerus</i> (Heckel, 1840)	■	■	■	■	■	■	P
<i>Crenicichla lepidota</i> Heckel, 1840	■		■	■			S
<i>Crenicichla semifasciata</i> (Heckel, 1840)	■						0
<i>Gymnogeophagus balzanii</i> (Perugia, 1891)				■			S
Order Lepidosireneiformes							
Family Lepidosirenidae							
<i>Lepidosiren paradoxa</i> Fitzinger, 1837			■				0
TOTAL RICHNESS	49	27	51	49	8	18	

Seasonality

Fish species were additionally grouped based on their temporal occurrences taking into account wet and dry seasons. Permanent species (P) were present all year round. Semi permanent ones (S) showed in both seasons but not in all sampling surveys. Seasonal species were present on either wet (W) or dry (D) periods. We labeled as occasional (O) the remaining species, which appeared with single individuals in one or two sites in a single sampling field trip.

RESULTS

We collected 77 species, belonging to 23 families and eight orders (Table 1; Figures 3– 9).

Characiformes (48.1%) and Siluriformes (32.5%) were the best represented orders, followed in descending order by Perciformes (7.8%), Gymnotiformes (5.2%), and Cyprinodontiformes (2.6%). Families Characidae and Loricariidae were the most species rich taxa, with 27 and eight species each. In turn, Potamotrygonidae, Synbranchidae and Lepidosirenidae are represented by a single species.

From the total amount of fishes collected in the National Park and surrounded areas, all orders and families were represented inside the RPNP. However, only five orders and 16 families were found outside. In terms of richness representation at the species level, both inside and outside the National Park areas show high values for the landscapes characterized, the RPNP showed 84% of the species records while outside landscapes contributed with 68%. There are no man-made landscapes inside the Río Pilcomayo National Park.

Potamotrygon motoro (Müller & Henle, 1841) were only found in the Pilcomayo River. *Lepidosiren paradoxa* Fitzinger, 1837 were only captured in Laguna Blanca lake, although was considered a common species by locals. In terms of exclusiveness at the species *Tridentopsis cahuali* Azpelicueta, 1990 were only found in swamps inside the RPNP and *Rhamphichthys hahni* (Meinken, 1937) in Laguna Blanca lake.

The most common species were *Triporthus pantanensis* Malabarba 2004, *Aphyocharax anisitsi* Eigenmann & Kennedy, 1903, *Cichlasoma dimerus* (Heckel, 1840), *Hoplosternum littorale* (Hancock, 1828), *Markiana nigripinnis* (Perugia, 1891), *Psellogrammus kennedyi* (Eigenmann, 1903), *Serrapinnus kriegi* (Schindler, 1937) and *S. microdon* (Eigenmann, 1915), which were present in all landscapes throughout the year. More than 40% of the species were occasional and found in just one type of landscape. Landscapes with permanent waters (L1, L3 and L4) exhibited higher richness with around 50 species each (Figure 2; Table 1). Landscapes with temporary waters showed lower richness, with higher values for those inside RPNP.

DISCUSSION

Considering the available references for the Pilcomayo River basin (Ringuelet et al. 1967; Menni et al. 1992, Baud et al. 1993; Mandelburger et al. 1996), a total of 159 species have been previously registered with the study area representing around 50% of the total species recorded in the basin. Menni (2004) mentioned the presence of

143 fish species in the Formosa Province, based on point records mostly from large rivers and related wetlands while Canón Verón (2008) reported 89 species just for the eastern portion of the province. Considering these references together, the RPNP area covered 54% of the ichthyofauna known from this province.

Our study provided new records for the RPNP area. Five species were added to Formosa's ichthyofauna: *Astyanax pelegri* Eigenmann, 1907 and *T. pantanensis* (see Brancolini et al. 2011), *Cyanocharax* sp., *Hypophthalmus edentatus*, and *Brachyhyopomus gauderio*.

In addition, this study presents the first species list of fishes from the Río Pilcomayo National Park and Ramsar Site organized by taxonomy and by landscape characterization, with coded information on their temporal occurrence. Our sampling design, which included the variety of aquatic environments present in the different landscapes, both in the National Park and its surroundings and their seasonality allow our results to be a useful reference as a baseline for ecological, conservation and environmental impact studies.

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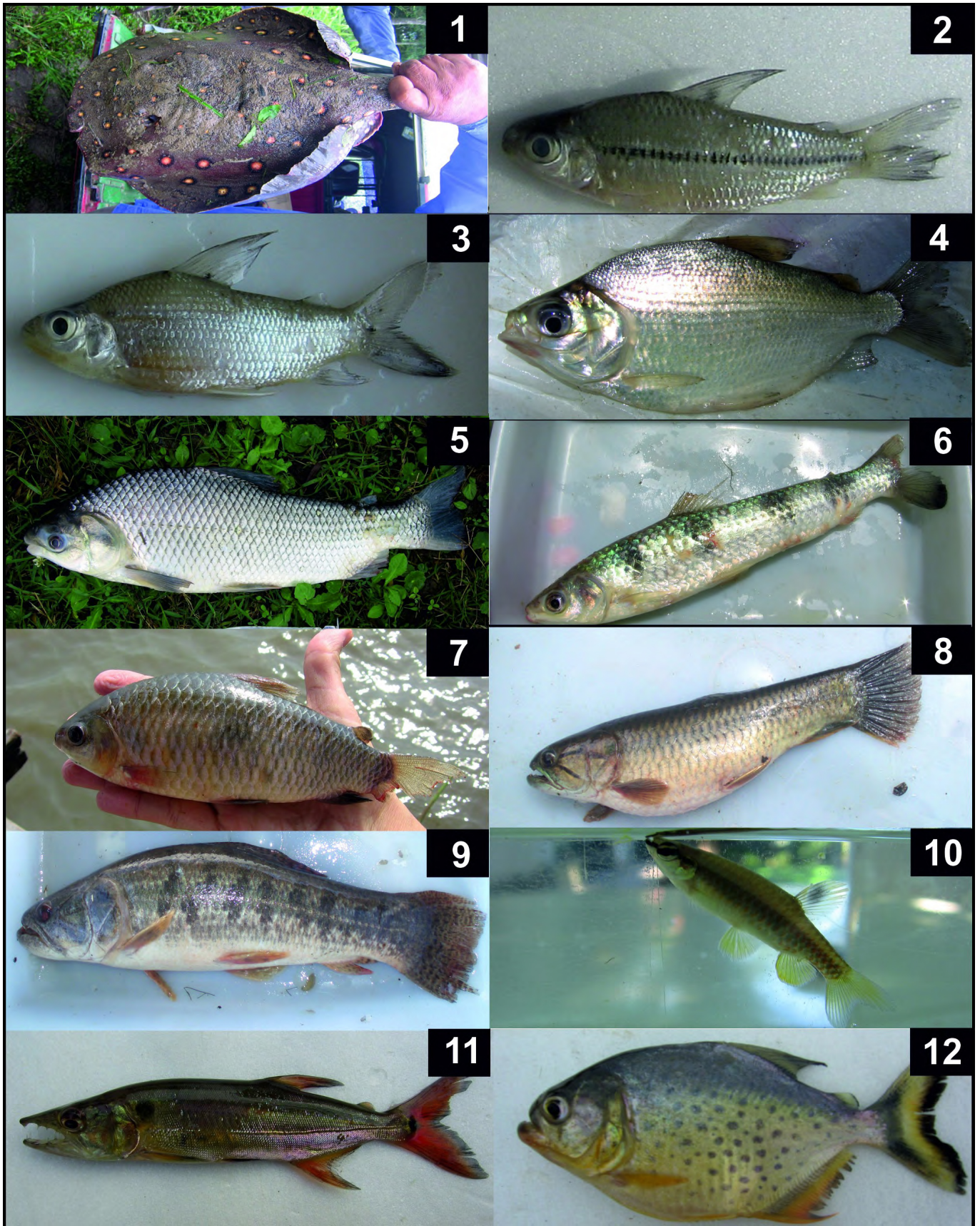


FIGURE 3. Fish fauna from the Río Pilcomayo National Park: (1) *Potamotrygon motoro*; (2) *Steindachnerina brevipinna*; (3) *Steindachnerina conspersa*; (4) *Psectrogaster curviventris*; (5) *Prochilodus lineatus*; (6) *Schizodon borelli*; (7) *Leporinus lacustris*; (8) *Hoplerythrinus unitaeniatus*; (9) *Hoplias malabaricus*; (10) *Pyrrhulina australis*; (11) *Acestrorhynchus pantaneiro*; (12) *Serrasalmus maculatus*.



FIGURE 4. Fish fauna from the Río Pilcomayo National Park: (13) *Serrasalmus marginatus*; (14) *Pygocentrus nattereri*; (15) *Aphyocharax anisitsi*; (16) *Aphyocharax dentatus*; (17) *Aphyocharax nattereri*; (18) *Charax leticiae*; (19) *Roeboides descalsvadensis*; (20) *Roeboides microlepis*; (21) *Tetragonopterus argenteus*; (22) *Cheirodon interruptus*; (23) *Serrapinnus calliurus*; (24) *Serrapinnus kriegi*.

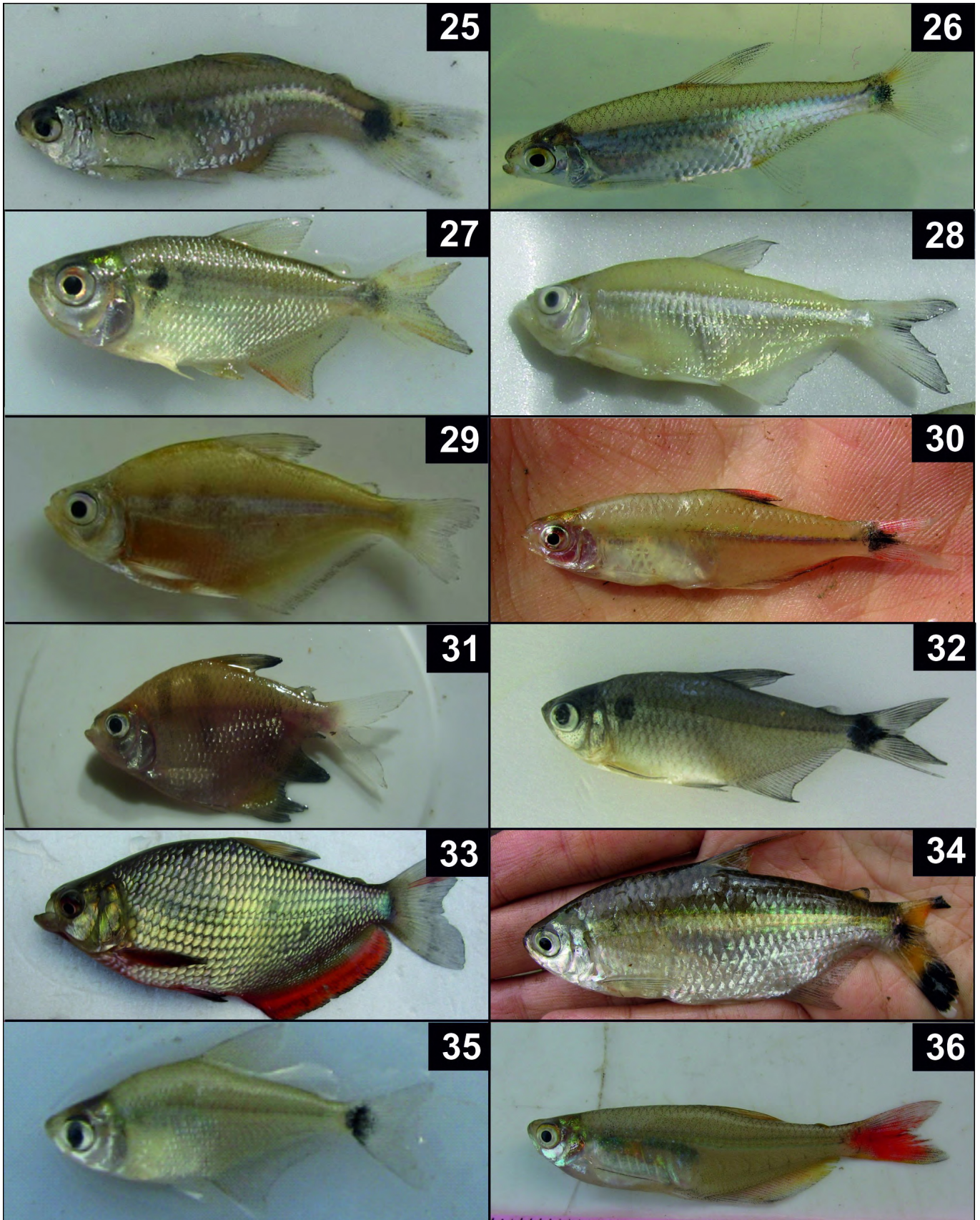


FIGURE 5. Fish fauna from the Río Pilcomayo National Park: (25) *Serrapinnus microdon*; (26) *Odontostilbe pequira*; (27) *Astyanax asuncionensis*; (28) *Astyanax cf. fasciatus* (29) *Astyanax pelegri*; (30) *Cyanocharax* sp.; (31) *Gymnocorymbus ternetzi*; (32) *Hypressobrycon luetkenii*; (33) *Markiana nigripinnis*; (34) *Moenkhausia dichroua*; (35) *Psellogrammus kennedyi*; (36) *Prionobrama paraguayensis*.



FIGURE 6. Fish fauna from the Río Pilcomayo National Park: (37) *Salminus brasiliensis*; (38) *Triportheus pantanensis*; (39) *Anadoras wedellii*; (40) *Auchenipterus osteomystax*; (41) *Trachelyopterus striatulus*; (42) *Hypophthalmus edentatus*; (43) *Pimelodus albicans*; (44) *Pimelodus ornatus*; (45) *Pseudoplatystoma corruscans*; (46) *Pseudoplatystoma reticulatum*; (47) *Sorubim lima*; (48) *Pimelodella gracilis*.



FIGURE 7. Fish fauna from the Río Pilcomayo National Park: (49) *Pimelodella laticeps*; (50) *Rhamdia quelen*; (51) *Tridentopsis cahuali*; (52) *Callichthys callichthys*; (53) *Corydoras hastatus*; (54) *Hoplosternum littorale*; (55) *Lepthoplosternum pectorale*; (56) *Otocinclus vittatus*; (57) *Loricaria simillima*; (58) *Loricariichthys platymetopon*; (59) *Rineloricaria parva*; (60) *Sturisoma robustum*.



FIGURE 8. Fish fauna from the Río Pilcomayo National Park: (61) *Hypostomus* sp.1; (62) *Hypostomus* sp.2; (63) *Pterygoplichthys anisitsi*; (64) *Eigenmania trilineata*; (65) *Rhamphichthys hahni*; (66) *Brachyhypopomus gauderio*; (67) *Gymnotus inaequilabiatus*; (68) *Pterolebias bokermani*; (69) *Trigonectes balzanii*; (70) *Synbranchus marmoratus*; (71) *Apistogramma borellii*; (72) *Bujurquina vittata*.

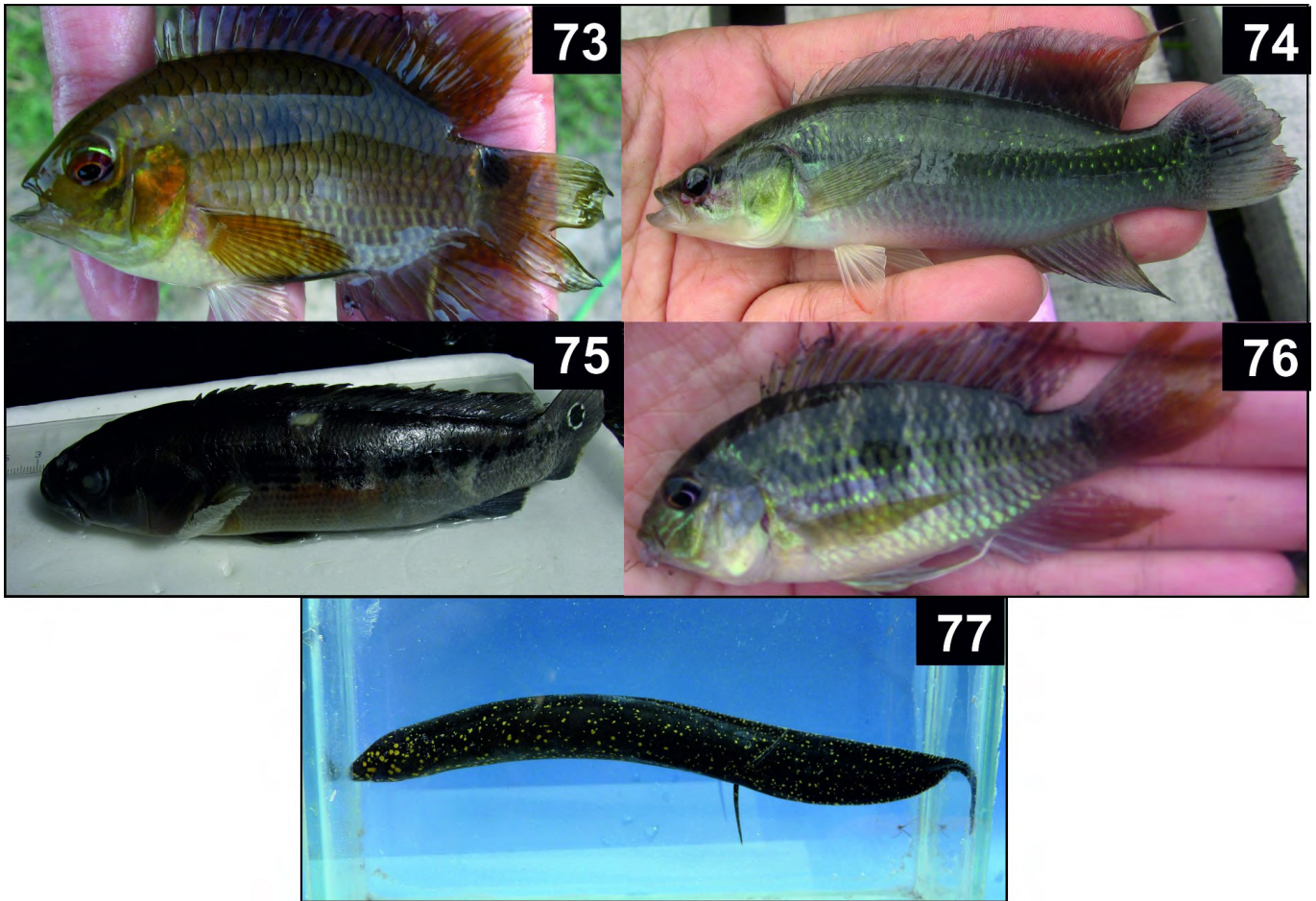


FIGURE 9. Fish fauna from the Río Pilcomayo National Park: (73) *Cichlasoma dimerus*; (74) *Crenicichla lepidota*; (75) *Crenicichla semifasciata*; (76) *Gymnogeophagus balzanii*; (77) *Lepidosiren paradoxa*.

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APPENDIX 1. Voucher of the species sampled in Department Pilcomayo, Province Formosa, Argentina. (Collectors: C. Baigún, P. Minotti & F. Brancolini).

Curimatidae: *Steindachnerina brevipinna*, MACN-Ict 9885, 5, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 16 August 2007; *S. conspersa*, MACN-Ict 9883, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 14 August 2007; MACN-Ict 9886, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 13 August 2007; MACN-Ict 9887, 2, Río Pilcomayo sur (24°59'03" S, 58°18'47" W), 22 February 2007; MACN-Ict 9888, 1, Río Pilcomayo sur (24°59'03" S, 58°18'47" W), 05 July 2007; MACN-Ict 9971, 7, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 10011, 1, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007. **Prochilodontidae:** *Prochilodus lineatus*, MACN-Ict 9988, 1, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 10 October 2007. **Anostomidae:** *Schizodon borellii*, MACN-Ict 9957, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 14 August 2007; MACN-Ict 9961, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 13 August 2007; MACN-Ict 9966, 1, Laguna Blanca (25°10'17.33" S, 58°07'51.24" W), 14 August 2007; *Leporinus lacustris*, MACN-Ict 9878, 2, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9882, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9945, 2, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 10 October 2007; MACN-Ict 9946, 1, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 10 October 2007; MACN-Ict 9950, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2007; MACN-Ict 9953, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2007; MACN-Ict 9955, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 21 December 2007. **Erythrinidae:** *Hoplerythrinus unitaeniatus*, MACN-Ict 9973, 1, Puerto Ramos (24°59'38" S, 58°19'05.2" W), 16 January 2008; MACN-Ict 9986, 3, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; *Hoplias malabaricus*, MACN-Ict 9881, 1, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007. **Lebiasinidae:** *Pyrrhulina australis*, MACN-Ict 9894, 13, Estero Catalina (25°06'37.4" S, 58°09'07" W), 10 April 2007; MACN-Ict 9907, 13, Paraje Boquerón (25°01'28.3" S, 58°07'46.99" W), 15 August 2007. **Acestrorhynchidae:** *Acestrorhynchus pantaneiro*, MACN-Ict 9880, 4, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007. **Serrasalminidae:** *Serrasalmus maculatus*, MACN-Ict 9958, 2, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 10 October 2007; MACN-Ict 9968, 2, Laguna Blanca (25°10'14.03" S, 58°07'49.04" W), 20 February 2007; MACN-Ict 9976, 2, Laguna Blanca (25°10'17.33" S, 58°07'51.24" W), 14 August 2007; *S. marginatus*, MACN-Ict 9875, 3, Laguna Blanca (25°10'14" S, 58°07'50" W), 10 October 2007; MACN-Ict 9965, 1, Laguna Blanca (25°10'39" S, 58°06'32" W), 19 December 2006; MACN-Ict 9967, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006; MACN-Ict 10120, 6, Laguna Blanca (25°10'16" S, 58°07'53" W), 14 January 2008; *Pygocentrus nattereri*, MACN-Ict 9874, 3, Laguna Blanca (25°10'14.03" S, 58°07'49.04" W), 20 February 2007; MACN-Ict 9876, 1, Laguna Blanca (25°10'17.33" S, 58°07'50.7" W), 18 December 2008; MACN-Ict 9959, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 13 August 2007; MACN-Ict 9960, 4, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; MACN-Ict 9964, 10, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007. **Characidae:** *Aphyocharax anisitsi*, MACN-Ict 9913, 6, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 18 February 2007; MACN-Ict 9915, 1, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 15 January 2008; *A. nattereri*, MACN-Ict 10034, 3, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 15 January 2008; *Prionobrama paraguayensis*, MACN-Ict 9902, 4, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 9911, 11, Laguna Blanca (25°10'18" S, 58°07'52" W), 13 August 2007; MACN-Ict 9916, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; MACN-Ict 9994, 2, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 14 August 2007; MACN-Ict 10007, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 18 December 2006; MACN-Ict 10012, 1, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 10015, 2, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; *Roeboides microlepis*, MACN-Ict 9877, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9879, 3, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 03 July 2007; MACN-Ict 9962, 12, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006; MACN-Ict 9963, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 20 December 2006; *R. descalvadensis*, MACN-Ict 9891, 9, Laguna Blanca (25°10'16" S, 58°07'51" W), 18 December 2006; MACN-Ict 9892, 5, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; MACN-Ict 9941, 11, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; MACN-Ict 9970, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; MACN-Ict 9999.7, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 10002, 42, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 03 July 2007; MACN-Ict 10003, 27, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006; MACN-Ict 10005, 12, Laguna Blanca (25°10'16" S, 58°07'51" W), 18 December 2006; MACN-Ict 10009, 16, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 20 December 2006; MACN-Ict 10010, 7, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 14 August 2007; MACN-Ict 10014, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 21 December 2006; MACN-Ict 10022, 2, Laguna Blanca (25°10'14" S, 58°07'50" W), 21 December 2006; *Tetragonopterus argenteus*, MACN-Ict 9984, 1, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 15 January 2008; *Cheirodon interruptus*, MACN-Ict 9903, 3, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 16 August 2007; *Serrapinnus calliurus*, MACN-Ict 10031, 5, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 15 January 2008; *S. kriegi*, MACN-Ict 9899, 9, Paraje Boquerón (25°01'28.3" S, 58°07'46.99" W), 15 August 2007; MACN-Ict 9905, 5, Estero Catalina (25°06'37.4" S, 58°09'07.0" W), 20 February 2007; MACN-Ict 9975, 2, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007; *S. microdon*, MACN-Ict 9890, 8, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 12 August 2007; MACN-Ict 9896, >25, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 03 July 2007; MACN-Ict 9900, 2, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 13 January 2008; MACN-Ict 9904, 15, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007; MACN-Ict 9909, 10, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 18 February 2007; MACN-Ict 9910, 5, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 9974, 2, Río Pilcomayo sur (24°59'03" S, 58°18'47" W), 22 February 2007; MACN-Ict 10026, 2, Estero Sastrow (25°10'58" S, 58°10'18" W), 12 April 2007; MACN-Ict 10027, 1, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 January 2008; MACN-Ict 10029, 2, Estero Poi (25°07'15" S, 58°10'25" W), 17 January 2008; MACN-Ict 10125, 1, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 January 2008; MACN-Ict 10126, 1, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 January 2008; MACN-Ict 10127, 11, Cavas Laguna Blanca (25°07'48" S, 58°15'21" W), 12 August 2007; *Odontostilbe pequirá*, MACN-Ict 9912, 2, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007; *Astyanax asuncionensis*, MACN-Ict 9884, 8, Laguna Blanca (25°10'16" S, 58°07'53" W), 02 July 2007; MACN-Ict 9957, 4, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007; MACN-Ict 9985, 3, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9987, 4, Laguna Blanca (25°10'22" S, 58°07'47" W), 20 February 2007; MACN-Ict 9995, 1, Río Pilcomayo (25°00'53" S, 58°07'46" W), 11 October 2007; MACN-Ict 9996, 4, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 14 August 2007; MACN-Ict 9998, 2, Estero Catalina (25°06'37.4" S, 58°09'07.0" W), 20 February 2007; MACN-Ict 10000, 2, Laguna Blanca (25°10'14" S, 58°07'50" W), 20 February 2007; MACN-Ict 10004, 10, Estero Poi (25°07'13" S, 58°10'22.0" W), 20 February 2007; MACN-Ict 10013, 8, Laguna Blanca (25°10'17.33" S, 58°07'51.24" W), 14 August 2007; MACN-Ict 10016, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; MACN-Ict 10021, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 14 January 2008; MACN-Ict 10023, 1, Laguna Blanca (25°10'16" S, 58°07'51" W), 18 December 2006; MACN-Ict 10024, 1, Canal San Juan (25°10'32" S, 57°58'11" W), 21 February 2007; *A. pelegrii*, ILPLA 1964, 1, Río Pilcomayo (25°00'53" S, 58°07'46" W), 11 October 2007; *Cyanochorax* sp., ILPLA 1965, 2, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; *Hypressobrycon luetkenii*, MACN-Ict 9906, 1, Estero Poi (25°07'13" S, 58°10'22.0" W), 18 December 2006; *Markiana nigripinnis*, MACN-Ict 9992, 2, Laguna Blanca (25°10'32" S, 58°08'14" W), 19 February 2007; MACN-Ict 10001, 1, Laguna Blanca (25°10'14.03" S, 58°07'49.04" W), 20 February 2007; MACN-Ict 10006, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 10008, 4, Estero Poi (25°07'13" S, 58°10'22.0" W), 20 February 2007; *Psellogrammus kennedyi*, MACN-Ict 9889, 12, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; MACN-Ict 9893, 8, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 18 February 2007; MACN-Ict 9897, 5, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 01 July 2007; MACN-Ict 9901, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9908, 8, Río Pilcomayo (24°58'46" S, 58°18'11" W), 05 July 2007; MACN-

MACN-Ict 9994, 2, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 14 August 2007; MACN-Ict 10007, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 18 December 2006; MACN-Ict 10012, 1, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 10015, 2, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; *Roeboides microlepis*, MACN-Ict 9877, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9879, 3, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 03 July 2007; MACN-Ict 9962, 12, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006; MACN-Ict 9963, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 20 December 2006; *R. descalvadensis*, MACN-Ict 9891, 9, Laguna Blanca (25°10'16" S, 58°07'51" W), 18 December 2006; MACN-Ict 9892, 5, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; MACN-Ict 9941, 11, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; MACN-Ict 9970, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; MACN-Ict 9999.7, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 10002, 42, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 03 July 2007; MACN-Ict 10003, 27, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006; MACN-Ict 10005, 12, Laguna Blanca (25°10'16" S, 58°07'51" W), 18 December 2006; MACN-Ict 10009, 16, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 20 December 2006; MACN-Ict 10010, 7, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 14 August 2007; MACN-Ict 10014, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 21 December 2006; MACN-Ict 10022, 2, Laguna Blanca (25°10'14" S, 58°07'50" W), 21 December 2006; *Tetragonopterus argenteus*, MACN-Ict 9984, 1, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 15 January 2008; *Cheirodon interruptus*, MACN-Ict 9903, 3, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 16 August 2007; *Serrapinnus calliurus*, MACN-Ict 10031, 5, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 15 January 2008; *S. kriegi*, MACN-Ict 9899, 9, Paraje Boquerón (25°01'28.3" S, 58°07'46.99" W), 15 August 2007; MACN-Ict 9905, 5, Estero Catalina (25°06'37.4" S, 58°09'07.0" W), 20 February 2007; MACN-Ict 9975, 2, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007; *S. microdon*, MACN-Ict 9890, 8, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 12 August 2007; MACN-Ict 9896, >25, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 03 July 2007; MACN-Ict 9900, 2, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 13 January 2008; MACN-Ict 9904, 15, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007; MACN-Ict 9909, 10, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 18 February 2007; MACN-Ict 9910, 5, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 9974, 2, Río Pilcomayo sur (24°59'03" S, 58°18'47" W), 22 February 2007; MACN-Ict 10026, 2, Estero Sastrow (25°10'58" S, 58°10'18" W), 12 April 2007; MACN-Ict 10027, 1, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 January 2008; MACN-Ict 10029, 2, Estero Poi (25°07'15" S, 58°10'25" W), 17 January 2008; MACN-Ict 10125, 1, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 January 2008; MACN-Ict 10126, 1, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 January 2008; MACN-Ict 10127, 11, Cavas Laguna Blanca (25°07'48" S, 58°15'21" W), 12 August 2007; *Odontostilbe pequirá*, MACN-Ict 9912, 2, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007; *Astyanax asuncionensis*, MACN-Ict 9884, 8, Laguna Blanca (25°10'16" S, 58°07'53" W), 02 July 2007; MACN-Ict 9957, 4, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007; MACN-Ict 9985, 3, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9987, 4, Laguna Blanca (25°10'22" S, 58°07'47" W), 20 February 2007; MACN-Ict 9995, 1, Río Pilcomayo (25°00'53" S, 58°07'46" W), 11 October 2007; MACN-Ict 9996, 4, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 14 August 2007; MACN-Ict 9998, 2, Estero Catalina (25°06'37.4" S, 58°09'07.0" W), 20 February 2007; MACN-Ict 10000, 2, Laguna Blanca (25°10'14" S, 58°07'50" W), 20 February 2007; MACN-Ict 10004, 10, Estero Poi (25°07'13" S, 58°10'22.0" W), 20 February 2007; MACN-Ict 10013, 8, Laguna Blanca (25°10'17.33" S, 58°07'51.24" W), 14 August 2007; MACN-Ict 10016, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; MACN-Ict 10021, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 14 January 2008; MACN-Ict 10023, 1, Laguna Blanca (25°10'16" S, 58°07'51" W), 18 December 2006; MACN-Ict 10024, 1, Canal San Juan (25°10'32" S, 57°58'11" W), 21 February 2007; *A. pelegrii*, ILPLA 1964, 1, Río Pilcomayo (25°00'53" S, 58°07'46" W), 11 October 2007; *Cyanochorax* sp., ILPLA 1965, 2, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; *Hypressobrycon luetkenii*, MACN-Ict 9906, 1, Estero Poi (25°07'13" S, 58°10'22.0" W), 18 December 2006; *Markiana nigripinnis*, MACN-Ict 9992, 2, Laguna Blanca (25°10'32" S, 58°08'14" W), 19 February 2007; MACN-Ict 10001, 1, Laguna Blanca (25°10'14.03" S, 58°07'49.04" W), 20 February 2007; MACN-Ict 10006, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 10008, 4, Estero Poi (25°07'13" S, 58°10'22.0" W), 20 February 2007; *Psellogrammus kennedyi*, MACN-Ict 9889, 12, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; MACN-Ict 9893, 8, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 18 February 2007; MACN-Ict 9897, 5, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 01 July 2007; MACN-Ict 9901, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9908, 8, Río Pilcomayo (24°58'46" S, 58°18'11" W), 05 July 2007; MACN-

Ict 9914, 4, Laguna Blanca (25°10'16" S, 58°07'51" W), 18 December 2006; MACN-Ict 9917, 10, Laguna Blanca (25°10'16" S, 58°07'53" W), 02 July 2007; MACN-Ict 9918, 4, Laguna Blanca (25°09'19.48" S, 58°08'36.52" W), 20 February 2007; MACN-Ict 9919, 3, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; MACN-Ict 9920, 2, Laguna Blanca (25°10'14.03" S, 58°07'49.04" W), 20 February 2007; MACN-Ict 9921, 11, Estero Sastrow (25°10'58" S, 58°10'18" W), 12 April 2007; MACN-Ict 9972, 6, Río Pilcomayo sur (24°58'47" S, 58°18'11" W), 5 May 2007; MACN-Ict 10020, 1, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 10028, 2, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 January 2008; MACN-Ict 10119, 6, Laguna Blanca-í (25°09'60" S, 58°06'22" W), 11 April 2007; MACN-Ict 10121, 1, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 August 2007; MACN-Ict 10122, 1, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; MACN-Ict 10123, 1, Laguna Blanca (25°10'02" S, 58°08'14" W), 21 December 2006; MACN-Ict 10124, 1, Laguna Blanca (25°09'19.48" S, 58°08'36.52" W), 20 February 2007; MACN-Ict 10128, 5, Estero Sastrow (25°10'58" S, 58°10'18" W), 03 July 2007. **Triporthidae:** *Triporthes pantanensis*, ILPLA 1966, 6, Laguna Blanca (25°10'16" S, 58°07'53" W), 19 February 2007; ILPLA 1967, 12, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; ILPLA 1968, 6, Río Pilcomayo (24°58'46" S, 58°18'11" W), 05 July 2007; ILPLA 1969, 3, Laguna Blanca (25°10'17.33" S, 58°07'51.24" W), 14 August 2007; ILPLA 1970, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007. **Doradidae:** *Anadoras weddellii*, MACN-Ict 9928, 2, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006. **Auchenipteridae:** *Auchenipterus osteomystax*, MACN-Ict 9868, 1, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 9870, 1, Canal San Juan (25°10'32" S, 57°58'11" W), 21 February 2007; *Trachelyopterus striatulus*, MACN-Ict 9852, 1, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006. **Pimelodidae:** *Hypophthalmus edentatus*, ILPLA 1973, 1, Laguna Blanca (25°10'02.5" S, 58°08'14" W), 21 December 2006; ILPLA 1974, 2, Laguna Blanca (25°10'16" S, 58°07'53" W), 21 December 2006; *Pimelodus albicans*, MACN-Ict 9853, 4, Río Pilcomayo (25°00'53" S, 58°07'46" W), 11 October 2007; MACN-Ict 9934, 1, Estero Sastrow (25°10'32" S, 58°08'14" W), 22 December 2006; *P. ornatus*, MACN-Ict 9858, 1, Río Pilcomayo (25°00'53" S, 58°07'46" W), 22 February 2007. **Heptapteridae:** *Pimelodella gracilis*, MACN-Ict 9924, 4, Río Pilcomayo (25°00'53" S, 58°07'46" W), 11 October 2007; MACN-Ict 9926, 49, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; MACN-Ict 9935, 4, Laguna Blanca (25°10'16" S, 58°07'51" W), 18 December 2006; MACN-Ict 9940, 2, Laguna Blanca (25°10'32" S, 58°08'14" W), 19 February 2007; *P. laticeps*, MACN-Ict 9922, 3, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 21 December 2006; MACN-Ict 9941, 5, Laguna Blanca (25°10'32" S, 58°08'14" W), 19 February 2007; MACN-Ict 9969, 4, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007. **Trichomycteridae:** *Tridentopsis cahuali*, MACN-Ict 9956, 4, Estero Poi (25°07'13" S, 58°10'22.0" W), 18 December 2007. **Callichthyidae:** *Callichthys callichthys*, MACN-Ict 9989, 2, Paraje Boquerón (25°01'27.8" S, 58°07'43.2" W), 15 August 2007; *Corydoras hastatus*, MACN-Ict 9851, 25, Laguna Blanca (25°10'14" S, 58°07'50" W), 18 August 2007; MACN-Ict 10129, 8, Laguna Blanca (25°10'14" S, 58°07'50" W), 10 October 2007; *Hoplosternum littorale*, MACN-Ict 9850, 4, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 9859, 2, Cavas Laguna Blanca (25°07'59" S, 58°15'01" W), 01 July 2007; MACN-Ict 9923, 2, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 13 August 2007; MACN-Ict 9936, 1, Laguna Blanca (25°07'48" S, 58°15'21" W), 12 August 2007; MACN-Ict 9990, 1, Estero Sastrow (25°10'58" S, 58°10'18" W), 17 August 2007; *Leptoplosternum pectorale*, MACN-Ict 9854, 76, Estero Poi (25°07'15" S, 58°10'25" W), 17 January 2008; MACN-Ict 9860, 3, Laguna Blanca (25°10'14" S, 58°07'50" W), 18 August 2007; MACN-Ict 9869, 16, Paraje Boquerón (25°01'27.8" S, 58°07'43.2" W), 15 August 2007; MACN-Ict 9942, 1, Laguna Blanca (25°10'32" S, 58°08'14" W), 14 January

2008. **Loricariidae:** *Otocinclus vittatus*, MACN-Ict 9871, 7, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007; MACN-Ict 9872, 10, Arroyo Zanjita (25°00'51" S, 58°08'13.7" W), 11 October 2007; *Loricaria simillima*, MACN-Ict 9855, 5, Laguna Blanca (25°08'57" S, 58°10'58" W), 19 February 2007; MACN-Ict 9857, 10, Laguna Blanca (25°10'16" S, 58°07'53" W), 14 January 2008; MACN-Ict 9862, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 02 July 2007; MACN-Ict 9863, 1, Laguna Blanca (25°09'19.48" S, 58°08'36.52" W), 20 February 2007; MACN-Ict 9865, 1, Laguna Blanca (25°10'17.33" S, 58°07'51.24" W), 14 August 2007; MACN-Ict 9866, 2, Laguna Blanca (25°10'16" S, 58°07'53" W), 21 December 2006; MACN-Ict 9925, 2, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006; MACN-Ict 10018, 2, Laguna Blanca (25°10'02" S, 58°08'14" W), 21 December 2006; MACN-Ict 10130, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 14 January 2008; *Loricariichthys platymetopon*, MACN-Ict 9856, 1, Laguna Blanca (25°10'14.03" S, 58°07'49.04" W), 20 February 2007; MACN-Ict 9861, 1, Canal San Juan (25°10'32" S, 57°58'11" W), 21 February 2007; MACN-Ict 9864, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 21 December 2006; MACN-Ict 9867, 1, Riacho Porteño (25°11'46.4" S, 58°05'56.2" W), 16 August 2007; *Rineloricaria parva*, MACN-Ict 9873, 2, Riacho Porteño (25°11'46.4" S, 58°05'56.2" W), 16 August 2007; *Hypostomus* sp.1, ILPLA 1972, 2, Canal San Juan (25°10'32" S, 57°58'11" W), 21 February 2007. **Sternopygidae:** *Eigenmannia trilineata*, MACN-Ict 9927, 8, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 19 December 2006; MACN-Ict 9929, 10, Laguna Blanca (25°10'02.5" S, 58°07'50.7" W), 10 October 2007; MACN-Ict 9933, 1, Laguna Blanca (25°10'32" S, 58°08'14" W), 19 February 2007. **Hypopomidae:** *Brachyhypopomus gauderio*, MACN-Ict 9952, 2, Paraje Boquerón (25°01'28.3" S, 58°07'46.99" W), 15 August 2007; MACN-Ict 9954, 2, Paraje Boquerón (25°01'27.8" S, 58°07'43.2" W), 15 August 2007; MACN-Ict 10033, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 14 January 2008. **Gymnotidae:** *Gymnotus inaequilabiatus*, CFA-IC-2859, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 09 October 2007; CFA-IC-2860, 1, Laguna Blanca (25°10'16" S, 58°07'53" W), 10 October 2007; CFA-IC-2861, 1, Canal San Juan (25°10'32" S, 57°58'11" W), 21 February 2007; CFA-IC-2862, 4, Río Pilcomayo sur (24°58'46" S, 58°18'11" W), 22 February 2007. **Rivulidae:** *Trigonectes balzanii*, MACN-Ict 9899, 2, Laguna Blanca (25°10'16" S, 58°07'53" W), 15 January 2008. **Cichlidae:** *Apistogramma borellii*, MACN-Ict 9931, 46, Paraje Boquerón (25°01'27.8" S, 58°07'43.2" W), 15 August 2007; MACN-Ict 10025, 3, Paraje Boquerón (25°01'28.3" S, 58°07'46.99" W), 15 August 2007; *Cichlasoma dimerus*, MACN-Ict 9934, 3, Canal San Juan (25°10'32" S, 57°58'11" W), 21 February 2007; *Crenicichla lepidota*, MACN-Ict 10019, 1, Laguna Blanca (25°10'17.33" S, 58°07'51.24" W), 14 August 2007; *Gymnogeophagus balzanii*, MACN-Ict 9943, 1, Riacho Porteño (25°11'47.3" S, 58°05'57.1" W), 16 August 2007.

Comparative material: *Triporthes pantanensis*: **Paraguay:** USNM 181682, 4 paratypes radiographs, 100.3–124.0 mm SL, Asuncion Bay, Paraguay River, near Asuncion, 25°15' S, 57°40' W, Col. C.J.D. Brown, 10 January 1957, USNM 181689, 2 paratypes photographs and radiographs, 133.9–154.0 mm SL, Lago Ypacaray near San Bernardino, 25°28' S, 57°33' W, Col. C.J.D. Brown, 11 October 1956; **Brasil:** MCP 35824, 2, 73.8–78.9 mm SL, from América do Sul, Brasil, Mato Grosso, Paraguay, Paraguay River in Cáceres and surrounding areas, 16°03'00" S, 57°42'00" W, Col. R.E. Reis et al., 11 August 1991; *Triporthes nematurus* (Kner, 1858): **Argentina:** ILPLA 1971, 2 d&t, 93.8–97.6 mm SL, Buenos Aires, second section of San Fernando delta, Cangrejo Stream, 34°17'35.3" S, 58°32'03.7" W, Col. F. Brancolini, A. Brancolini and M.C. Nouzaret, 05 May 2007. *Hypophthalmus edentatus* MLP 8264, 140.7 mm SL, Buenos Aires, Río de la Plata, Balneario Municipal Ensenada, Col. R. Arámburu, 2-VII-73-13; *Hypophthalmus oreomaculatus* Nani & Fuster, 1947: **Argentina:** MACN 3496, Holotipo, 330-9 mm SL, Puerto Gaboto, curso inferior Río Paraná, MACN 5464, 254.3 mm SL, Santa Fe, Rosario, Río Paraná, leg. A. Nani.