

New records of freshwater fish for Uruguay

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ABSTRACT: Based on National Collections records, this article presents the first report of eight freshwater fish species for Uruguay in the middle and lower Uruguay River basin, extending their current distribution: *Cyanocharax alegretensis* Malabarba and Weitzman, 2003; *Leporinus lacustris* Amaral Campos, 1945; *Microglanis* aff. *eurystoma* Malabarba and Mahler, 1998; *Tatia boemia* Koch and Reis, 1996; *Lepthoplosternum pectorale* (Boulenger, 1895); *Crenicichla missioneira* Lucena and Kullander, 1992; *C. minuano* Lucena and Kullander, 1992; *Apistogramma borellii* Regan, 1906. These species were previously recorded either for upper Uruguay River or Paraná River.

Scarce knowledge about number and distribution of species limits not only our understanding of the ecological and evolutive processes but also affect our capacity to use this information in conservation management plans (Maitland 1995). As occurs in the whole Neotropical region, the knowledge about the freshwater ichthyofauna of Uruguay is clearly incomplete. Freshwater systems of Uruguay include part of the middle and lower sections of the Uruguay river, small coastal drainages flowing into the Río de la Plata and Atlantic Ocean, and the southwestern Merin Lagoon basin (Patos-Merin system). Nión *et al.* (2002) presented a list of the fish species of the country, however that list did not provide distributional data, or specimens voucher locations, and was based only in bibliographic sources, some of them outdated. As part of a general taxonomic revision of freshwater fish species of Uruguay, we reviewed the fish collection of Facultad de Ciencias, Montevideo, Uruguay. In this note we report the first record of eight freshwater fish species for Uruguay, extending their current distribution.

Specimens reported belong to Facultad de Ciencias (Institutional code: ZVC-P), Montevideo, Uruguay. Details of analyzed lots are given in Appendix 1. Characiformes were identified according to Malabarba and Weitzman (2003) (*Cyanocharax*) and Casciotta *et al.* (2005) (*Leporinus*); Siluriformes according to Sacramento-Soares and Martins-Pinheiro (2008) and Koch and Reis (1996) (*Tatia*), Malabarba and Mahler (1998) (*Microglanis*), and Reis (1997) (*Lepthoplosternum*); Cichlidae according to Lucena and Kullander (1992) (*Crenicichla*), and Casciotta *et al.* (2005) (*Apistogramma*).

ORDER CHARACIFORMES

Anostomidae:

Leporinus lacustris (Figure 1A)

The specimen presents the characteristic anterior teeth morphology plus a reduced number in longitudinal

and transverse scale series (33 and 4/4) that distinguish it from the other *Leporinus* species of the area, *L. obtusidens* (Valenciennes, 1837). The specimen was collected in Isla del Zapallo, a depositional island of the Uruguay River (Figure 2D).

Characidae:

Cyanocharax alegretensis (Figure 1B)

The specimens recorded present the external appearance of *Cyanocharax* species and some of the distinguishing characters proposed for the genus by Malabarba and Weitzman (2003): two unbranched and eight branched dorsal-fin rays, one branched and six branched pelvic-fin rays, anterior mouth with

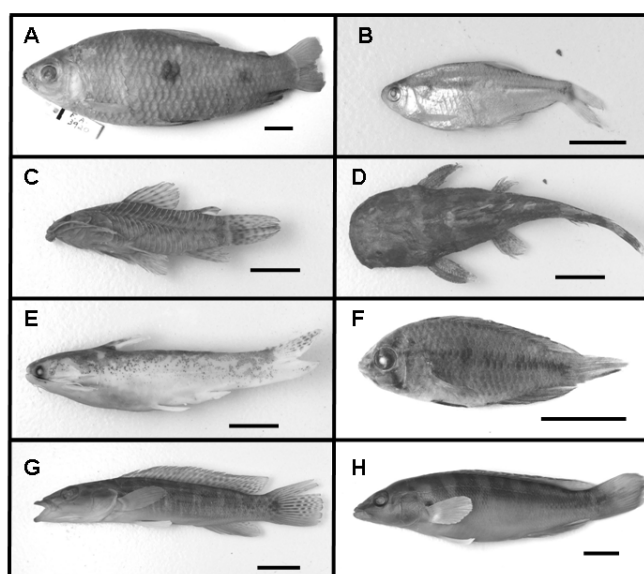


FIGURE 1. Specimens photographs: A. *Leporinus lacustris* (ZVC-P 2751); B. *Cyanocharax alegretensis* (ZVC-P 8131); C. *Lepthoplosternum pectorale* (ZVC-P 5337); D. *Microglanis* aff. *eurystoma* (ZVC-P 940); E. *Tatia boemia* (ZVC-P 8210); F. *Apistogramma borellii* (ZVC-P 8133); G. *Crenicichla missioneira* (ZVC-P 6884); H. *Crenicichla minuano* (ZVC-P 7078). Scale bars represent 1 cm.

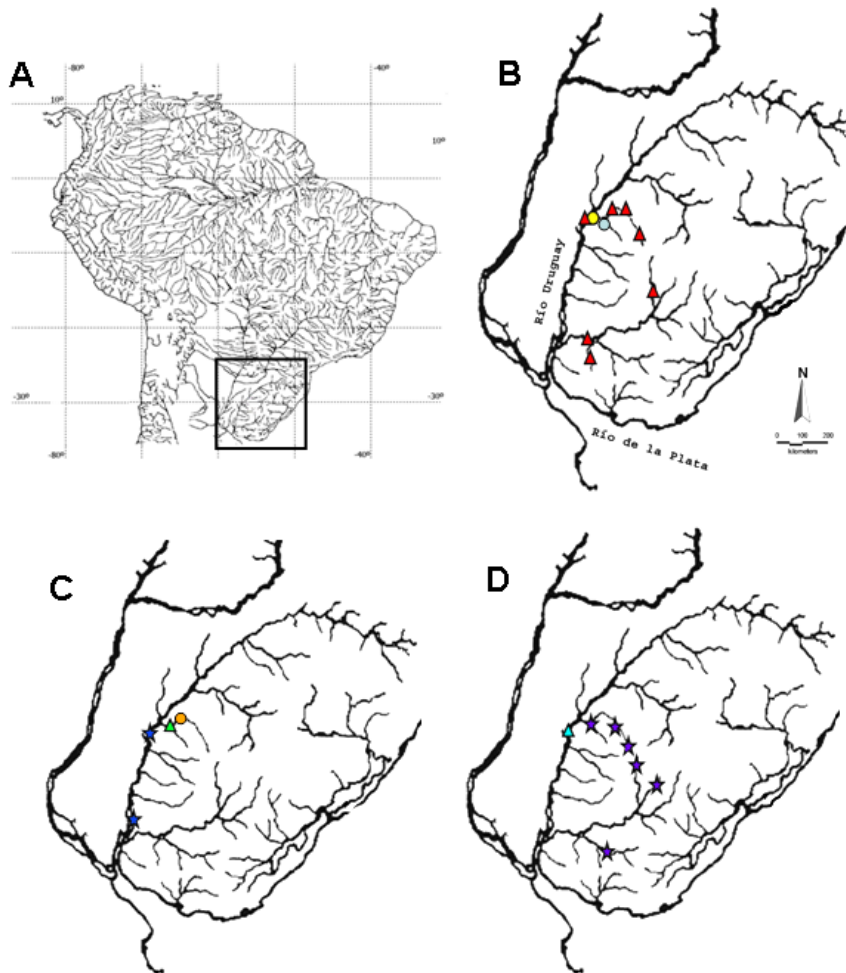


FIGURE 2. Distribution maps of species recorded: A. Study area represented by black rectangle; B. Red triangles = *Crenicichla minuano*, Yellow circle = *Apistogramma borellii*; Light blue circle = *Cyanocharax alegretensis*; C. Green triangle = *Tatia boemia*, Blue stars = *Lephthoplosternum pectorale*, Orange circle = *Microglanis aff. eurystoma*; D. Violet stars = *Crenicichla missioneira*, Cyan triangle = *Leporinus lacustris*.

unspecialized teeth, and incompletely toothed maxilla; they can be recognized as *C. alegretensis* by the interrupted lateral line, anal fin origin along the vertical through dorsal fin-origin, branched anal fin rays 25, anal fin with a basal sheath of scales, consisting of 1 row with 17 small scales covering the bases of unramified and first 12 ramified anal-fin rays. Specimens were recently collected in Laguna Redonda (Franquia) a floodplain lagoon of the Uruguay River close to the Cuareim River outlet (Figure 2A).

ORDER SILURIFORMES

Callichthyidae:

Lephthoplosternum pectorale (Figure 1C)

Specimens recorded present external characteristics of Callichthyinae and the coracoids exposed ventrally, caudal fin convex, one dorsal spine and 7 branched rays that permits the recognition of *Lephthoplosternum*. The number of dorsal and ventral lateral plates, the body width allows us to classify these specimens as *L. pectorale*. We found this species in the Uruguay River basin at two different localities, a modified wetland in the northern region of Uruguay and in Esteros de Farrapos a wetland system (National Protected Area) of the lower section of the river (Figure 2B)

Pseudopimelodidae:

Microglanis aff. eurystoma (Figure 1D)

Specimens present all external characteristics of the genus (Malabarba and Mahler 1998) and the diagnostic characteristics of the species: extremely large mouth gape and squarish head shape. This species was collected in the middle Cuareim River, the northern tributary of the Uruguay River in Uruguay (Figure 2C).

Auchenipteridae:

Tatia boemia (Figure 1E)

The specimen presents all the externally recognized characteristics of the genus proposed by Sacramento-Soares and Martins-Pinheiro (2008): anal fin base reduced in males and caudal peduncle laterally compressed and deep with middorsal keel. Furthermore it presented the diagnostic characteristic of the species consisting in a unique body pigmentation pattern. The specimen was recently collected in the middle Cuareim River (Uruguay River basin) (Figure 2B).

ORDER PERCIFORMES

Cichlidae:

Apistogramma borellii (Figure 1F)

Specimens recorded present the first branchial arch with dermal lobe, characteristic of Geophaginae plus scales of the anterior section of lateral line separated from

dorsal fin base by 1 scale and body side blue characteristic of *A. borellii*. Specimens were collected in Laguna Redonda, Franquia, a floodplain lagoons adjacent to Uruguay River close to the Cuareim River outlet (Figure 2A).

Crenicichla missioneira (Figure 1G)

Specimens recorded present the diagnostic characters: absent or reduced suborbital stripe, a row of blotches along the middle of the side, dark dots only present on the caudal peduncle, upper and lower lip folds interrupted anteriorly, lips not lobed, and lower jaw distinctly prognathous. Specimens with these characteristics are present in many localities along Uruguay River main course and tributaries, including several localities in the largest effluent of the lower Uruguay River, the Negro River (Figure 2D).

C. minuano (Figure 1H)

Specimens recorded present the diagnostic characters: absent or reduced suborbital stripe, a row of blotches along the middle of the side, dark dots only present on the caudal peduncle, upper and lower lip folds interrupted anteriorly, lips not lobed, and lower jaw isognathous. The new distribution records of this species are similar to *C. missioneira* (Figure 2A).

The present work adds eight new species for the Uruguayan ichthyofauna. The present note is the first record of *L. lacustris*, *A. borellii*, and *L. pectorale* for the Uruguay River. These species were previously restricted to the middle Paraná River (Casciotta et al. 2005; Reis 1997). *Cyanocharax alegretensis*, *M. aff. euristoma* were previously recorded for Ibicuy River (middle Uruguay River basin) (Malabarba and Weitzman 2003; Malabarba and Mahler 1998), so we extend their southern limit to Cuareim River. *Tatia boemia* was considered endemic of the upper Uruguay River (Kock and Reis 1996; Sacramento-Soares and Martins-Pinheiro 2008), the present record extends its distribution approximately 700 km to the south. Similar cases correspond to *C. missioneria* and *C. minuano*, species cited previously from tributaries of middle and upper Uruguay River (Lucena and Kullander 1992); these new records extend their distribution to Negro River, the

largest tributary of the lower Uruguay River. We report the presence of *Leporinus lacustris*, *Lepthoplosternum pectorale*, and *Apistogramma borellii* registered from the middle Paraná River (Casciotta et al. 2005) in the middle and lower Uruguay River; this evidence that ictiogeographic zonation of the Uruguay River and its relationship with the Paraná River basin are not resolved yet.

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LITERATURE CITED

- Casciotta, J., A. Almirón and J. Bechara. 2005. *Peces del Iberá-Habitat y Diversidad*. Corrientes: Fundación Ecos. 244 p.
- Koch, W.R. and R.E. Reis. 1996. *Tatia boemia*. A new species of auchenipterid catfish (Teleostei, Siluriformes) from the Río Uruguay drainage, southern Brazil. *Ichthyological Exploration of Freshwaters* 7: 85-90.
- Lucena, C.A.S. and S.O. Kullander. 1992. The *Crenicichla* (Teleostei: Cichlidae) species of the Uruguai River drainage in Brazil. *Ichthyological Exploration of Freshwaters* 3(2): 97-160.
- Maitland, P.S. 1995. The conservation of freshwater fish: past and present experience. *Biological Conservation* 72: 259-270.
- Malabarba, L.R. and J.K.F.Jr. Mahler 1998. Review of the genus *Microglanis* in the río Uruguay and coastal drainages of southern Brazil (Ostariophysi: Pimelodidae). *Ichthyological Exploration of Freshwaters* 9(3): 243-254.
- Malabarba, L.R. and S.H. Weitzman. 2003. Description of a new genus with six new species from southern Brazil, Uruguay, and Argentina, with discussion of a putative characid clade (Teleostei: Characiformes: Characidae). *Comunicações do Museu de Ciências da PUCRS, Série zoológica, Porto Alegre* 16(1): 67-151.
- Niñón, H., C. Ríos and P. Menezes. 2002. *Peces del Uruguay. Lista Sistemática y nombres comunes*. Montevideo: DINARA, Infopesca. 115 p.
- Reis, R.E. 1997. Revision of the Neotropical catfish genus *Hoplosternum* (Ostariophysi, Siluriformes, Callichthyidae), with the description of two new genera. *Ichthyological Exploration of Freshwaters* 7(4): 299-326
- Sacramento-Soares, L.M. and R.F. Martins-Pinheiro. 2008. A systematic revision of *Tatia* (Siluriformes: Auchenipteridae: Centromochlinae). *Neotropical Ichthyology* 6(3): 494-542.

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APPENDIX 1. Museum records of species analyzed. ZVC-P: Colección de Peces, Facultad de Ciencias, Montevideo, Uruguay.

***Cyanocharax alegretensis*:** Uruguay: Depto. Artigas: ZVC-P 8131, Bella Unión, Lagunas de Franquia, Col. I. Gonzalez-Bergonzoni, A. Duarte, F. Cantera, IX/2007; ***Leporinus lacustris*:** Uruguay: Depto de Artigas: ZVC-P 2751, Río Uruguay, Isla del Zapallo, Col. M. Meneghel, F. Achaval, 23/1/1984; ***Microglanis aff. euristoma*:** Uruguay: Depto. Artigas: ZVC-P 940, Río Cuareim, frente a ciudad de Artigas, Col. J. Soriano, 24/1/1960; ***Tatia boemia*:** Uruguay: Depto. Artigas: ZVC-P 8210, Paso Ramos, Río Cuareim, Col. M. Loureiro, F. Teixeira de Mello, I. Gonzalez-Bergonzoni, F. Quintans, I/2006; ***Lepthoplosternum pectorale*:** Uruguay: Depto de Artigas: ZVC-P 5337, Río Uruguay, Arrocería Conti, Frente a la Isla del Zapallo del Zapallo, Col. A. Langguth, 03/X/1976. Depto de Río Negro: ZVC-P 4761, Río Uruguay, Estero de Farrapos, desembocadura del Aº Román Grande, Col. M. Loureiro, A. D'Anatro, F. Teixeira de Mello, E. Charbonier, V/2002; ZVC-P 4654, Río Uruguay, Estero de Farrapos cercano al extremo sur de San Javier, Col. M. Loureiro, A. D'Anatro, F. Teixeira de Mello, E. Charbonier, V/2002; ***Crenicichla missioneira*:** Uruguay: Depto Artigas: ZVC-P 63, Río Cuareim, Región de la Sepultura, Picada del Negro Muerto, Col. Laboratorio de Zoología de Vertebrados, Facultad de Ciencias. I/1952; ZVC-P 94, Aº de la Invernada, Picada de la Negra Muerta, Col. Laboratorio de Zoología de Vertebrados, Facultad de Ciencias. II/1954; ZVC-P 1435, Río Cuareim, Estancia Yuquery 32 km al NW de la ciudad de Artigas, Col. Excursión Facultad de Humanidades y Ciencias, 28/1/1970; ZVC-P 5952 Paso Urumbeba, sobre el Aº Catalán grande, Col. C. Prigioni, F. Achaval, R. Bracco, 28/II/1986; ZVC-P 5953, same locality of ZVC-P 94; ZVC-P 5959, same locality of ZVC-P 63; ZVC-P 6880, Aº Cuaró Grande, ruta 4, Col. M. Loureiro, F. Teixeira de Mello, I. Gonzalez-Bergonzoni y F. Quintans, II/2006; ZVC-P 6882, Aº Cuaró Chico, Col. M. Loureiro, F. Teixeira de Mello, I. Gonzalez-Bergonzoni y F. Quintans, II/2006; ZVC-P 6883, Aº Catalán Grande, Paso Urumbeba, Col. M. Loureiro, F. Teixeira de Mello, I. Gonzalez-Bergonzoni y F. Quintans, II/2006; ZVC-P 6884, Río Cuareim, Rincón de Pacheco, campo de Delia Bravo, Col. M. Loureiro, F. Teixeira de Mello, I. Gonzalez-Bergonzoni y F. Quintans, II/2006; ZVC-P 6887, Río Cuareim, Paypaso, Col. M. Loureiro, F. Teixeira de Mello, I. González-Bergonzoni y F. Quintans, II/2006; ZVC-P 6890, Aº Catalán Grande, Picada Sinforiano Col. M. Loureiro, F. Teixeira de Mello, I. González-Bergonzoni y F. Quintans, II/2006; ZVC-P 6895, Río Cuareim, Paso del León, Col. M. Loureiro, F. Teixeira de Mello, I. Gonzalez-Bergonzoni y F. Quintans, II/2006; ZVC-P 7170, Aº Catalán chico, Paso Mendiondo, Col. M. Loureiro, I. González-Bergonzoni, F. Teixeira de Mello y F. Quintans, II/2006; ZVC-P 7174, Aº Cuaró Chico, Col. M. Loureiro, I. Gonzalez-Bergonzoni, F. Teixeira de Mello y F. Quintans II/2006; ZVC-P 7176, Río Cuareim, Paso Ramos, Col. M. Loureiro, I. Gonzalez-Bergonzoni, F. Teixeira de Mello y F. Quintans, II/2006; Depto Rivera: ZVC-P 2628 Aº Cuñapirú, Col. Excursión Facultad Humanidades y Ciencias, 05/III/1969; ZVC-P 7396, Aº Lunarejo, Paso Real, Col. M. Loureiro, IV/2006; Depto Durazno: ZVC-P 7061, Río Yí, Paso San Borja, Col. F. Teixeira de Mello, A. D'Anatro, I.

Gonzalez-Bergonzoni, S. Oviedo y M. Loureiro, 23/XI/2005; *Crenicichla minuano*: Uruguay: Depto Artigas: ZVC-P 4550 Bella Unión, Franquia, Bañados aledaños a Río Uruguay, Col. M. Loureiro, G. Eguren, F. Teixeira de Mello, E. Charbonier, 30/V/2002; ZVC-P 5954 Aº de la Invernada, Picada de la Negra muerta, Col. Excursión Laboratorio de Zoología, Facultad de Humanidades y Ciencias, I/1954; ZVC-P 6885, Río Cuareim, Paypasso, Col. M. Loureiro, F. Teixeira de Mello, I. González-Bergonzoni y F. Quintans, II/2006; ZVC-P 6888, Río Cuareim, Paso Ramos, Col. M. Loureiro, F. Teixeira de Mello, I. González-Bergonzoni, F. Quintans, II/2006. ZVC-P 6892, Río Cuareim, Paso de la Cruz, Col. M. Loureiro, F. Teixeira de Mello, I. González-Bergonzoni, F. Quintans, II/2006; ZVC-P 7208, Aº Catalán chico, Paso Mendiondo, Col. M. Loureiro, I. Gonzalez-Bergonzoni, F. Teixeira de Mello, F. Quintans, II/2006; ZVC-P 7209, Río Cuareim, Paso Ramos, Col. M. Loureiro, I. González-Bergonzoni, F. Teixeira de Mello, F. Quintans, II/2006. Depto. Salto: ZVC-P 7065 Río Arapey Chico, cruce con Ruta 4 Col. F. Teixeira de Mello, A. D'Anatro, I. González-Bergonzoni, S. Oviedo y M. Loureiro, 22/XI/2005. Depto. Durazno: ZVC-P 7069, Aº Grande, Ruta 14. Col. F. Teixeira de Mello, A. D'Anatro, I. González-Bergonzoni, S. Oviedo y M. Loureiro 21/XI/2005; ZVC-P 7078, Río Negro, represa de Palmar, Col. F. Teixeira de Mello, A. D'Anatro, I. Gonzalez-Bergonzoni, S. Oviedo y M. Loureiro, 21/XI/2005. Depto. Tacuarembó: ZVC-P 7803 Río Tacuarembó Chico, Paso de los novillos. Col. F. Teixeira de Mello, I. Gonzalez-Bergonzoni, III/2008; *Apistogramma borellii*: Uruguay: Depto. Artigas: ZVC-P 8133, Bella Unión, Franquia, Bañados aledaños a Río Uruguay, Col. I. Gonzalez-Bergonzoni, A. Duarte, F. Cantera. XI/2007.