

First record of *Megaleporinus piavussu* (Characiformes: Anostomidae) from Argentina.

Mauricio Fabián Benitez^{1*} & Danilo Ramón Aichino²

¹ Laboratorio de Genética Evolutiva 'Dr. Claudio Juan Bidau', Instituto de Biología Subtropical (UNaM-CONICET), Félix de Azara 1552, 3300 Posadas, Misiones, Argentina

² Proyecto Biología Pesquera Regional, Instituto de Biología Subtropical (UNaM-CONICET), Rivadavia 2370, 3300 Posadas, Misiones, Argentina

* mauriciofbenitez@gmail.com

Abstract

Megaleporinus obtusidens and *M. macrocephalus* were known to be the only representatives of the genus in Argentina and the former was also the only species recorded from the Paraná river in the country. Recent collection campaigns at Paraná River in Argentina allowed us to identify for the first time the presence of *Megaleporinus piavussu*.

Introduction

The genus *Megaleporinus* Ramirez, Birindelli & Galetti Jr., 2017 is a monophyletic group of Anostomidae, commonly known in Argentina as 'bogás'. The genus is diagnosed by having three unicuspid teeth on each premaxillary and dentary bone and a colour pattern composed of one to four dark midlateral blotches. Its monophyly was tested by molecular phylogenetic analysis using mitochondrial and nuclear genes, and also a ZZ/ZW chromosomal sex determination system was proposed as a possible synapomorphy of this taxon.

Nowadays, the genus comprises 10 species distributed throughout the major basins of South America (Fricke et al. 2020), but only two are known from Argentina (Koerber et al. 2019): *Megaleporinus obtusidens* (Valenciennes, 1837) and *Megaleporinus macrocephalus* (Garavello & Britzki, 1988). The former was originally described from the Río de la Plata as *Curimatus obtusidens* and the latter was recorded from the Argentinean portion of the Paraguay river basin by Braga (1993).

Recent collecting campaigns, allowed us to detect the presence of *M. piavussu* in the Paraná river of Corrientes province, Argentina.



fig. 1. *Megaleporinus piavussu* from Paraná River in Ituzaingó, Corrientes, Argentina. LGEP 857.

Materials and methods

Sampling was conducted by the 'Biología Pesquera Regional' research group. Fishes were captured with gill nets, upstream the Yacyretá reservoir. Collection points are referenced in the section of examined material examined. Fishes were fixed in a 10% formalin solution, stored in 70% ethylalcohol and deposited at the ichthyological collection of the Laboratorio de Genética Evolutiva (LGEP) of the Universidad Nacional de Misiones. Meristic and morphometric measurements were taken according to Winterbottom (1980) and Birindelli et al. (2013). Scales counts in lateral line and longitudinal series follow Birindelli et al. (2013), (table 1). A digital calliper's nearest 0,01 mm were employed for measurements. Standard length (SL) is expressed in millimetres and all other measurements are expressed as percentages of SL, except those of head subunits which are expressed as percentages of head length (HL).

	LGEP 856		LGEP 857
Standard length (mm)	326,3	346,52	306,12
Body depth	37,78	31,53	33,72
Caudal peduncle depth	13,53	11,49	13,55
Predorsal distance	53,76	46,28	45,14
Prepelvic distance	54,03	46,75	47,2
Pectoral length	16,77	14,62	15,91
Pelvic length	17,82	15,47	17,04
Head length	27,29	23,04	22,66
Eye diameter	15,73	16,03	16,64
Snout length	47,33	44,29	44,72
Bony interorbital	49,47	45,89	51,08
Premaxillary teeth	3	3	3
Dentary teeth	3	3	3
Lateral line scales	40	40	40
Upper LL scales (dorsal)	6	6	6
Lower LL scales (pelvic)	5,5	5,5	6
Circumpeduncular scale series	16	15	16
Dorsal fin rays	ii,10	ii,10	ii,10
Pectoral fin rays	i,14	i,14	i,17
Pelvic fin rays	i,8	i,8	i,8
Anal fin rays	ii,9	ii,9	ii,9
Caudal fin rays	i,9-8,i	i,9-8,i	i,9-8,i

tab. 1. Measurements of the three collected specimens.

Results

Megaleporinus piavussu (Britski, Birindelli & Garavello, 2012)

Fig. 1, Table 1

Material examined (all from the Paraná river): LGEP 856 (2), 326,30 and 346,52 mm, Argentina, Corrientes, Ituzaingó. (27°29'30"S, 56°40'48"W). Coll.: D.R. Aichino, 21.10.2019 | LGEP 857 (1), 306,12 mm, Argentina, Corrientes, Ituzaingó. (27°29'06"S, 56°40'23"W). 11, 12, 2019. Coll. D.R. Aichino, 11.12.2019.

Discussion

Until now, *Megaleporinus obtusidens* and *M. macrocephalus* were known to be the only representatives of the genus in Argentina and the former was also the only species recorded from the Paraná river in the country. With the description of *M. piavussu*, Britski et al. (2012) redefined *M. obtusidens* and *M. elongatus*.

Morphologically very similar, *M. piavussu* can be distinguished from *M. obtusidens* by having 39 to 40 (rarely 41) pored scales in the lateral line vs. 41 to 44. Britski et al (2012) also reported that individuals of *M. obtusidens* from the upper Paraná river have the mouth directed slightly or entirely downward vs. a terminal mouth in *M. piavussu*, a character also found among the specimens examined by us. It is worth pointing out that the mouth direction is not a character of *M. obtusidens* since specimens of the lower Paraná can have both configurations. Additionally, *M. piavussu* can be distinguished from *M. macrocephalus* by the coloration pattern (blotches of the flank rounded vs. at least first blotch, below the dorsal fin, transversely elongated), number of scales in the lateral line (39-40, rarely 41 vs. 42-43) and a shorter snout (Garavello & Britski, 1988).

Interestingly, *M. macrocephalus*, which is known in Argentina from the Paraguay river only, has been reported from the Upper Paraná river in Brazil by some authors. They suggested that the species may have been introduced to the Paraná river for its commercial value (Graça & Pavanelli 2007; Britski et al. 2012; Ota et al. 2018, Birindelli et al., 2020).

The species molecular delimitations performed by Ramirez et al. (2017) and Birindelli et al. (2020) in *Megaleporinus*, exhibit a contrast between the number of MOTUs (Molecular Operational Taxonomic Units) and the number of nominal species recognized in the genus. These authors found that some COI sequences of specimens from Lower Paraná (Rosario, Argentina) - originally assigned to *M. obtusidens* by Díaz et al. (2016) - clustered with sequences of *M. piavussu* from upper Paraná river in Brazil. They defined this lower Paraná group as *Megaleporinus cf. piavussu*. However, based on different molecular delimitation methods they considered *M. cf. piavussu* and *M. piavussu* (from Upper Paraná), as distinct MOTUs. As we did not perform a molecular analysis of the specimens herein reported, we cannot know which MOTU they belong to.

This note constitutes the first formal record for *Megaleporinus piavussu* from Argentina, extending its distribution for about 300 km southward in straight line.

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