

# Actinopterygii, Siluriformes, Loricariidae, *Loricariichthys platymetopon* Isbrücker and Nijssen, 1979: First record in Reservoir of Canoas II, Middle Paranapanema River, border of the states of São Paulo and Paraná, Brazil

Ana Carolina Souto\*, Ana Paula Vidotto-Magnoni, Heleno Brandão, Igor Paiva Ramos and Edmir Daniel Carvalho

Universidade Estadual Paulista, Instituto de Biociências, Departamento de Morfologia, Laboratório de Biologia e Ecologia de Peixes. Distrito de Rubião Jr. s/n. CEP. 18600-000. Botucatu, SP, Brazil.

\* Corresponding author. E-mail: [acsouto@ibb.unesp.br](mailto:acsouto@ibb.unesp.br)

**ABSTRACT:** First record of the “cascudo”, *Loricariichthys platymetopon* Isbrücker and Nijssen, 1979 in Canoas II Reservoir (Middle Paranapanema River, border of the states of São Paulo and Paraná, Brazil). Its occurrence is due to the flooding of Sete Quedas waterfall, as a result of the construction of Itaipu Reservoir. Furthermore, there is absence or low abundance of natural predators, like *Salminus brasiliensis*, since this species has difficulties to adapt or even survive in reservoirs.

The fish species *Loricariichthys platymetopon* Isbrücker and Nijssen, 1979, known as “cascudo chinelo”, “acari”, “cascudo viola”, and “raspa canoa” (Figure 1), has its natural distribution in Prata River basin (Reis and Pereira 2000). This fish species exhibit body covered with dermal plates disposed in series; ventral mouth and reduced swim bladder, involved by a bony capsule attached to the posterior part of the cranium (Britski *et al.* 2007).

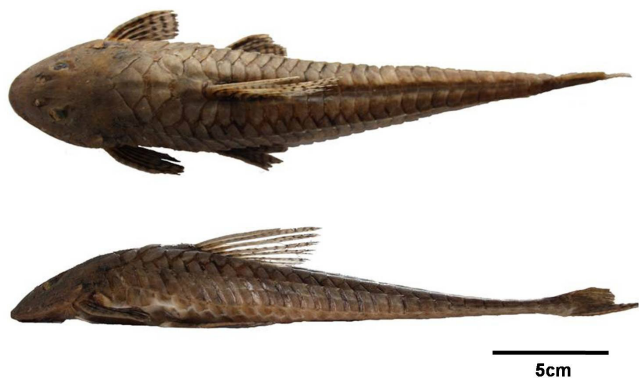
The diet is composed mainly by organic detritus, sediment (mineral particles), Diptera larvae (Chironomidae), microcrustaceans, nematodes, mites, mollusks and algae (Fugi *et al.* 1996), representing an important role in the detritus food chain, in the energy flow and cycling of nutrients in ecosystems (Bowen 1983; Fugi *et al.* 2001). This species lives in lentic and semi-lentic environments (Querol *et al.* 2002), with little requirement of dissolved oxygen of the water (Azevedo 1938). Furthermore, this species does not carry out reproductive migration, not depending of tributaries for complete its cycle of life (Marcucci *et al.* 2005).

The standard length (Ls) of this species can vary from 11.0 cm to 23.8 cm (Fugi *et al.* 1996), presenting size on the onset of gonadal maturation around 13.0 cm (Marcucci *et al.* 2005); males present parental care during the reproduction, carrying the eggs in the lips (Dei Tos *et al.* 1997).

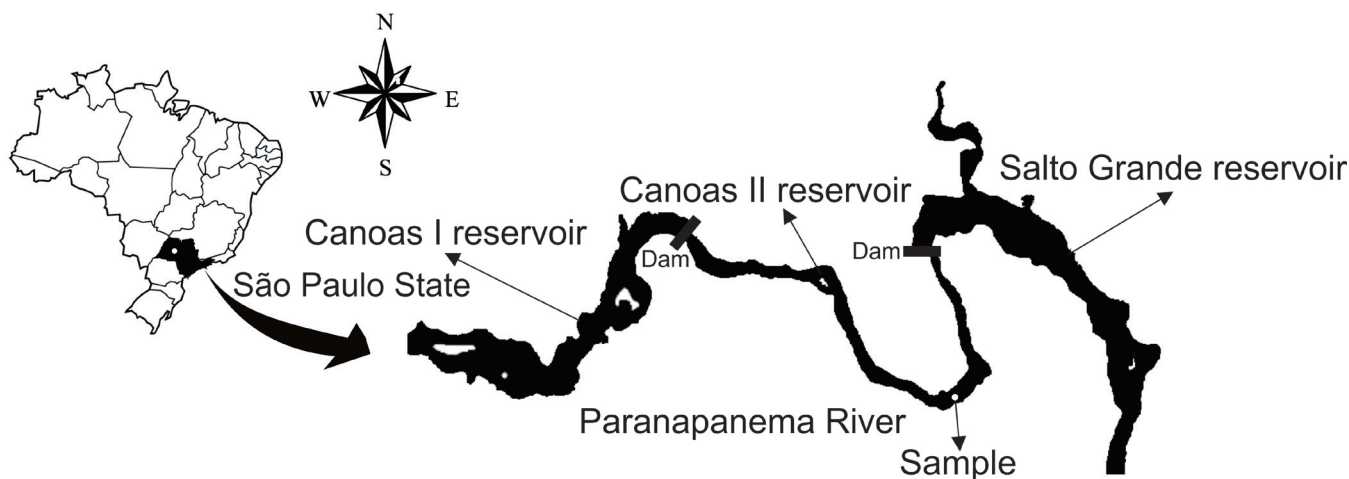
This species of fish presents high potential for pisciculture at Rio Grande do Sul state, Brazil (Baldisserotto, 2009) being one of the most captured species in the fisheries in that state. It presents good productivity of fillet, and the carcass can be used as complement of ration due to its good calcareous composition (Querol *et al.* 1996).

After the formation of Itaipu Reservoir, located 150 km downstream of Sete Quedas waterfall, a natural barrier between the stretches of Upper and Middle Paraná River was lost (Agostinho *et al.* 2007). Approximately 37 species of fishes raised the river, invading the floodplain upstream (Langeani *et al.* 2007). Four species, the “piranha” *Serrasalmus marginatus*, the “cangati” *Parauchenipterus galeatus*, the “armado” *Pterodoras granulosus* and the “cascudo” *Loricariichthys platymetopon* are among the most abundant in the fish communities of the floodplain (Gaspar da Luz *et al.* 2004). Furthermore, the species continued ascending and colonizing reservoirs upstream the Upper Paraná River basin.

In studies carried out until 1998 there was no register about this species of fish in reservoirs of Paranapanema River, as Capivara, Salto Grande (Bennemann *et al.* 2000; Dias and Garavello 1998) and Jurumirim (Carvalho and Silva 1999). However, the massive presence of this species was first recorded between 1993 and 2000, in Taquaruçu Reservoir (Britto and Carvalho 2006), located downstream of reservoirs informed above. The species was first recorded in Capivara Reservoir in 1999 (Marcucci *et al.* 2005), and was among the most abundant species and considered constant in all reservoir between 2001 and 2002 (Hoffmann *et al.* 2005).



**FIGURE 1.** *Loricariichthys platymetopon* (register number: LBP 9115 - UNESP, Instituto de Biociências de Botucatu, SP, Brazil) specimen sampled at Canoas II reservoir, Middle Paranapanema River, border of the states of São Paulo and Paraná, Brazil.



**FIGURE 2.** Map the state São Paulo indicating the reservoirs of Canoas II and Salto Grande, Middle Paranapanema River, border of the states of São Paulo and Paraná, Brazil and sampling site.

The Canoas II Reservoir (Figure 2) is located between Salto Grande and Canoas I reservoirs. We captured 10 individuals of *L. platymetopon* (register number: LBP 9115 - UNESP, Instituto de Biociências de Botucatu, SP, Brazil) in January/2010, in a stretch upstream of Canoas II Reservoir (downstream of Salto Grande Reservoir, 22°55'38.68" S, 50°00'10.86" W). For the samplings we used gill nets (mesh size from 3 to 14 cm between opposite knots) exposed for 18 hours. All specimens (nine females and one male) presented the gonads in mature stage, indicating that the specie is rising the Middle Paranapanema River, and establishing in reservoirs upstream.

The loricariids present parental care, involving different behaviors, as protect their eggs in nest or cavities, or carrying them in the surface of the body. The carrying of eggs is an effective reproductive strategy in environments that present variations in the limnological conditions and water level (Moodie and Power 1982), as observed in several reservoirs. In addition, the low transparency of the water in these sites inhibits the visual localization by predators (Dei Tos *et al.* 1997). Studies carried out in Paraná River indicate that the "dourado" *Salminus brasiliensis* is one of the few natural predators of *L. platymetopon*, composing more than 60% of its diet (Hahn *et al.* (1997). These natural predators such *S. brasiliensis* require long stretches of river to perform its reproductive migration, therefore presenting low abundance in reservoirs.

Therefore, the low abundance of natural predators for cascudo *L. platymetopon* might turn this species abundant, as observed in Capivara Reservoir (Marcucci *et al.* 2005), and may cause unpredictable effects on native fish fauna, such as competition for food and space resources, habitat modification and functioning of the local system, introduction of pathogens and parasites and genetic changes (Agostinho *et al.* 2007).

#### LITERATURE CITED

Agostinho, A.A., A.E.A. Vazzoler and M.S.M. Thomaz. 1995. The High River Paraná Basin: limnological and ichthyological aspects; p. 59-103 In: J.G. Tundisi, C.E.M. Bicudo and T. Matsumura-Tundisi (ed.). *Limnology in Brazil*. Rio de Janeiro: ABC/SBL.

Agostinho, A.A., L.C. Gomes, F.M. Pelicice. 2007. *Ecologia e manejo de recursos pesqueiros em reservatórios do Brasil*. Maringá: EDUEM. 501 p.

Azevedo, P. 1938. O cascudo dos açudes nordestinos *Plecostomus plecostomus*. *Publicado no Instituto de Pesca, Buenos Aires* 10(9): 211-224.

Baldissierotto, B. 2009. Piscicultura continental no Rio Grande do Sul: situação atual, problemas e perspectivas para o futuro. *Ciência Rural* 39(1): 291-299.

Bowen, S.H. 1983. Detritivory in neotropical fish communities. *Environmental Biology Fishes* 9: 137-144.

Britski, H.A., K.Z.S. Silimon and B.S. Lopes. 2007. *Peixes do Pantanal*. Brasília: EMBRAPA. 184 p.

Britto, S.G. and E.D. Carvalho. 2006. Ecological attributes of fish fauna in the Taquaruçu Reservoir, Paranapanema River (Upper Paraná, Brazil): composition and spatial distribution. *Acta Limnologica Brasiliensis* 18(4): 377 - 388.

Carvalho, E.D. and V.F.B. Silva. 1999. Aspectos ecológicos da ictiofauna e da produção pesqueira do reservatório de Jurumirim (Alto Rio Paranapanema), São Paulo; p. 771-799 In R. Henry (ed.). *Ecologia de reservatórios: estrutura, função, e aspectos sociais*. Botucatu: FAPESP.

Dei Tos, C., A.A. Agostinho and H.I. Suzuki. 1997. Population structure and reproductive biology of *Loricariichthys platymetopon* (Siluriformes, Pisces) in the upper river Paraná. *Brazilian Archives of Biology and Technology* 40(4): 793-807.

Dias, J.H.P. and J.C. Garavello. 1998. Ecological studies on the fish community of Salto Grande Reservoirs, Paranapanema river basin, São Paulo, Brazil. *Verhandlungen International Verein Limnology* 26: 2228-2231.

Fugi, R., N.S. Hahn and A.A. Agostinho. 1996. Feeding styles of five species of bottom-feeding fishes of the high Paraná River. *Environmental Biology of Fishes* 46: 297-307.

Fugi, R., A.A. Agostinho and N.S. Hahn. 2001. Trophic morphology of five benthic feeding fish species of a tropical floodplain. *Revista Brasileira de Biologia* 61: 27-33.

Gaspar Da Luz, K.D., E.F. Oliveira, A.C. Petry, H.F. Júlio Júnior, C.S. Pavanelli and L.C. Gomes. 2004. Fish assemblages in the Upper Paraná River floodplain; p. 107-115 In A.A. Agostinho, L. Rodrigues, L.C. Gomes, S.M. Thomaz and L.E. Miranda (ed.). *Structure and functioning of the Paraná River and its floodplain: LTER - site 6 (Peld - sitio 6)*. Maringá: EDUEM.

Hahn, N.S., I.F. Andrian, R. Fugi and V.L.L. Almeida. 1997. Ecologia trófica; p. 209-228 In A.E.A.M. Vazzoler, A.A. Agostinho and N.S. Hahn (ed.). *A planície de inundação do alto rio Paraná: aspectos físicos, biológicos e socioeconômicos*. Maringá: EDUEM.

Hoffmann, A.C., M.L. Orsi and O.A. Shibatta. 2005. Diversidade da ictiofauna do reservatório da UHE Escola Mackenzie (Capivara), rio Paranapanema. *Iheringia, Série Zoologia* 95(3): 319-325.

Júlio Jr., H.F.; C. Dei Tós; A.A. Agostinho and C.S. Pavanelli. 2009. A massive invasion of fish species after eliminating a natural barrier in the upper rio Paraná basin. *Neotropical Ichthyology* 7(4): 709-718.

Marcucci, K.M.I., M.L. Orsi and O.A. Shibatta. 2005. Estratégia reprodutiva e a ocupação de *Loricariichthys platymetopon* (Siluriformes, Loricariidae) na área de influência da represa de Capivara, médio rio Paranapanema. *Iheringia, Série Zoologia* 95(2): 196-203.

Moodie, E.E. and M. Power. 1982. The reproductive biology of an armoured catfish, *Loricaria uracantha*, from Central America. *Environmental Biology of Fishes* 7(2): 143-148.

Querol, M.V.M., E. Querol and E. Passos. 1996. Estudo preliminar do cascudo *Loricariichthys platymetopon* (Isbrucker and Nijssen, 1979) (Siluriformes, Loricariidae) visando seu aproveitamento comercial, na região de Uruguaiana, RS, Brasil. *Revista da Faculdade de Zootecnia, Veterinária e Agronomia de Uruguaiana*. 2/3(1): 13-17.

Querol, M.V.M., E. Querol and N.N.A. Gomes. 2002. Fator de condição gonadal, índice hepatossomático e recrutamento como indicadores

do período de reprodução de *Loricariichthys platymetopon* (Osteichthyes, Loricariidae), bacia do rio Uruguai médio, sul do Brasil. *Iheringia, Série Zoologia* 92(3): 1-112.

Reis, R.E. and E.H.L. Pereira. 2000. Three new species of the loricariid catfish genus *Loricariichthys* (Teleostei: Siluriformes) from southern South America. *Copeia* 4: 1029-1047.

RECEIVED: January 2011  
LAST REVISED: March 2011  
ACCEPTED: April 2011  
PUBLISHED ONLINE: May 2011  
EDITORIAL RESPONSIBILITY: Rubens Pazza