Loricariichthys platymetopon (a fish, no common name)
Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, February 2022
Revised, March 2022
Web Version, 4/11/2023

Organism Type: Fish
Overall Risk Assessment Category: Uncertain

Photo: Diego Garcia. Licensed under CC-BY 3.0. Available: https://www.fishbase.de/photos/ThumbnailsSummary.php?ID=50677# (January 2022).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2022):

"South America: La Plata River basin."

From Reis and Pereira (2000):

"*Loricariichthys platymetopon* is common in the rio Paraguay, lower rio Paraná, and lower and middle rio Uruguai […] [Brazil]. In the original description, Isbrücker and Nijssen (1979) included one paratype […] from a channel between lago Janauacá and the rio Solimões (Amazon

basin) [Brazil], and we have examined four specimens of *L. platymetopon* […] from the upper rio Guaporé (Amazon basin) or its tributaries [Brazil]."

Status in the United States

No records of *Loricariichthys platymetopon* in trade or in the wild in the United States were found.

Means of Introductions in the United States

No records of *Loricariichthys platymetopon* in the wild in the United States were found.

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2022), *Loricariichthys platymetopon* Isbrücker & Nijssen, 1979 is the current valid name for this species.

From ITIS (2022):

Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Loricariidae
Subfamily Loricariinae
Genus *Loricariichthys*
Species *Loricariichthys platymetopon* Isbrücker and Nijssen, 1979

Size, Weight, and Age Range

From Casimiro et al. (2017):

"This omnivorous species grows to lengths of around 30 cm, with maturity at lengths of approximately 15 cm (Ferraris, 2003)."

From Froese and Pauly (2022):

"Max length : 38.3 cm TL male/unsexed; [Marques et al. 2016]; 39.0 cm TL (female); max. published weight: 311.00 g [Marques et al. 2016]; max. published weight: 311.00 g"

Environment

From Froese and Pauly (2022):

"Freshwater; demersal; […] 23°C - 26°C [Baensch and Riehl, 1995; assumed to be recommended aquarium temperature range]"

Climate

From Froese and Pauly (2022):

"Tropical;"

Distribution Outside the United States

Native

From Froese and Pauly (2022):

"South America: La Plata River basin."

From Reis and Pereira (2000):

"*Loricariichthys platymetopon* is common in the rio Paraguay, lower rio Paraná, and lower and middle rio Uruguai […] [Brazil]. In the original description, Isbrücker and Nijssen (1979) included one paratype […] from a channel between lago Janauacá and the rio Solimões (Amazon basin) [Brazil], and we have examined four specimens of *L. platymetopon* […] from the upper rio Guaporé (Amazon basin) or its tributaries [Brazil]."

Introduced

From Reis and Pereira (2000):

"In the last years, *L. platymetopon* has been frequently captured in the upper río Paraná stream of Guaíra, the location of the now submerged Sete Quedas Falls [border of Brazil and Paraguay]."

From Casimiro et al. (2017):

"The initial detection of *L. platymetopon* in fish samples collected from the Capivara area of the Paranapanema River [Brazil] was in 1999. At Sertanópolis Point [Brazil], no *L. platymetopon* were recorded in samples collected between 1990 and 1996, but they were captured in 2001 and have been present in each sample collected since then."

From Bailly et al. (2011):

"There are two […] peculiarities about *L. platymetopon*. […] The second regards the species' success in colonizing new environments, as verified in the Upper Paraná River floodplain, where *L. platymetopon* currently figures among the most abundant fish species (Luiz et al. 2004, Agostinho et al. 2004, Morales et al. 2009)."

Means of Introduction Outside the United States

From Reis and Pereira (2000):

"Prior to the construction of the Itaipu hydroelectric dam, which drowned the major Sete Quedas Falls, this species was apparently absent from the upper rio Paraná drainage, as the falls acted as a natural barrier for upstream dispersion."

From Casimiro et al. (2017):

"In Brazil, authorities have been concerned about the consequences of the blockage of migration routes on fisheries and they have taken measures to address the problem (Agostinho et al., 2004). The installation of new fish passages in Brazilian dams is popular and in some states their installation on dams is mandatory (Pelicice and Agostinho, 2008)."

"Although it is a non-migratory species, *L. platymetopon* may have used the fish passes to disperse and cross the Canoas I and II dams [Brazil] […]. Souto et al. (2011) reported the capture of adult individuals in Canoas II Reservoir and during some more recent work in the two reservoirs (Canoas I and II) between 2010 and 2012, there were 17 and 9 individuals captured in the passes respectively (Orsi and Almeida, 2011)."

Short Description

From Reis and Pereira (2000):

"Dorsal profile of head evenly convex from tip of snout to supraoccipital bone; straight from supraoccipital to dorsal fin base. Body dorsal profile posterior to dorsal fin nearly straight and deepening at last two or three plates before caudal fin. Dorsal plates along dorsal fin base depressed at midline, forming longitudinal groove. Plates posterior to dorsal fin depressed at midline in larger specimens only. Dorsal margin of orbit slightly elevated; postorbital notch well developed. Overall aspect of head in dorsal view broadly rounded; tip of snout also rounded in dorsal view; rostral border poorly developed. Naked margin of head extending posteriorly from tip of snout to vertical at posterior of orbit. Teeth minute, 8-15 (10.2) on premaxilla and 10-20 (14.1) on dentary, cusps rounded in males and pointed in females. Six to eight (7.1) thoracic plates between pectoral fin and pelvic fin origin slightly bent transversely, forming low ridge in front of pelvic fin origin. Preanal plate bordered anteriorly by two or three plates. Abdominal plates, between thoracic plates, irregularly arranged in one (especially posteriorly) or two rows; anteriormost abdominal plates smaller and more numerous than posterior ones. Midventral plate series with 30-33 (31.3) plates. Midventral and middle plate series with well-developed keels formed by hypertrophied odontodes; these keels meeting in last 10-12 (10.8) lateral plates. Paired plates between supraoccipital and nuchal plate with two low, inconspicuous ridges."

"Posterior dorsal fin margin straight to slightly concave, tip reaching fifth plate posterior to its base; five or six dorsal plates along dorsal fin base. Posterior pectoral fin margin straight or slightly convex; first unbranched ray longest, reaching or just passing origin of pelvic fin. Pelvic fin posterior margin broadly rounded; third or fourth ray longest, reaching anterior third of anal fin. Posterior anal fin margin rounded; second or third ray longest. Tip of anal fin reaching fifth or sixth plate posterior to its base; three ventral plates along anal fin base. Caudal fin posterior margin concave, upper ray longest."

"Color in alcohol. - Ground color light to grayish brown dorsally and light brown to pale yellow ventrally. Body dorsal surface with many dark brown blotches of irregular shape and size. These blotches concentrated to form five or six irregular transverse darker bands: one at base of dorsal fin, one right behind dorsal fin, and two or three on caudal peduncle. Specimens from rio Uruguai drainage usually darker. Eyes dark gray. All fins with small dark brown dots on rays and membranes, somewhat aligned and forming irregular lines, especially on pectoral and pelvic fins. Pectoral and pelvic fins becoming dark brown in larger specimens. Dorsolateral surface of upper lip usually with some dark brown or grayish pigmentation."

Biology

From Garcia and Benedito (2010):

"Studies on the biology of this species in the Paraná River (Dei Tos *et al*., 1997) and in the Uruguay River basin (Querol *et al*., 2002) indicate that *L. platymetopon* inhabits mainly lentic and semi-lotic habitats, and that its reproductive period extends from October to March (Spring-Summer) (Vazzoler, 1996; Marcucci *et al*., 2005)."

"*Loricariichthys platymetopon* is a detritivorous species, feeding on detritus and benthic organisms (Fugi *et al.*, 2001). Because of its feeding habits and abundance, this species plays an important role in nutrient and energy cycling in Neotropical ecosystems."

From Bailly et al. (2011):

"Besides, this species was regarded as an important prey in the diet of various piscivores in the Upper Paraná River (Hahn et al. 2004), showing its ecological relevance as a link in the aquatic food chain."

"There are two further peculiarities about *L. platymetopon*. The first is the parental care afforded to its offspring, which is done by males who carry the eggs up to the moment of hatching (Dei Tós et al. 1997)."

Human Uses

No information about human uses of *Loricariichthys platymetopon* could be found.

Diseases

No records of OIE-reportable diseases (OIE 2022) were found for *L. platymetopon*.

Poelen et al. (2014) lists the following as parasites of *Loricariichthys platymetopon*: *Sprentascaris mahnerti, Raphidascaris mahnerti*, and *Clinostomum marginatum* (Strona et al. 2013).

Threat to Humans

From Froese and Pauly (2022):

"Harmless"

3 Impacts of Introductions

From Casimiro et al. (2017):

"[…] through being able to move into a previously inaccessible ecoregion and then disperse – with assistance from human activities – *L. platymetopon* has established and become highly invasive in the reservoirs of the upper Paraná River basin, notably Capivara Reservoir, resulting in increased biological homogeneity of the fish assemblage."

4 History of Invasiveness

Loricariichthys platymetopon has been introduced and become established due to anthropogenic alteration of natural barriers, enabling the species to move upstream of its native range. It has been successful in colonizing new habitats and becoming abundant. Despite its well-known introduction history, there is almost no information available about negative impacts of its introduction, only a statement that it has become "highly invasive" and caused "increased biological homogeneity of the fish assemblage" (Casimiro et al. 2017). Because of this lack of information regarding impacts, the History of Invasiveness is categorized as Data Deficient.

5 Global Distribution

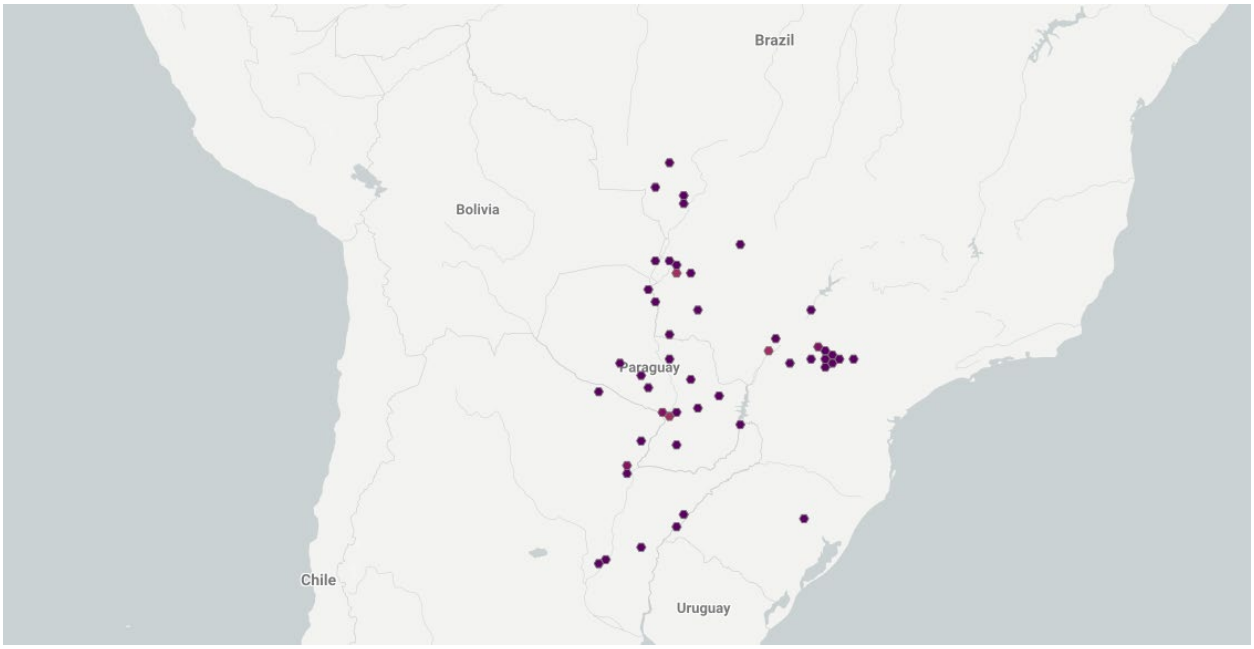

Figure 1. Known global distribution of *Loricariichthys platymetopon*. Observations are reported from the La Plata River basin in southern Brazil, Paraguay, and Argentina. Map from GBIF Secretariat (2022). Occurrences outside the extent of this map in Venezuela, Colombia, and northern Brazil were excluded from climate matching analysis because they occur outside the documented range of this species and do not represent established populations.

6 Distribution Within the United States

No records of *Loricariichthys platymetopon* in the wild in the United States were found.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Loricariichthys platymetopon* within the contiguous United States was high along the coast in the Southeast. The climate match was medium-high across much of the South and Southeast, medium in the lower Midwest, and low in the rest of the contiguous United States. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean distance) for the contiguous United States was 0.250, High (scores greater than 0.103, inclusive, are classified as High). The following States had high individual Climate 6 scores: Alabama, Arkansas, Delaware, Florida, Georgia, Kansas, Kentucky, Louisiana, Maryland, Missouri, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Arizona, Illinois, Indiana, New Jersey, New Mexico, and Ohio all received medium matches. All other States had low individual scores.

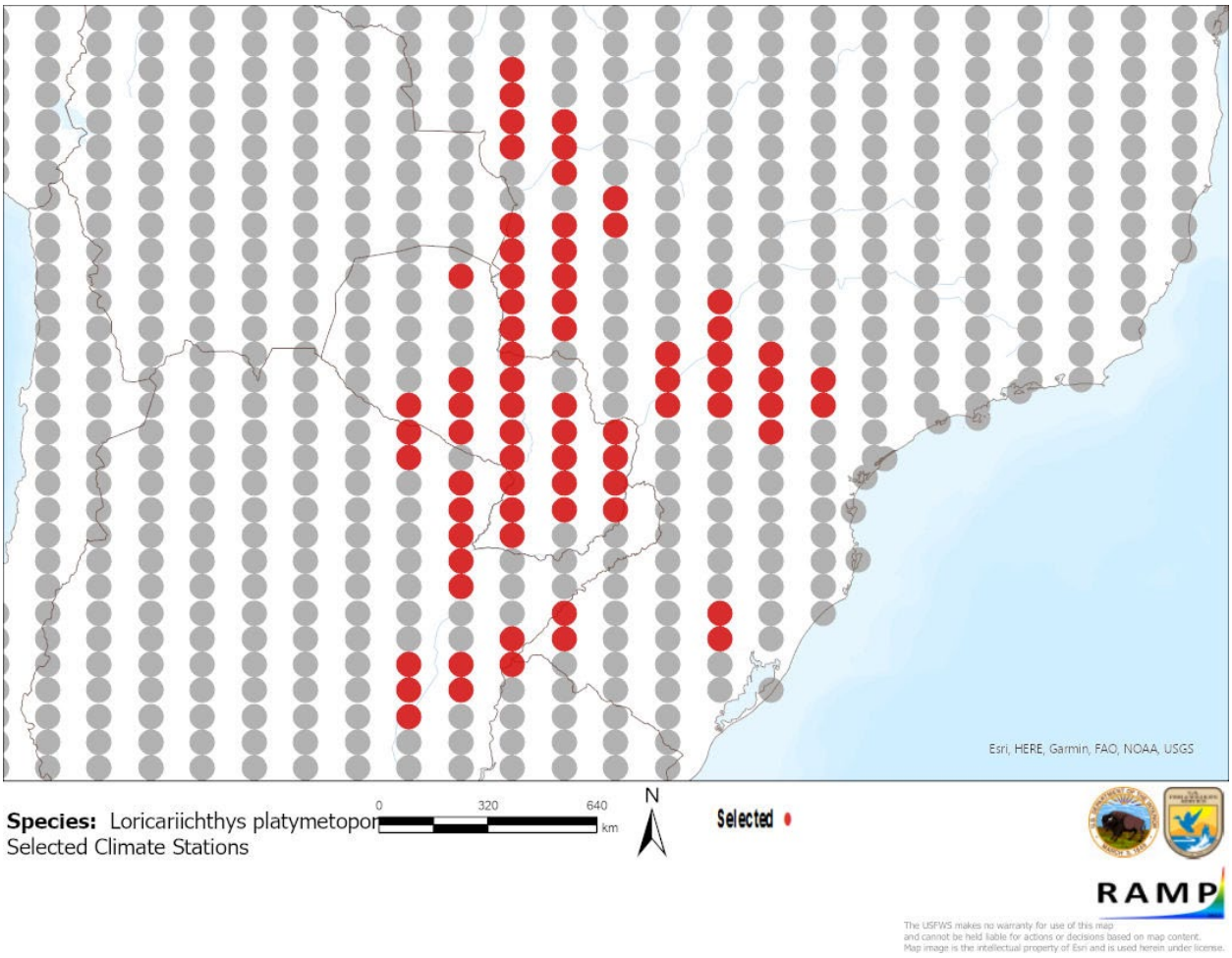

Figure 2. RAMP (Sanders et al. 2021) source map showing weather stations in the La Plata River basin selected as source locations (red; Brazil, Argentina, Uruguay, Paraguay) and non-source locations (gray) for *Loricariichthys platymetopon* climate matching. Source locations from GBIF Secretariat (2022). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

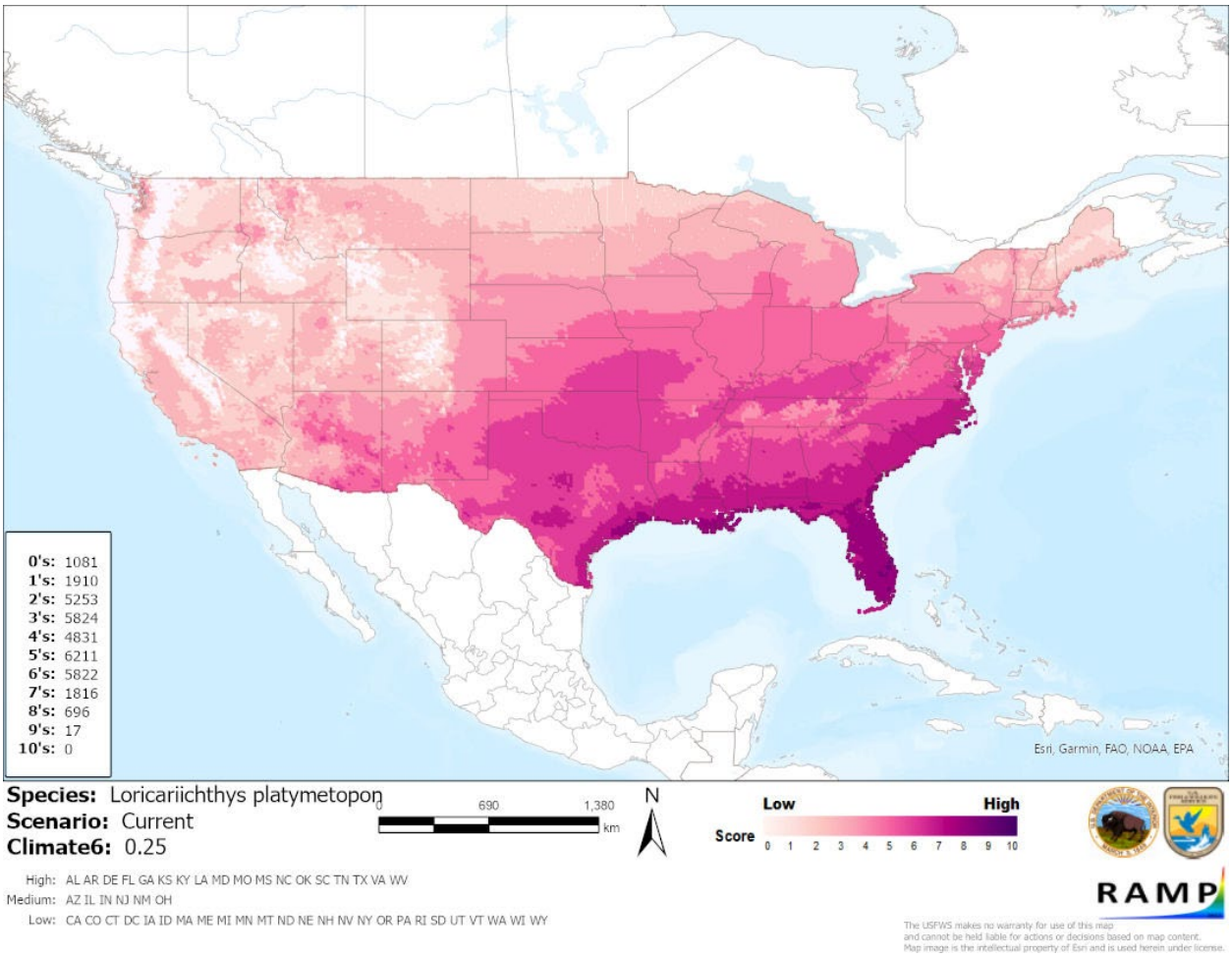

Figure 3. Map of RAMP (Sanders et al. 2021) climate matches for *Loricariichthys platymetopon* in the contiguous United States based on source locations reported by GBIF Secretariat (2022). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
0.000≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

8 Certainty of Assessment

There is adequate information available about the biology and distribution of *Loricariichthys platymetopon.* Information is available regarding introductions and the related pathway. There is almost no information available on impacts of this species outside of its native range. Due to the lack of information regarding history of invasiveness the certainty of this assessment is Low.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Loricariichthys platymetopon is a catfish species native to the La Plata River basin in Brazil, Paraguay, and Argentina. Its native range occurred below natural barriers to upstream migration, but construction of dams, which included fish passage structures, allowed this species to expand its range upstream. No information is available on impacts of the range expansion of *L. platymetopon,* except that it is apparently abundant where introduced. This species has a High overall climate match with the contiguous United States. The area of highest match occurred along the Southeast coast, ranging from the Gulf of Mexico to North Carolina. Certainty of this assessment is Low due to the lack of information about impacts of introduction of *L. platymetopon*. Overall risk assessment category is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): Data Deficient**
- **Overall Climate Match Category (Sec. 7): High**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks, Important additional information: No additional remarks.**
- **Overall Risk Assessment Category: Uncertain**

10 Literature Cited

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 11.

Bailly D, Batista-Silva VF, Abelha MC, Kashiwaqui EA, Fernandes CA, Carvalho ED. 2011. Relative abundance and reproductive tactics of a Loricariidae species at Saraiva Lagoon, Ilha Grande National Park, MS-PR, Brazil. Biota Neotropica 11(3):171–178.

Casimiro AC, Garcia DA, Costa AD, Britton JR, Orsi ML. 2017. Impoundments facilitate a biological invasion: dispersal and establishment of non-native armoured catfish *Loricariichthys platymetopon* (Isbrückler & Nijssen, 1979) in a neotropical river. Limnologica 62:34–37.

Fricke R, Eschmeyer WN, van der Laan R, editors. 2022. Eschmeyer's catalog of fishes: genera, species, references. California Academy of Science. Available: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp (February 2022).

Froese R, Pauly D, editors. 2022. *Loricariichthys platymetopon* Isbrücker & Nijssen, 1979. FishBase. Available: https://www.fishbase.de/summary/50677 (February 2022).

Garcia DA, Benedito E. 2010. Variation in energy density of *Loricariichthys platymetopon* (Siluriformes: Loricariidae) in the upper Paraná River basin. Neotropical Ichthyology 8(2):321–327.

GBIF Secretariat. 2022. GBIF backbone taxonomy: *Loricariichthys platymetopon* (Isbrücker & Nijssen, 1979). Copenhagen: Global Biodiversity Information Facility. Available: https://www.gbif.org/species/2339173 (February 2022).

[ITIS] Integrated Taxonomic Information System. 2022. *Loricariichthys platymetopon* (Isbrücker and Nijssen, 1979). Reston, Virginia: Integrated Taxonomic Information System. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=680468#null (February 2022).

[OIE] World Organisation for Animal Health. 2022. Animal diseases. Available: https://www.oie.int/en/what-we-do/animal-health-and-welfare/animal-diseases/ (February 2022).

Poelen JH, Simons JD, Mungall CJ. 2014. Global Biotic Interactions: an open infrastructure to share and analyze species-interaction datasets. Ecological Informatics 24:148–159.

Reis RE, Pereira EHL. 2000. Three new species of the loricariid catfish genus *Loricariichthys* (Teleostei: Siluriformes) from southern South America. Copeia 2000(4):1029–1047.

Sanders S, Castiglione C, Hoff M. 2021. Risk Assessment Mapping Program: RAMP. Version 4.0. U.S. Fish and Wildlife Service.

11 Literature Cited in Quoted Material

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

Agostinho AA, Bini LM, Gomes LC, Júlio-Júnior HF, Pavanelli CS, Agostinho CS. 2004. Fish assemblages. Pages 223–246 in Thomaz SM, Agostinho AA, Hahn NS, editors. The upper Paraná River and its floodplain: physical aspects, ecology and conservation. Leiden, Netherlands: Backhuys Publishers.

Agostinho AA, Gomes LC, Latini JD. 2004. Fisheries management in Brazilian reservoirs: lessons from/for South America. Interciência 29:334–338.

Baensch HA, Riehl R. 1995. Aquarien atlas. Band 4. Mergus Verlag GmbH. Melle, Germany: Verlag für Natur-und Heimtierkunde.

Dei Tos C, Agostinho AA, Suzuki HI. 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.

Ferraris Jr CJ. 2003. Loricariidae—Loricariinae (armored catfishes). Pages 330–350 in Reis RE, Kullander SO, Ferraris Jr CJ. Checklist of the freshwater fishes of South and Central America. Porto Alegre, Brazil: EDIPUCRS.

Fugi R, Agostinho AA, Hahn NS. 2001. Trophic morphology of five benthic-feeding fish species of a tropical floodplain. Revista Brasileira de Biologia 61:27–33.

Hahn NS, Fugi R, Andrian IF. 2004. Trophic ecology of the fish assemblages. Pages 247–269 in Thomaz SM, Agostinho AA, Hahn NS, editors. The Upper Paraná River and its floodplain: physical aspects, ecology and conservation. Leiden, Netherlands: Backhuys Publishers.

Isbrücker IJH, Nijssen H. 1979. Three new South American mailed catfishes of the genera *Rineloricaria* and *Loricariichthys* (Pisces, Siluriformes, Loricariidae). Bijdragen tot de Dierkunde 48:191–211.

Luiz EA, Gaspar da Luz KD, Costa RS, Latini JD, Júlio-Júnior HF, Gomes LC, Agostinho AA, Rodrigues L, Gomes LC. 2004. Structure of the fish assemblage in biotopes and subsystems of the upper Paraná River Floodplain. Pages 117–124 in Agostinho AA, Rodrigues L, Gomes LC, Thomaz SM, Miranda LE. Structure and functioning of the Paraná River and its floodplain. Maringá, Brazil: Editora da Universidade Estadual de Maringá.

Marcucci KM, Orsi ML, Shibatta OA. 2005. Abundância e aspectos reprodutivos de *Loricariichthys platymetopon* (Siluriformes, Loricariidae) em quatro trechos da represa Capivara, médio rio Paranapanema. Iheringia, Série Zoologia 95(2):197–203.

Marques H, Nobile AB, Dias JH, Ramos IP. 2016. Length–weight and length–length relationships for 23 fish species of Porto Primavera reservoir, Upper Paraná River, Brazil. Journal of Applied Ichthyology 32:1342–1346.

Morales BF, Benedito E, Oliveira EF. 2009. Composição e estrutura da ictiofauna. Pages 85–105 in Benedito E, editor. Ecologia do ribeirão Diamante: Estação Ecológica do Caiuá/PR. Maringá, Brazil: Editora da Universidade Estadual de Maringá.

Orsi ML, Almeida FS. 2011. Caracterizac¸ão e Monitoramento da Ictiofauna dos Reservatórios das UHEs Canoas I e II, Rio Paranapanema. Relatório final do Convênio entre a Duke Energy International Gerac¸ão Paranapanema, Fundac¸ão de Apoio ao Desenvolvimento da Universidade Estadual de Londrina (FAUEL) e Universidade Estadual de Londrina (UEL) conforme contrato N◦ 0100015122 e número da ET: 4600000/018/09.

Pelicice FM, Agostinho AA. 2008. Fish-passage facilities as ecological traps in large neotropical rivers. Conservation Biology 22:180–188.

Querol, MVM, Querol E, Gomes NNA. 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):79–84.

Souto AC, Vidotto-Magnoni AP, Brandão H, Ramos IP, Carvalho ED. 2011. Actinopterygii, Siluriformes, Loricariidae, *Loricariichthys platymetopon* Isbrucker and Nijssen, 1979: first record in Reservoir of Canoas II, Middle Paranapanema River, border of the states of São Paulo and Parana, Brazil. Check List 7(3):279–281.

Strona G, Lourdes M, Palomares D, Bailly N, Galli P, Lafferty KD. 2013. Host range, host ecology, and distribution of more than 11800 fish parasite species. Ecology 94:544.

Vazzoler, AEA de M. 1996. Biologia da reprodução de peixes teleósteos: teoria e prática. Maringá, Brazil: Editora da Universidade Estadual de Maringá, Núcleo de Pesquisas em Limnologia, Ictiologia e Aquicultura.