

Suckermouthed Catfish (*Hypostomus punctatus*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2012

Revised, March 2017

Web Version, 1/27/2018



Photo: M7. Licensed under CC BY-SA 3.0. Available:
<https://commons.wikimedia.org/w/index.php?curid=309686>. (March 2017).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

“South America: coastal drainages of southeastern Brazil.”

Status in the United States

From Chapman et al. (1994):

“List of freshwater species declared as imported into the U.S.A. during October 1992 [...] *Hypostomus punctatus*”

This species has not been reported as established in the U.S.

Means of Introductions in the United States

From Chapman et al. (1994):

“ornamental (tropical) imports”

Remarks

From GBIF (2016):

“SYNONYMS

Plecostomus punctatus (Valenciennes in Cuvier & Valenciennes, 1840)”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2017):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysii
Order Siluriformes
Family Loricariidae
Subfamily Hypostominae
Genus *Hypostomus*
Species *Hypostomus punctatus* Valenciennes in Cuvier and
Valenciennes, 1840

“Current Standing: valid”

Size, Weight, and Age Range

From Froese and Pauly (2016):

“Max length : 30.0 cm TL male/unsexed; [Riehl and Baensch 1996]”

“[...] 22°C - 28°C [Riehl and Baensch 1996; assumed to be recommended aquarium water temperature]”

Environment

From Froese and Pauly (2016):

“Freshwater; demersal; pH range: 5.0 - 8.0; dH range: 0.5 - 25.”

Climate/Range

From Froese and Pauly (2016):

“Tropical [...]”

Distribution Outside the United States

Native

From Froese and Pauly (2016):

“South America: coastal drainages of southeastern Brazil.”

Introduced

From Agoramorthy and Hsu (2007):

“In Taiwan, the exotic mouth-breeder fish, *Tilapia* spp., sucker-mouth catfish, *Hypostomus punctatus*, and the redeared slider, *Trachemys scripta*, have already infested ecosystems such as the natural rivers, lakes, and ponds throughout the island.”

From Binh et al. (2009):

“Alien Aquatic animals/Fishes which were introduced in Vietnam [...]”

<i>Hypostomus punctatus</i>	Suckermouth catfish	South America/via HongKong”
-----------------------------	---------------------	-----------------------------

From Gao et al. (2014):

“Huizhou West Lake [...] located in Huizhou, Guangdong Province, China [...]”

Means of Introduction Outside the United States

From FAO/SEAMEO BIOTROP (2015):

“Ty ba fish (*Hypostomus punctatus*): has been imported in Viet Nam for ornament purpose since 1970 and they presently have been found natural water areas.”

Short Description

From Regan (1904):

“Depth of body 5-6 times in the total length, length of head about $3\frac{1}{2}$ times. Depth of head $1\frac{2}{3} - 1\frac{3}{4}$ times in its length, breadth of head $1\frac{1}{6} - 1\frac{1}{4}$ times, diameter of eye $6-8\frac{1}{2}$ times, interorbital width $2\frac{2}{3} - 2\frac{4}{5}$ times, length of snout $1\frac{5}{7}$ times. Length of mandibular ramus $2\frac{4}{5} - 3$ times in the interorbital width. Snout ovate, more or less narrowed anteriorly; supraorbital edges not raised; supraoccipital with low median ridge; temporal plates not carinate. Scutes spinulose, the anterior carinate, 28-30 in a longitudinal series, 9 between dorsal and adipose fin, 14-16 between anal and caudal. Supraoccipital entirely bordered posteriorly by a single scute. Lower surface of head and abdomen, in the adult, almost completely covered with small granular scales. D. I 7, the first ray as long as or a little longer than the head, the last $\frac{3}{5} - \frac{2}{3}$ as long; length of base of dorsal nearly equal to its distance from the adipose fin. A. I 4. Pectoral spine extending to anterior $\frac{1}{4}$ of ventral. Caudal emarginate. Caudal peduncle $3\frac{2}{3} - 4\frac{3}{4}$ times as long as deep. Numerous small dark spots on head, body, and fins, those on the dorsal (in the adult) in 2 series on each interradiial membrane.”

Biology

From Froese and Pauly (2016):

“They are found in fast-flowing rivers as well as in flooded areas; feeds on algae and detritus [Riehl and Baensch 1996].”

From Menezes and Caramaschi (2000):

“The recruitment of young was indicated by the frequencies superior to 50% in the class of length 1.0 cm to 2.5 cm, between November and March, corroborating the results of Menezes & Caramaschi (1994) who verified the reproductive period for the species in this stream between October and March.”

“In the Ubatiba stream, younger *H. punctatus* occurred adhered to the submerged vegetation, while adults were collected mainly in rapids with rocky bottom and in pools among submerged branches. [...] The local process of distribution of *Hypostomus punctatus* in the Ubatiba stream is associated with the occurrence of different microhabitats along the stream. Thus, young fishes tend to prevail in areas with abundant riparian vegetation, where they take refuge, being adhered

by their mouth to the submerged herbaceous leaves; the adults are distributed as in rocky habitats, with larger current, as in lentic ones, with vegetable material, and in holes in palisades.”

“Menezes & Caramaschi (1994) suggested the importance of the transport of eggs, larvae and small fishes down by torrential rains to justify the largest incidence of younger *Hypostomus punctatus* in the inferior extension of the Ubatiba stream. We confirmed this hypothesis and verified the adults' occurrence just in the superior extension of the stream. We suppose individuals move up stream with the growth, and occupy diversified habitats.”

From Mazzoni et al. (2010):

“We registered five different food items (detritus, plant fragments, Diatoms, Chloroficeae and Cianobacteries) composing the species diet. Detritus was the most abundant one both during the rainy and dry seasons [...]”

Human Uses

From Froese and Pauly (2016):

“Fisheries: commercial; aquarium: commercial”

Diseases

From Fujimoto et al. (2013):

“The armored fish have a benthic behavior that facilitates the infection by leeches, and high values of infection by trypanosomes are not uncommon. D'Agosto and Serra-Freire (1990) reported 100% of prevalence for *Trypanosoma chagasi* and *T. guaiabensis* infecting the armored *Hypostomus punctatus* from lake Açú at Rio de Janeiro.”

Threat to Humans

From Froese and Pauly (2016):

“Harmless”

3 Impacts of Introductions

From FAO/SEAMEO BIOTROP (2015):

“Ty ba fish (*Hypostomus punctatus*) [...] is a multi-food eater which competes with native species to habitat and food.”

4 Global Distribution



Figure 1. Known global established locations of *Hypostomus punctatus*, all occurring in eastern Brazil. Map from GBIF (2016).

5 Distribution within the United States

This species has not been reported as established in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was low throughout most of the United States with medium matches in Florida and southeastern Texas and a few high matches in southern Florida. Climate 6 proportion indicated that the contiguous U.S. has a medium climate match overall. Proportions greater than 0.005 and less than 0.103 indicate a medium climate match; Climate 6 proportion of *Hypostomus punctatus* was 0.009.



Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *Hypostomus punctatus* climate matching. Source locations from GBIF (2016).

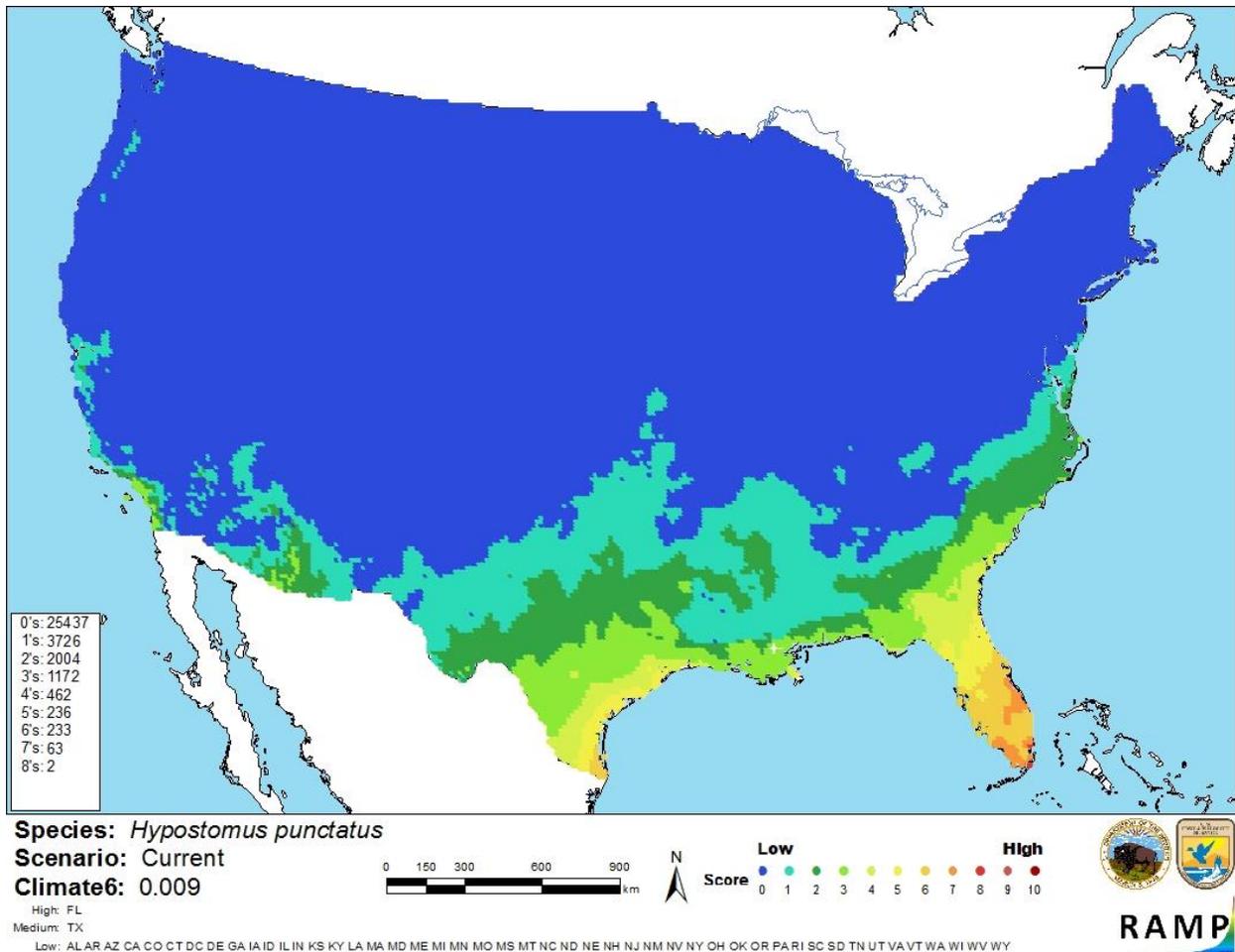


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Hypostomus punctatus* in the contiguous United States based on source locations reported by GBIF (2016). 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

The “High”, “Medium”, and “Low” climate match categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

Information was available on the biology and ecology of *H. punctatus*, but the introduced distribution in particular is not well-described. No scientifically-rigorous information was available on impacts of introduction. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Hypostomus punctatus is a catfish species native to coastal Brazil. The species is part of the ornamental trade in the United States, although no introductions into the wild have been reported in the U.S. Ornamental trade was responsible for its introduction into Vietnam, where it is reported to have negative effects on native species through competition. More detailed information is required to give scientific credibility to this report of negative impacts of introduction. The climate match analysis resulted in a medium match for the contiguous United States. The overall risk assessment category for *H. punctatus* is uncertain.

Assessment Elements

- **History of Invasiveness: None Documented**
- **Climate Match: Medium**
- **Certainty of Assessment: Low**
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

Agoramoorthy, G., and M. J. Hsu. 2007. Ritual releasing of wild animals threatens island ecology. *Human Ecology* 35:251-254.

Binh, L. T., M. D. Yen, and N. H. Luyen. 2009. Preliminary impacts assessment of alien aquatic species on biodiversity as well as invasion [*sic*] of native fishes in aquaculture and some management measures. 13th World Lake Conference. Rehabilitate the Lake Ecosystem: Global Challenges and the Chinese Innovations. Available: http://wldb.ilec.or.jp/data/ilec/WLC13_Papers/S17/s17-3.pdf. (March 2017).

Chapman, F. A., S. Fitz-Coy, E. Thunberg, J. T. Rodrick, C. M. Adams, and M. Andre. 1994. An analysis of the United States of America international trade in ornamental fish. Project final report. University of Florida, Gainesville. Available: <http://nsgl.gso.uri.edu/flsgp/flsgpt94006.pdf>. (March 2017).

FAO/SEAMEO BIOTROP (Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific/SEAMEO Regional Centre for Tropical Biology). 2015. Proceedings of the regional seminar-workshop on harmonizing methods in risk assessment and management of forest invasive alien plant species in southeast Asia. J. C. Fernandez, K. Shono, and K. Barrett, editors. RAP publication 2015/03, SEAMEO BIOTROP publication no. 66. Bogor, Indonesia.

Froese, R., and D. Pauly, editors. 2016. *Hypostomus punctatus* Valenciennes, 1840. FishBase. Available: <http://www.fishbase.se/summary/Hypostomus-punctatus.html>. (March 2017).

- Fujimoto, R. Y., M. S. Neves, R. F. B. Santos, N. C. Souza, M. V. S. do Couto, J. N. S. Lopes, D. G. Diniz, and J. C. Eiras. 2013. Morphological and hematological studies of *Trypanosoma* spp. infecting ornamental armored catfish from Guamá River-PA, Brazil. *Annals of the Brazilian Academy of Sciences* 85(3):1149-1156.
- Gao, J., Z. Liu, and E. Jeppesen. 2014. Fish community assemblages changed but biomass remained similar after lake restoration by biomanipulation in a Chinese tropical eutrophic lake. *Hydrobiologia* 724:127-140.
- GBIF (Global Biodiversity Information Facility). 2016. GBIF backbone taxonomy: *Hypostomus punctatus* Valenciennes, 1840. Global Biodiversity Information Facility, Copenhagen. Available: <http://www.gbif.org/species/5202194>. (March 2017).
- ITIS (Integrated Taxonomic Information System). 2017. *Hypostomus punctatus* Valenciennes in Cuvier and Valenciennes, 1840. Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=164343#null. (March 2017).
- Mazzoni, R., C. F. Rezende, and L. R. Manna. 2010. Feeding ecology of *Hypostomus punctatus* Valenciennes, 1840 (Osteichthyes, Loricariidae) in a costal [*sic*] stream from Southeast Brazil. *Brazilian Journal of Biology* 70(3):569-574.
- Menezes, M. S. de, and E. P. Caramaschi. 2000. Longitudinal distribution of *Hypostomus punctatus* (Osteichthyes, Loricariidae) in a coastal stream from Rio de Janeiro, Southeastern Brazil. *Brazilian Archives of Biology and Technology* 43(2):229-233.
- Regan, C. T. 1904. A monograph of the fishes of the family Loricariidae. *Transactions of the Zoological Society of London* 17(1):191-350.
- Sanders, S., C. Castiglione, and M. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

10 References Quoted But Not Accessed

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.

- D'Agosto, M., and N. M. Serra-Freire. 1990. Taxonomia de tripanosomas parasitas de peixes cascudo-pedra (*Hypostomus punctatus*) do lago Açú, Rio de Janeiro, Brasil. *Parasitologia al dia* 4:14-18.
- Menezes, M. S., and E. P. Caramaschi. 1994. Características reprodutivas de *Hypostomus* gr. *H. punctatus* no rio Ubatiba, Maricá, RJ (Osteichthyes, Siluriformes). *Revista Brasileira de Biologia* 54(3):503-513.

Riehl, R., and H. A. Baensch. 1996. Aquarien atlas, volume 1, 10th edition. Mergus Verlag GmbH, Melle, Germany.