Hypostomus isbrueckeri (a catfish, no common name)
Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, April 2017
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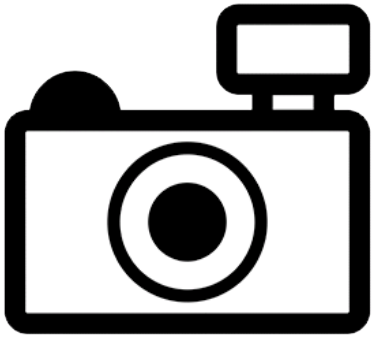

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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2016):

"South America: Middle and upper Uruguay River basin."

From Eschmeyer et al. (2017):

"Brazil and Uruguay."

Status in the United States

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

From Nico et al. (2017):

"Several morphologically distinct but unidentified *Hypostomu*s species have been recorded as established in the United States: these included populations in Indian Springs in Nevada; Hillsborough County in Florida; and the San Antonio River and San Felipe Creek in Texas (Courtenay and Deacon 1982; Courtenay et al. 1984, 1986; Courtenay and Stauffer 1990; Page and Burr 1991; López-Fernández and Winemiller 2005). A population of an unidentified

Hypostomus species is firmly established in Hawaii (Devick 1991a, b). Reported from Arizona, Colorado, Connecticut, Louisiana, and Pennsylvania. Failed in Connecticut, Massachusetts, and Pennsylvania."

Means of Introductions in the United States

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

From Nico et al. (2017):

"Members of this genus have been introduced through a combination of fish farm escapes or releases, and aquarium releases (Courtenay and Stauffer 1990; Courtenay and Williams 1992). In Texas, the initial introduction occurred when *Hypostomus* entered local streams after escaping from pool and canal systems of the San Antonio Zoological Gardens in or before 1962 (Barron 1964); the Comal County introduction was probably due to an aquarium release (Whiteside and Berkhouse 1992)."

Remarks

From Nico et al. (2017):

"Highlighting the serious need for additional taxonomic and systematic work, Armbruster (1997) concluded that it is currently impossible to identify most species in the genus. Several apparently different *Hypostomus* species have been collected in the United States but not definitively identified to species level (Page and Burr 1991; Courtenay and Stauffer 1990)."

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 Ostariophysi
Order Siluriformes
Family Loricariidae
Subfamily Hypostominae
Genus *Hypostomus*
Species *Hypostomus isbrueckeri* Reis, Weber and Malabarba, 1990"

From Eschmeyer et al. (2017):

"Current status: Valid as *Hypostomus isbrueckeri* Reis, Weber & Malabarba 1990. Loricariidae: Hypostominae."

Size, Weight, and Age Range

From Froese and Pauly (2016):

"Max length : 24.6 cm SL male/unsexed; [Weber 2003]; max. published weight: 285.10 g [Zaniboni Filho et al. 2004]"

Environment

From Froese and Pauly (2016):

"Freshwater; demersal."

Climate/Range

From Froese and Pauly (2016):

"Temperate, preferred ?"

Distribution Outside the United States

Native

From Froese and Pauly (2016):

"South America: Middle and upper Uruguay River basin."

From Eschmeyer et al. (2017):

"Brazil and Uruguay."

Introduced

This species has not been reported as introduced or established outside of its native range.

Means of Introduction Outside the United States

This species has not been reported as introduced or established outside of its native range.

Short Description

From Reis et al. (1990):

"Upper caudal ray shorter than head length, 3.4-4.1 in SL; margin of caudal fin truncated to slightly concave, homogeneously dark, often with an yellow (whitish in alcohol preserved specimens) distal band on mature males"

"*Hypostomus isbrueckeri* sp. n. is distinguished from all other *Hypostomus* species by the presence in mature males of a yellow vertical band (whitish in alcohol-preserved specimens) in the distal margin of caudal fin."

Biology
No information available.

Human Uses
No information available.

Diseases
From Reis et al. (1990):

"Small hirudines are common external parasites of all *Hypostomus* species included in this study [of which *H. isbrueckeri* is one]."

No OIE-reportable diseases have been documented for this species.

Threat to Humans
From Froese and Pauly (2016):

"Harmless"

3 Impacts of Introductions
The following information discusses the impacts of loricariid, or suckermouth, catfishes in general. *Hypostomus isbrueckeri* is assumed to have similar traits and behave similarly to other members of its family, but there is no information available to confirm this assumption.

From Nico et al. (2017):

"The effects of these loricariid catfish is largely unknown. In Texas, Hubbs et al. (1978) reported possible local displacement of algae-feeding native fishes such as *Campostoma anomalum* by *Hypostomus*, and López-Fernández and Winemiller (2005) suggest that reductions in *Dionda diaboli* abundance in portions of San Felipe Creek are due to population increases of *Hypostomus*. Because of their abundance in Hawaii, introduced *Hypostomus*, *Pterygoplichthys*, and *Ancistrus* may compete for food and space with native stream species (Devick 1989; Sabaj and Englund 1999)."

From Hoover et al. (2014):

"Suckermouth catfishes burrow into banks and bottom sediments to create chambers in which females lay eggs and males guard the developing mass of eggs (Burgess 1989; Ferraris 1991). Burrows may be especially evident in highly disturbed urban ponds (ERDC) and streams (Tompkins 2004). When burrows are dense, erosion, sedimentation, and elevated turbidity may

result (Devick 1988, 1989, 1991[b]). Bank failure, shoreline collapse, and a characteristic terracing have been observed in Mexico, Texas, and Florida where burrow densities were high […] Not all infested waters, however, exhibit significant erosion."

"[…] sheer numbers of these large, grazing animals can create problems for other animals (e.g., competition for food or space with like-sized aquatic organisms, or interference with other animals. Competition has apparently taken place in Hawaiian streams where native species no longer exist in the presence of high densities of suckermouth catfishes (Englund et al. 2000) or are threatened by low water quality after fishkills (Honolulu Advertiser 2006)."

"Suckermouth catfishes produce copious and conspicuous feces (Sandford and Crow 1991, Ferraris 1991 […]) which, in aquatic systems, transforms and translocates nutrients, alters sediment characteristics, and impacts microbial and benthic communities (Wotton and Malmqvist 2001), notably so in subtropical environments (e.g., Iovino and Bradley 1969, Frouz et al. 2004)."

"Economic impacts of suckermouth catfishes have been quantified for commercial tilapia fishing in Florida and for Mexico (Mendoza-Alfaro et al. 2009). In Florida, during the period 1993-2006, tilapia catch in six lakes decreased from 45- 80% to 17-30% after suckermouth catfishes became established, after which they represented 11-65% of the commercial catch."

"Social impacts resulting from economic impacts have been most pronounced in Mexico, where thousands of livelihoods in the Balsas Basin have been affected by the collapse of commercial fisheries. The collapse has impacted health status (e.g., wounds, infections, vaccinations), unemployment, emigration, and has created changes in household structure (Mendoza-Alfaro et al. 2009)."

4 Global Distribution

Figure 1. Known global distribution of *Hypostomus isbrueckeri* in Uruguay in South America. Map from GBIF (2016).

5 Distribution Within the United States

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

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean distance) was medium in the Southeast U.S. from coastal New Jersey to eastern Texas, and low elsewhere. Climate 6 score for the contiguous U.S. indicated a medium climate match overall. Climate 6 scores between 0.005 and 0.103 are classified as medium matches; Climate 6 score for *H. isbrueckeri* was 0.014. The

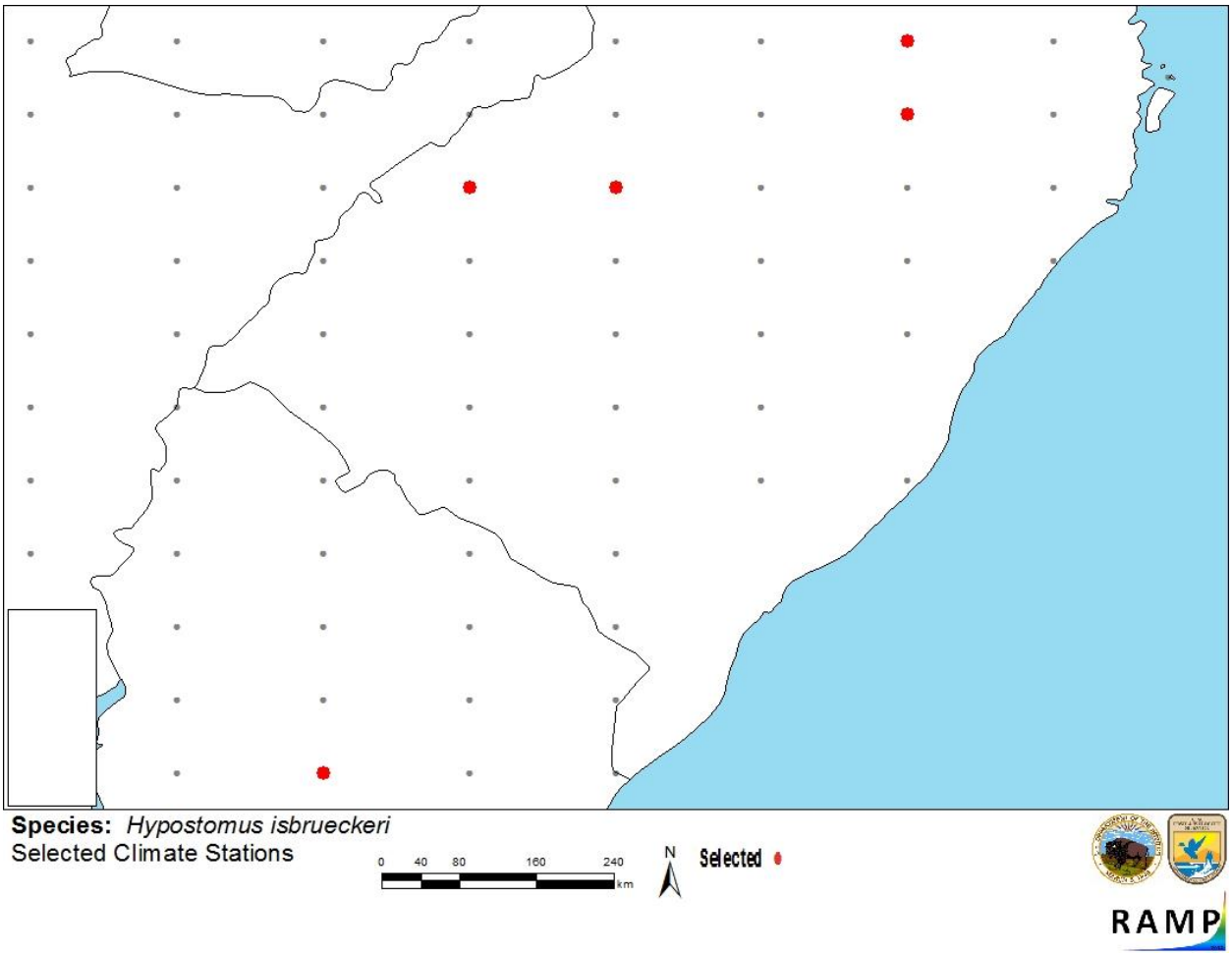

Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in southern Brazil and Uruguay selected as source locations (red) and non-source locations (gray) for *Hypostomus isbrueckeri* climate matching. Source locations from Reis et al. (1990) and GBIF (2016).

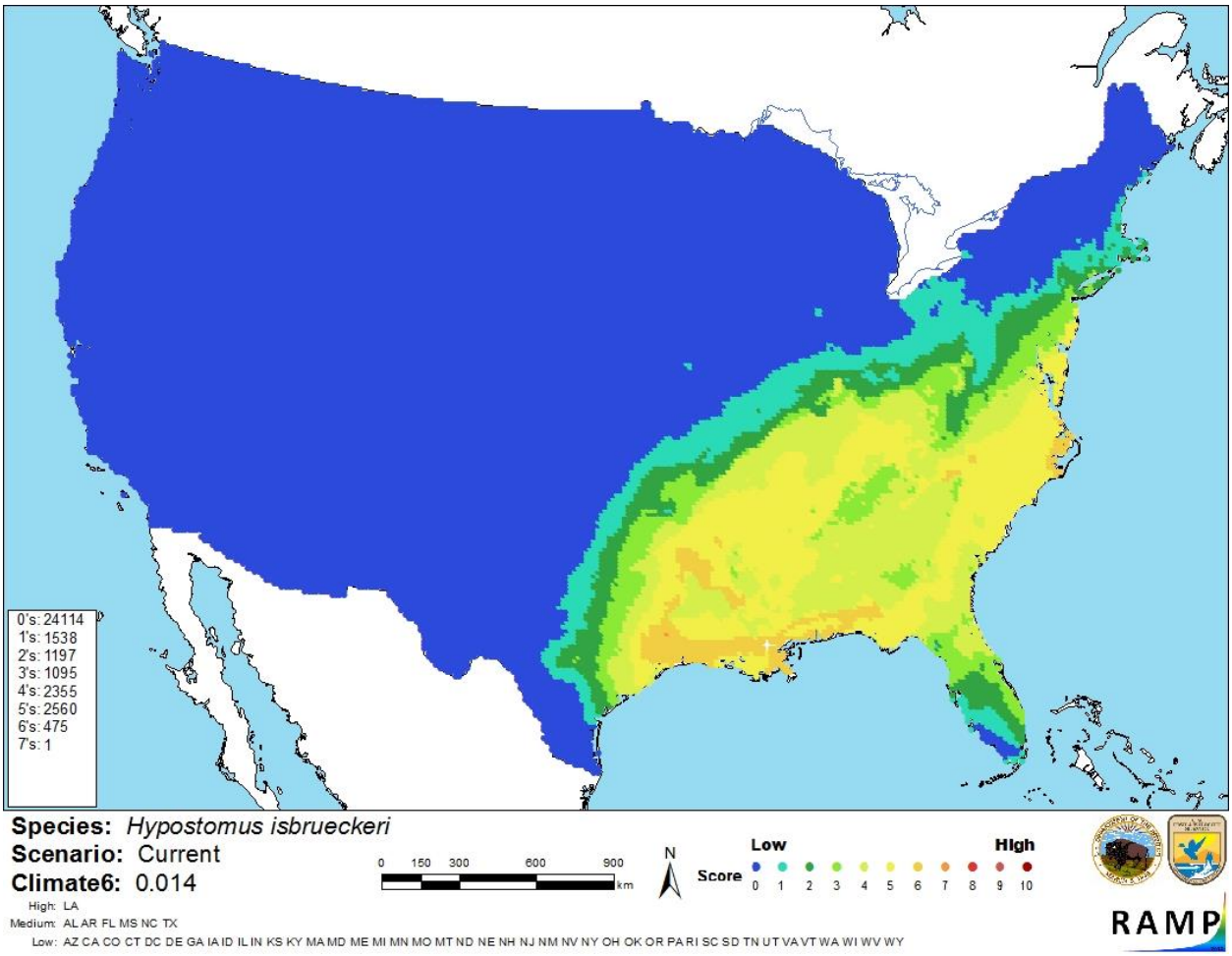

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Hypostomus isbrueckeri* in the contiguous United States based on source locations reported by Reis et al. (1990) and GBIF (2016). 0=Lowest match, 10=Highest match.

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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

There is little information available on *Hypostomus isbrueckeri*. There is no information available on the biology of this species. No introductions of this species outside of its native range have been documented. Members of the genus can also be difficult to identify to the species level. Certainty of this assessment is low due to a lack of information and taxonomic uncertainty.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Hypostomus isbrueckeri is a suckermouth catfish native to the middle and upper Uruguay River basin. It has not been reported as introduced or established outside its native range, although unidentified members of the genus are currently established in the U.S. *H. isbrueckeri* has a medium climate match with the contiguous United States. Overall, there is little information available on this species. More information is needed to adequately assess the risk this species poses. Overall risk category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **Overall Risk Assessment Category: Uncertain**

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

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