

***Hypostomus francisci* (a catfish, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2012

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1 Native Range and Status in the United States

Native Range

From Fricke et al. (2018):

“São Francisco River basin, Paraná River basin: Brazil.”

Status in the United States

This species has not been reported as introduced or established in the United States. However, unidentified members of the genus are established in the United States.

From Nico et al. (2018):

“Several morphologically distinct but unidentified *Hypostomus* 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.”

This species was not found for sale from U.S.-based online aquarium retailers and it does not appear to be in trade in the United States.

Means of Introduction into the United States

This species has not been reported as introduced or established in the United States. However, unidentified members of the genus are established in the United States.

From Nico et al. (2018):

“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. (2018):

“The genus *Hypostomus* contains about 116 species (Burgess 1989). 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). Distinguishing characteristics of the genus and a key to loricariid genera were provided by Burgess (1989) and Armbruster (1997). Photographs appeared in Burgess (1989) and Ferraris (1991). *Hypostomus* has officially replaced the generic name *Plecostomus*. The genus was included in the key to Texas fishes of Hubbs et al. (1991) and several identifying traits were also given by Page and Burr (1991).”

According to Fricke et al. (2018), *H. francisci* was originally named *Plecostomus francisci*. Both names were used in searching for information for this report.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Loricariidae
Subfamily Hypostominae
Genus *Hypostomus*
Species *Hypostomus francisci* (Lütken, 1874)”

“Current Standing: valid”

From Fricke et al. (2018):

“Current status: Valid as *Hypostomus francisci* (Lütken 1874). Loricariidae: Hypostominae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 36.0 cm SL male/unsexed; [Weber 2003]”

Environment

From Froese and Pauly (2018):

“Freshwater; demersal.”

Climate/Range

From Froese and Pauly (2018):

“Tropical”

Distribution Outside the United States

Native

From Fricke et al. (2018):

“São Francisco River basin, Paraná River basin: Brazil.”

Introduced

No introductions of this species have been reported.

Means of Introduction Outside the United States

No introductions of this species have been reported.

Short Description

From Zanata and Pitanga (2016):

“[...] light spots against a dark background [...]”

Biology

From Garavello and Garavello (2004):

“This study revealed that the fishes utilize their suckers, through a mouth equipped with an oral disk, as well as the pectoral, pelvic, and caudal fins areas, to interact with the rocky river-bottom. The comb-toothed inferior mouth of the *Hypostomus* showed itself able to grasp green algae on the river bottom. With the help of the oral disk and sucker mouth, which anchor the fishes, in conjunction with the arched design of pectoral and pelvic fin spines, they are also able to remain upright while exploring this substratum. In addition, their large, concave caudal-fin is associated with fast locomotion over short distances. This combination of characteristics allow these fish to live on the bottom of large South American rivers.”

From Sales et al. (2016):

“The population of *H. francisci* presented the expected balanced sex ratio of wild populations of tropical fish: one male to one female. However, the number of females was significantly greater for larger specimens above 331 mm.”

“Males that exhibit parental care are often observed in *Hypostomus*.”

“Reproductive parameters observed for *H. francisci* in the river Itapecerica, i.e., long reproductive period, total spawning and parental care, suggest adaption toward equilibrium strategy that seems to be efficient in running waters (predictable environments).”

Human Uses

No information available.

Diseases

No information available. No OIE-reportable diseases have been documented in this species.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No introductions of *H. francisci* have been reported outside its native range so no impacts of introduction are known. However, unidentified members of the genus are established in the United States.

From Nico et al. (2018):

“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 *Camptostoma 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).”

4 Global Distribution



Figure 1. Known global distribution of *Hypostomus francisci*, reported from eastern Brazil. Map from GBIF Secretariat (2017).

5 Distribution within the United States

There is currently no known distribution of *Hypostomus francisci* within the United States; however, unidentified species of *Hypostomus* are established in Nevada, Florida, Texas, and Hawaii.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) was low throughout most of the contiguous United States. A medium climate match occurred in the southern half of peninsular Florida, southern Texas, southeastern Arizona, and southern coastal California. The Climate 6 score indicated that the contiguous United States has a low climate match overall. Scores of 0.005 and below are classified as low match; the Climate 6 score for *H. francisci* was 0.001. All States had a low climate score, except Florida, which had a medium score.

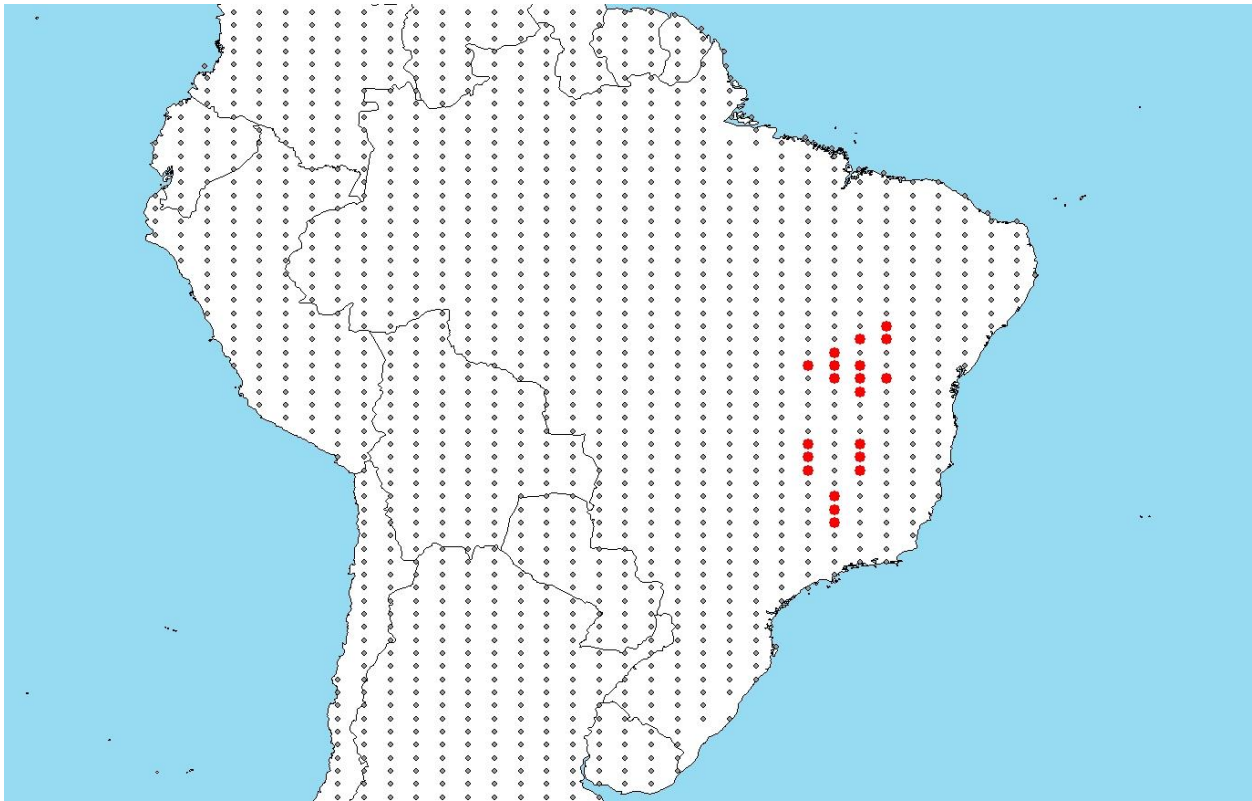


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Brazil) and non-source locations (gray) for *Hypostomus francisci* climate matching. Source locations from GBIF Secretariat (2017).

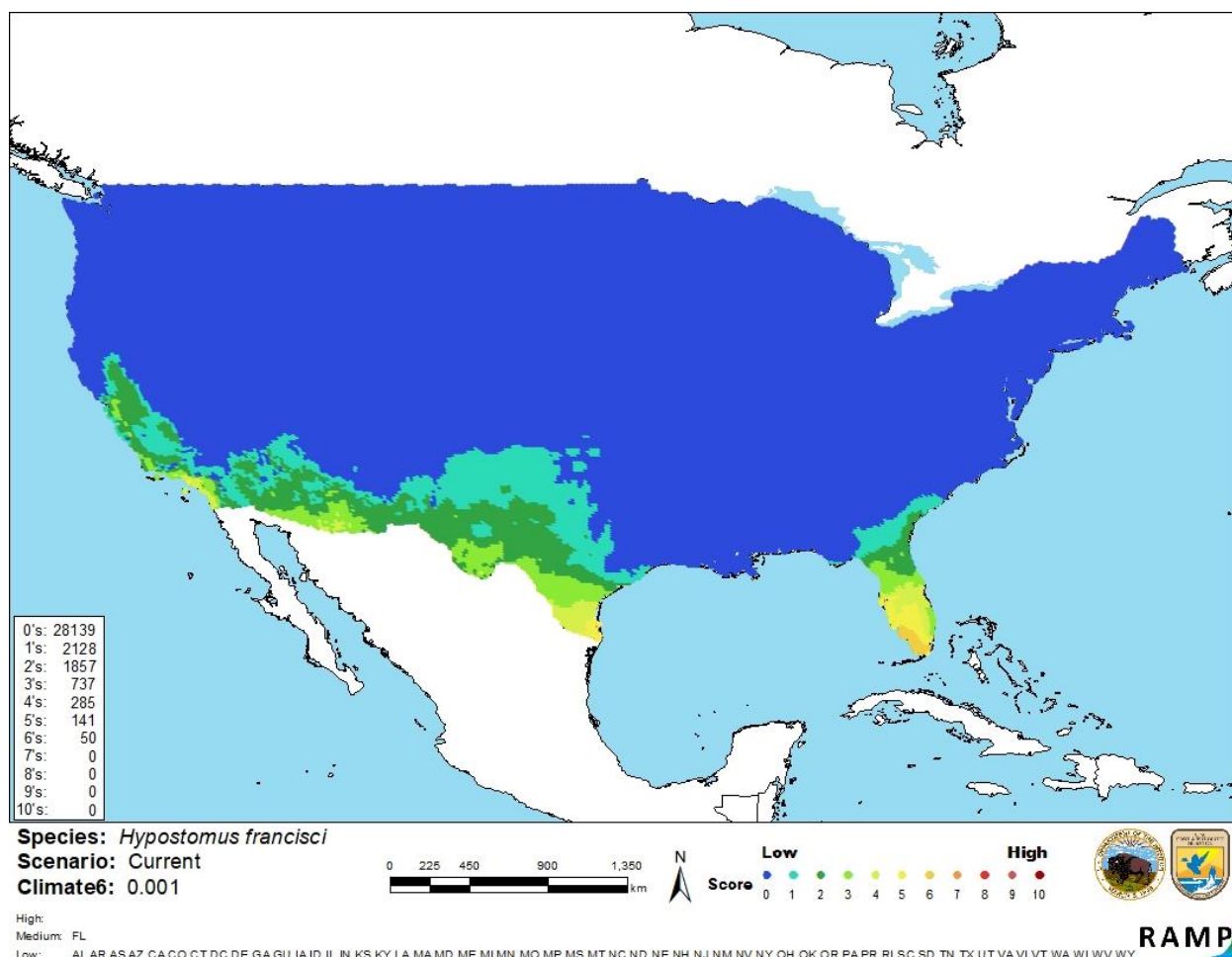


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Hypostomus francisci* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10= Highest match.

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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

Information was available on the biology and ecology of *H. francisci*. However, it has not been reported as introduced outside its native range, so no impacts of introduction are known. Unidentified species of *Hypostomus* have become established in the United States, and it is possible that one or more of those populations could be identified later as *H. francisci*. There is considerable uncertainty about the taxonomy of this genus and about species-level identification. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Hypostomus francisci is a catfish native to the São Francisco and Paraná River basins in Brazil. This species has no documented history of introduction in the United States or elsewhere outside its native range. However, unidentified species of *Hypostomus* are established in the United States. History of invasiveness is uncertain. *H. francisci* does not appear to be present in trade in the United States or elsewhere. Climate match to the contiguous United States was low overall, with medium match in parts of Florida, Texas, Arizona, and California. Because of the lack of documented introduction history and substantial taxonomic uncertainty, certainty of this assessment is low and overall risk is uncertain.

Assessment Elements

- **History of Invasiveness: Uncertain**
- **Climate Match: Low**
- **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.

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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.

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