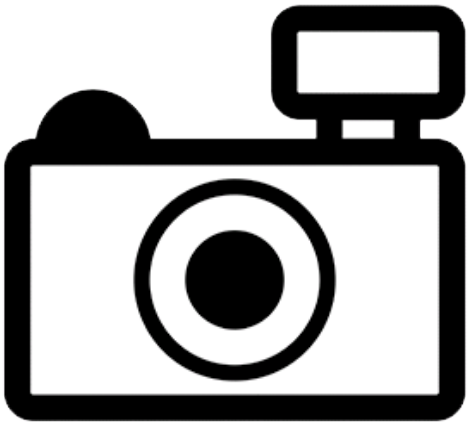
Hypostomus affinis (a catfish, no common name)
Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, November 2016
Revised, December 2018
Web Version, 2/19/2019



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1 Native Range and Status in the United States

Native Range
From Froese and Pauly (2018):

"South America: Paraíba do Sul River basin [Brazil]."

From Duarte et al. (2011):

"*Hypostomus affinis* (Steindachner, 1877) is a detritivorous species from the Paraiba do Sul River basin that has successfully adapted to the Lajes Reservoir (DUARTE & ARAÚJO 2000), an oligotrophic environment constructed between 1905 and 1908, surrounded by well-preserved stretches of Atlantic rainforest (SANTOS et al. 2004)."

Status in the United States
No records of *Hypostomus affinis* in the wild or in trade in the United States were found.

From Nico et al. (2019):

"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)."

"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."

"The Nevada population was reported originally as *Plecostomus punctatus* by Minckley (1973) and as *Hypostomus plecostomus* by Deacon and Williams (1984), but was determined to be an unidentified species of *Hypostomus* (not *H. plecostomus*; J. Armbruster, pers. comm.). Populations from Texas (e.g., Hubbs et al. 1978; Whiteside and Berkhouse 1992) and Florida (e.g., Rivas 1965) occasionally have been reported as *Hypostomus plecostomus*. According to Courtenay et al. (1974), the Florida *Hypostomus* species in the Hillsborough County area was probably different than that reported from the southern part of the state. In addition, most early reports from south Florida, and possibly elsewhere in the state, probably were based on incorrect identifications of *Pterygoplichthys* (Loftus and Kushlan 1987; Ludlow and Walsh 1991; Nico, personal observation). Courtenay (personal communication) reviewed records of loricariid catfishes from southeastern Florida and located only one specimen of the genus *Hypostomus* (UF 98938), collected from Coral Gables Canal at Red Road, Dade County, in 1960; he concluded that all other loricariids from Dade County were *Pterygoplichthys*. The *Hypostomus* inhabiting the Tampa area was reported as expanding its range into the Hillsborough River from Six Mile Creek (Courtenay and Stauffer 1990), but there are no supporting specimens, and these also may be based on misidentifications of *Pterygoplichthys* (Ludlow and Walsh 1991). Whitworth (1996) recorded the capture of specimens of an unidentified loricariid from the Thames River drainage, Connecticut, and listed it as *Hypostomus*. Unfortunately, he does not provide any information that might be useful in its positive identification. In his book, Whitworth included an illustration of a *Hypostomus*, but the drawing is from an old plate and not of the Connecticut fish. Distribution maps for *Hypostomus* found in the United States were given in Courtenay and Hensley (1979), Hensley and Courtenay (1980), and Courtenay and McCann (1981), but these maps most likely include records based on what is now recognized to be *Pterygoplichthys*. Members of this genus are popular aquarium fishes."

Means of Introductions in the United States

No records of *Hypostomus affinis* in the wild in the United States were found.

From Nico et al. (2019):

"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. (2019):

"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."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2018), *Hypostomus affinis* (Steindachner, 1877) is the current valid name of this species. *Hypostomus affinis* was originally described as *Plecostomus affinis* Steindachner, 1877.

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 affinis* (Steindachner, 1877)"

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Max length : 39.7 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 Froese and Pauly (2018):

"South America: Paraíba do Sul River basin [Brazil]."

From Duarte et al. (2011):

"*Hypostomus affinis* (Steindachner, 1877) is a detritivorous species from the Paraiba do Sul River basin that has successfully adapted to the Lajes Reservoir (DUARTE & ARAÚJO 2000), an oligotrophic environment constructed between 1905 and 1908, surrounded by well-preserved stretches of Atlantic rainforest (SANTOS et al. 2004)."

Introduced
No records of introductions of *Hypostomus affinis* were found.

Means of Introduction Outside the United States
No records of introductions of *Hypostomus affinis* were found.

Short Description
No information on a short description of *Hypostomus affinis* was found.

Biology
From Froese and Pauly (2018):

"Found in large and small waters, in lentic or rapid sections of the river, on rocky or sandy-rocky bottom. Young specimens inhabit the riparian vegetation along those habitats [Weber 2003]."

"Asynchronous ovarian development [Duarte and Araújo 2002]."

From Duarte et al. (2010):

"Studies on the reproductive biology of *H. affinis* in in the Paraíba do Sul River encompass sex ratio (MAZZONI & CARAMASCHI 1995), ovarian de [*sic*] development, fecundity and

spawning season (MAZZONI & CARAMASCHi 1997). They concluded that this species adopts an equilibrium (sensu WINEMILLER) reproductive strategy characterized by a suite of attributes associated with parental care, maturation, large eggs and seasonal reproduction."

Human Uses

No information on human uses of *Hypostomus affinis* was found.

Diseases

De Azevedo et al. (2010) lists *Hyperopletes malmbergi*,*Phanerotheicioides agostinhoi*, *Austrodiplostomum compactum*,*Paracapillaria piscicola*, *Trinigyrus hypostomatis* and *Placobdella* sp. as parasites of *Hypostomus affinis.*

No records of OIE-reportable diseases were found for *H. affinis.*

Threat to Humans

From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions

No records of introductions of *Hypostomus affinis* were found.

4 Global Distribution

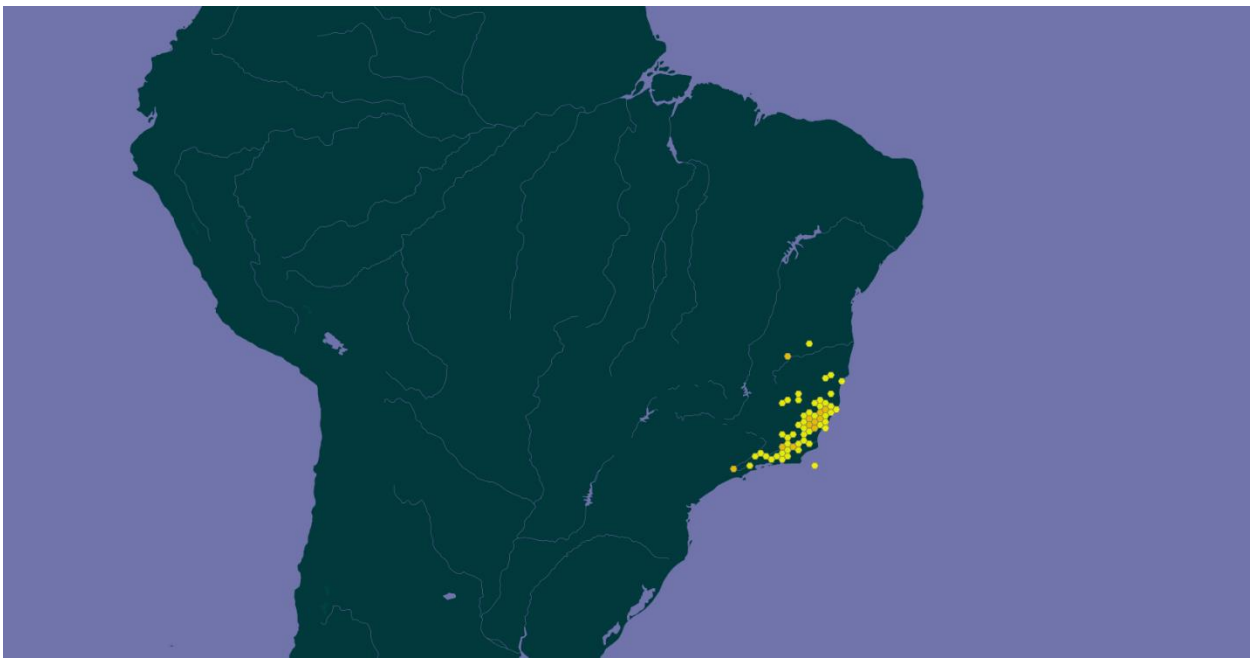

Figure 1. Known global distribution of *Hypostomus affinis.* Locations are in southern Brazil. Map from GBIF Secretariat (2018).

The source point located in the Atlantic Ocean (Figure 1) was not used for climate matching.

5 Distribution Within the United States

No records of *Hypostomus affinis* in the wild in the United States were found. The records of *Hypostomus* spp. in the wild in the United States cannot be determined to be *H. affinis* (Nico et al. 2019) and so were not used to select source points for the climate match.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Hypostomus affinis* was low for the majority of the contiguous United States. There were small patches of medium match along the Gulf Coast in Texas and far southern Louisiana, as well as in northern peninsula Florida; southern peninsula Florida had a high match. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.009, medium. The range for a medium climate score is between 0.005 and 0.103. All states had a low climate score except for Florida, which had a high climate score.

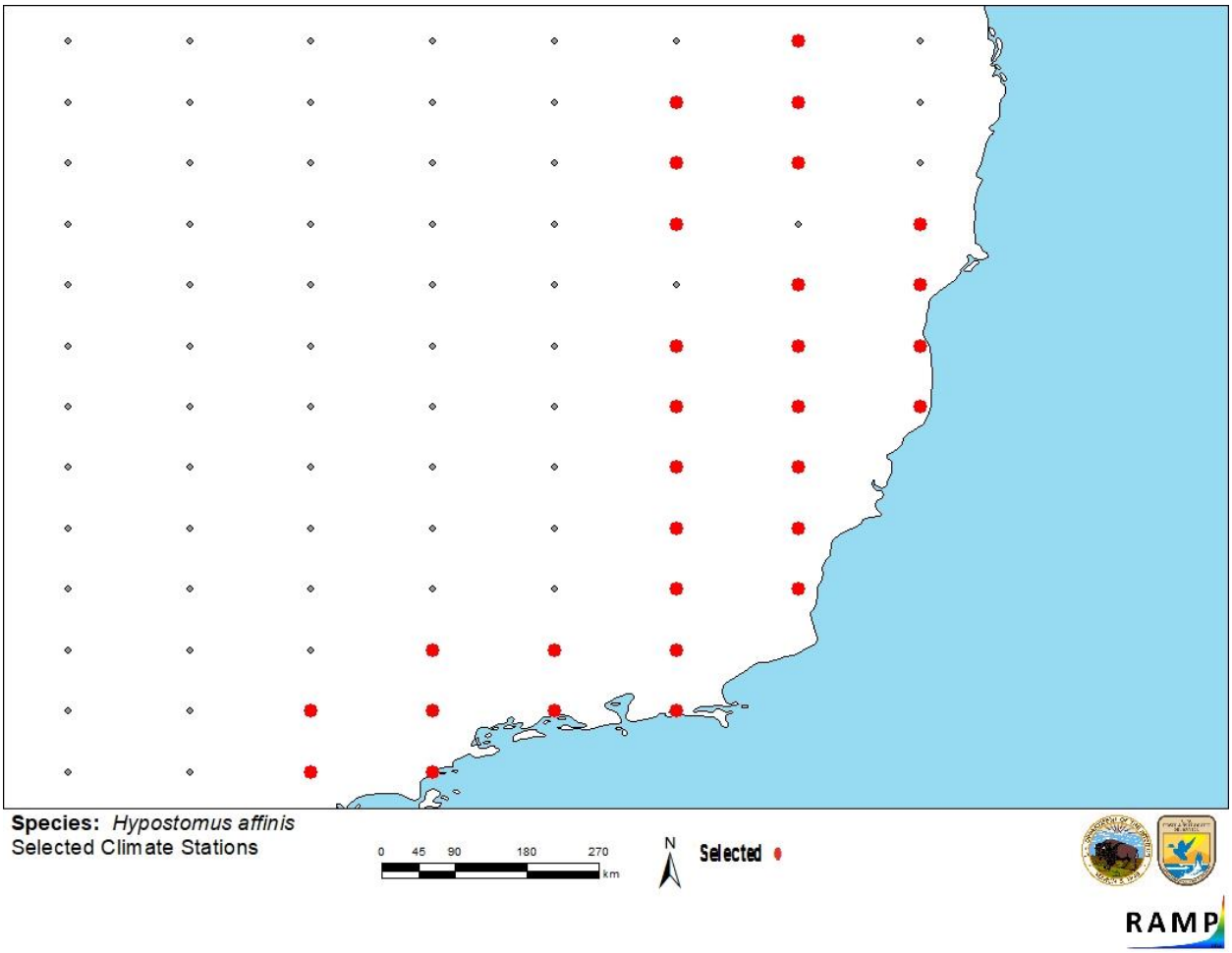

Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in South America selected as source locations (red; southern Brazil) and non-source locations (gray) for *Hypostomus affinis* climate matching. Source locations from GBIF Secretariat (2018).

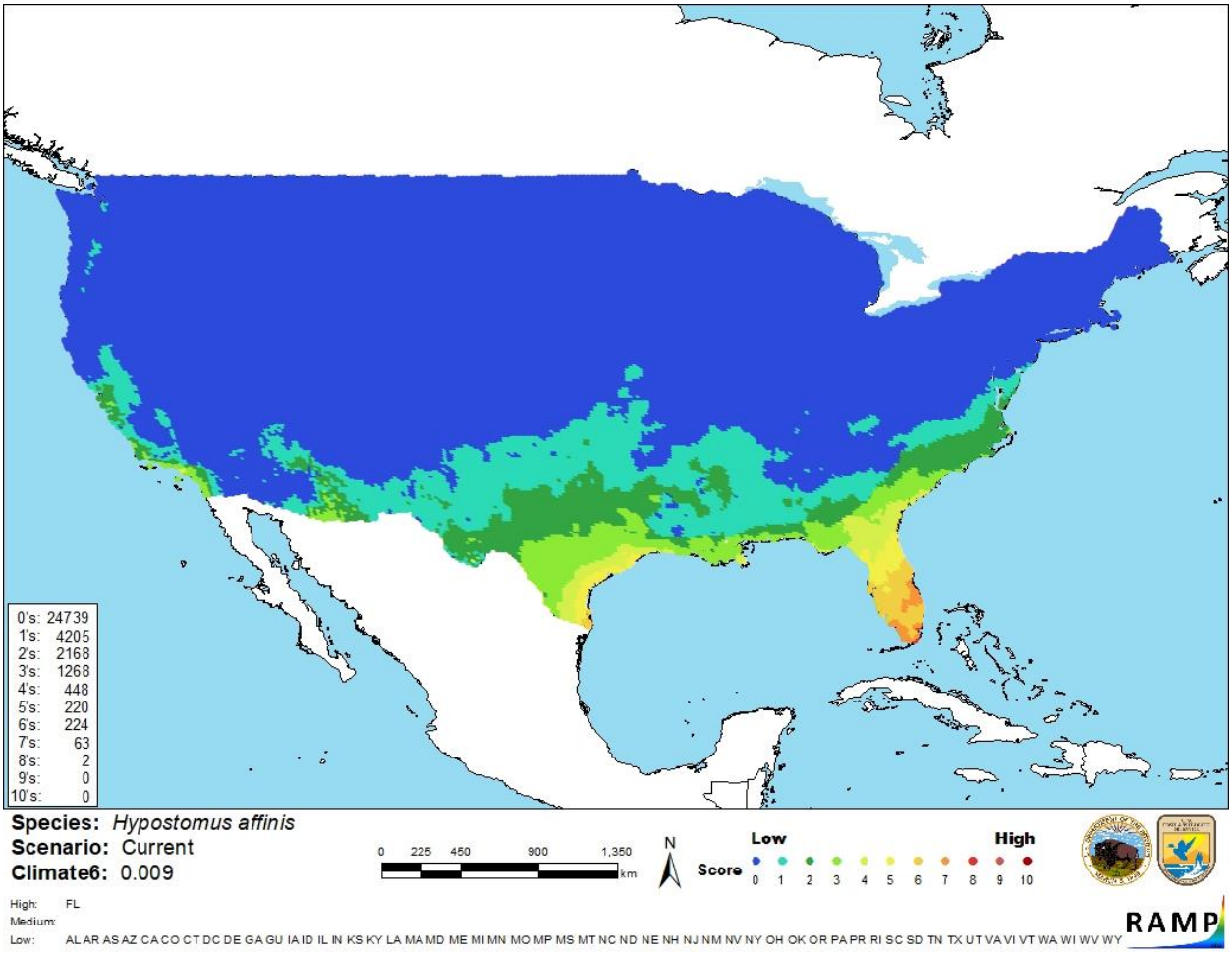

Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Hypostomus affinis* in the contiguous United States based on source locations reported from GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match.

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

The certainty of assessment for *Hypostomus affinis* is low. There is minimal information available for this species. No information on introductions of *Hypostomus affinis* was found.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Hypostomus affinis is a South American suckermouth catfish native to Brazil. The history of invasiveness is uncertain. It has not been reported as introduced or established anywhere in the world. The climate match for the contiguous United States was medium with all the states having a low individual climate score except for Florida, which had a high climate score. The certainty of assessment is low due to lack of information. The overall risk assessment category is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information:** No additional information.
- **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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