Hypostomus nigromaculatus (a catfish, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, February 2012
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1 Native Range and Status in the United States

Native Range

From Fricke et al. (2018):

"Middle and upper 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), the original name of this species was *Plecostomus nigromaculatus*. Information searches for this report were conducted using both the original name and the currently accepted scientific name.

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 nigromaculatus* (Schubart, 1964)"

From Fricke et al. (2018):

"**Current status:** Valid as *Hypostomus nigromaculatus* (Schubart 1964). Loricariidae: Hypostominae."

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Max length : 10.2 cm SL male/unsexed; [Weber 2003]"

Environment

From Froese and Pauly (2018):

"Freshwater; demersal."

From Teresa and Casatti (2013):

"[…] *H. nigromaculatus* […] showed preference for shallow and fast-flowing habitats."

Climate/Range

From Froese and Pauly (2018):

"Tropical"

Distribution Outside the United States

Native

From Fricke et al. (2018):

"Middle and upper 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
No description available.

Biology
From Teresa and Casatti (2013):

" […] the diet composed of periphyton […]

From Casatti (2005):

"In the upper stretch [of the first order stream sampled in Morro do Diabo State Park, Brazil], the shallower depth, the substrate composed of gravel and pebbles and the strong current seems to represent favorable conditions for *T. diabolus* and *H. nigromaculatus*, the most abundant species in this stretch of the stream, but which are progressively less frequent in the middle and lower stretches."

"Juveniles and adults of *H. nigromaculatus* (1:1) were progressively less abundant downstream and the smallest frequencies of mature individuals was obtained in September, at the end of the dry season."

Human Uses
No information available.

Diseases
No information available. No OIE-reportable diseases (OIE 2019) have been documented in this species.

Threat to Humans
From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions
No introductions of *H. nigromaculatus* 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 *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)."

4 Global Distribution

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

5 Distribution within the United States

There is currently no known distribution of *Hypostomus nigromaculatus* 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 high in peninsular Florida, medium in much of the Mid-Atlantic and Southeast from New Jersey to Texas, and low elsewhere in the contiguous United States. Climate 6 score indicated that the contiguous United States had a medium climate match overall. Scores between 0.005 and 0.103 indicate a medium match; Climate 6 score for *H. nigromaculatus* was 0.029.

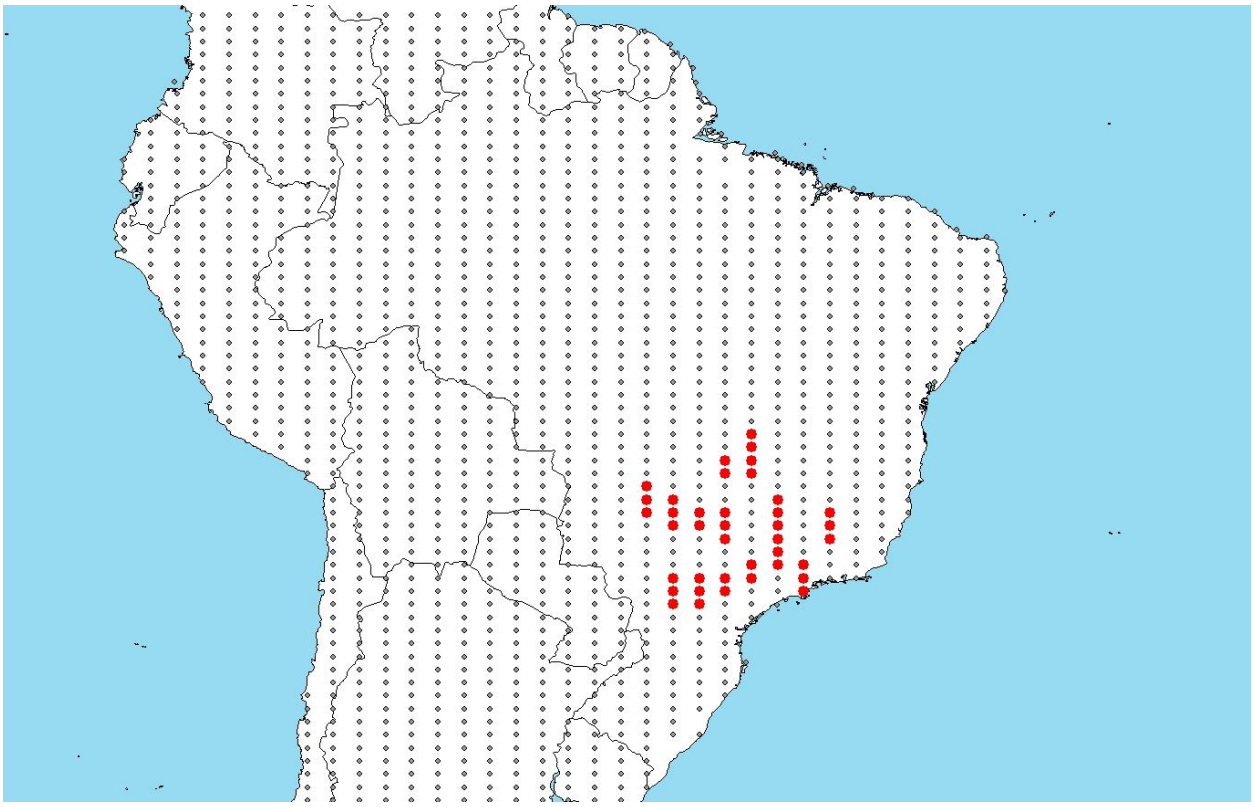

Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Brazil) and non-source locations (gray) for *Hypostomus nigromaculatus* climate matching. Source locations from GBIF Secretariat (2017).

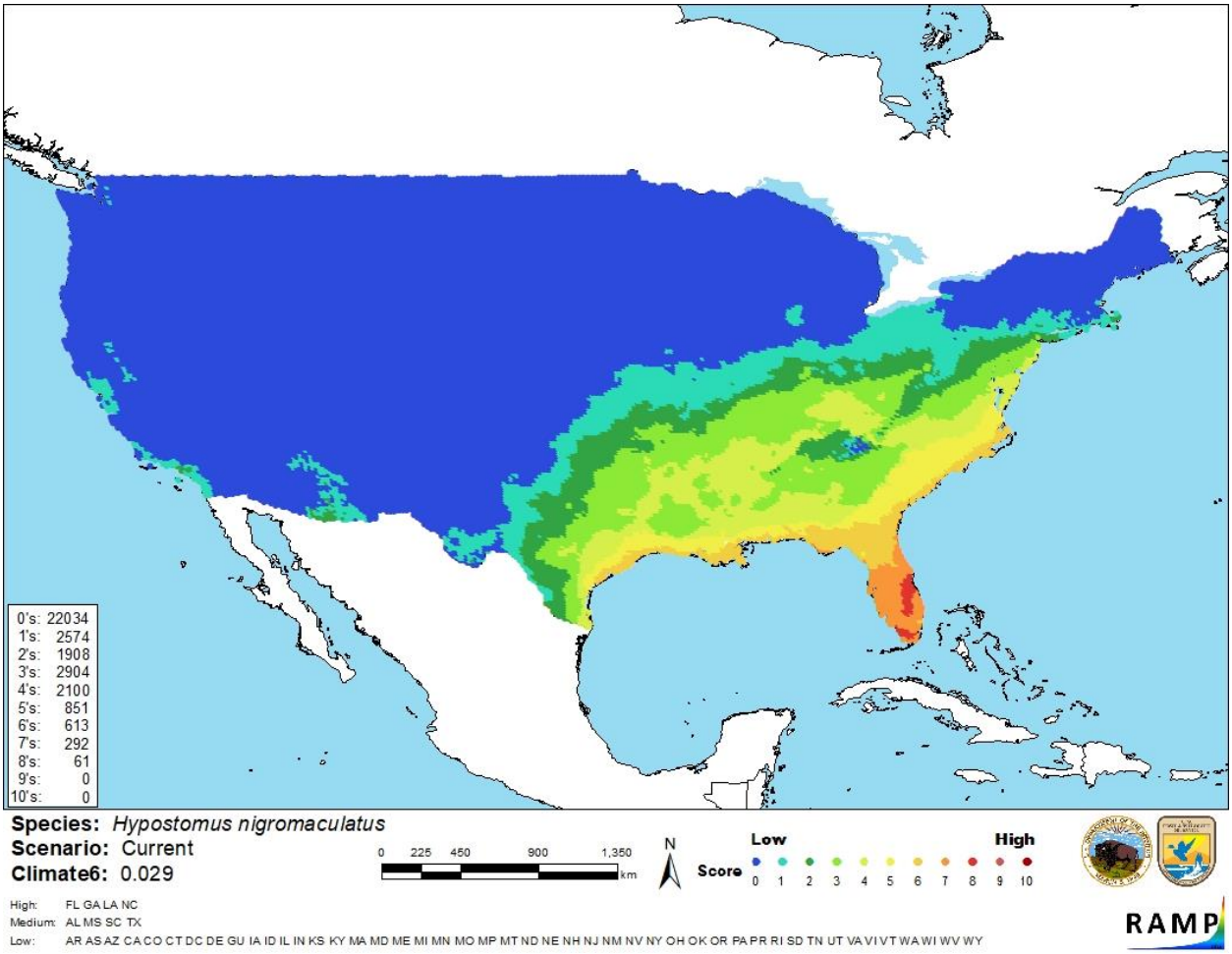

Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Hypostomus nigromaculatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10= Highest match.

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

7 Certainty of Assessment

Limited information was available on the biology and ecology of *H. nigromaculatus*. It has not been reported as introduced outside its native range, so no impacts of introduction are known. However, 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. nigromaculatus*. 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 nigromaculatus is a catfish native to the middle and upper Paraná River basin in Brazil. This species has no documented history of introduction in the United States or elsewhere outside its native range, and it is not known to be in trade. However, unidentified species of *Hypostomus* are established in the United States. History of invasiveness is uncertain. Climate match to the contiguous United States was medium overall, with high match in peninsular Florida. 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: 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.

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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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