Trichomycterus punctatissimus (a catfish, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, December 2016
Revised, January 2018
Web Version, 2/21/2020

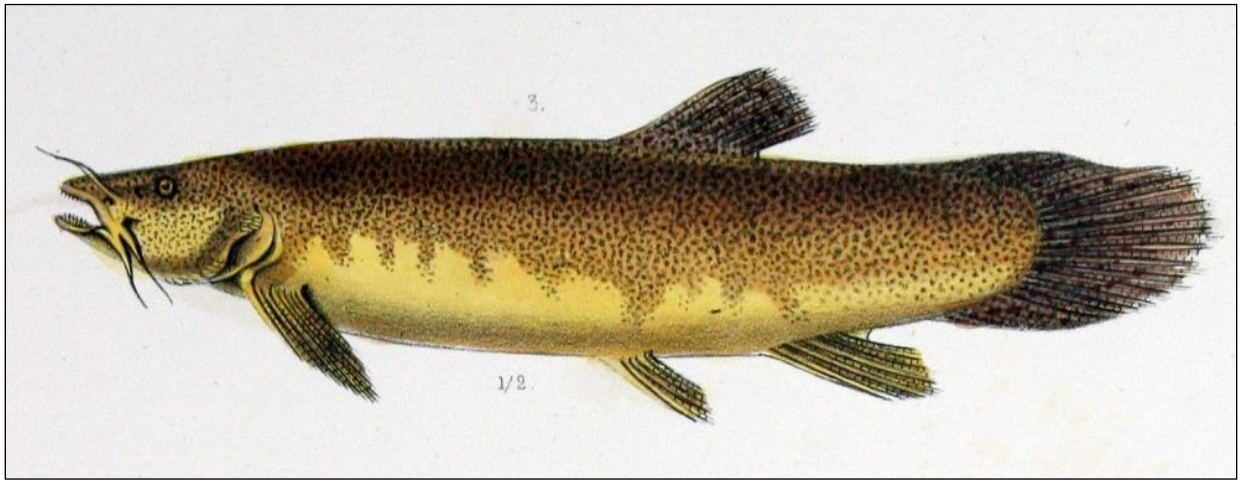

Image: Castelnau (1855). No Rights Reserved. Available: http://eol.org/data_objects/27233389. (January 2018).

1 Native Range, and Status in the United States

Native Range

From Froese and Pauly (2017):

"South America: Araguaia River basin in Brazil."

Status in the United States

This species has not been reported as introduced or established in the United States. There is no indication that this species is in trade in the United States.

From Arizona Secretary of State (2006):

"Fish listed below are restricted live wildlife [in Arizona] as defined in R12-4-401. […] South American parasitic catfish, all species of the family Trichomycteridae and Cetopsidae […]"

From Dill and Cordone (1997):

"[…] At the present time, 22 families of bony and cartilaginous fishes are listed [as prohibited in California], e.g. all parasitic catfishes (family Trichomycteridae) […]"

From FFWCC (2019):

"Nonnative Conditional species (formerly referred to as restricted species) and Prohibited species are considered to be dangerous to Florida's native species and habitats or could pose threats to the health and welfare of the people of Florida. These species are not allowed to be personally possessed, but can be imported and possessed by permit for research or public exhibition; Conditional species may also be possessed by permit for commercial sales. Facilities where Conditional or Prohibited species are held must meet certain biosecurity criteria to prevent escape."

Trichomycterus punctatissimus is listed as a Prohibited species in Florida.

From Louisiana House of Representatives Database (2010):

"No person, firm, or corporation shall at any time possess, sell, or cause to be transported into this state [Louisiana] by any other person, firm, or corporation, without first obtaining the written permission of the secretary of the Department of Wildlife and Fisheries, any of the following species of fish: […] all members of the families […] *Trichomycteridae* (pencil catfishes) […]"

From Mississippi Secretary of State (2019):

"All species of the following animals and plants have been determined to be detrimental to the State's native resources and further sales or distribution are prohibited in Mississippi. No person shall import, sell, possess, transport, release or cause to be released into the waters of the state any of the following aquatic species or hybrids thereof.
[The list includes all species of] Family Trichomycteridae"

From Legislative Council Bureau (2018):

"Except as otherwise provided in this section and NAC [Nevada Administrative Code] 504.486, the importation, transportation or possession of the following species of live wildlife or hybrids thereof, including viable embryos or gametes, is prohibited [in Nevada]: […]
All species in the families Cetopsidae and Trichomycteridae"

From Utah DNR (2012):

"All species of fish listed in Subsections (2) through (30) are classified [in Utah] as prohibited for collection, importation and possession […]
Parasitic catfish (candiru, carnero) family Trichomycteridae (All species)"

Means of Introductions in the United States

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

Remarks

From Fernández and Miranda (2007):

"The Andean and Preandean regions are characterized by the presence of several endorrheic drainage basins, each of which has evolved a characteristic fish fauna with some of them poorly known or hitherto inaccessible (Arratia and Menu-Marque, 1984; Fernández and Vari, 2000, 2002; Fernández and Schaefer, 2003). The environmental impacts of gold-mining activities in these regions include deforestation and the release of thousands of tonnes of sediment and chemicals into exploited rivers (e.g. >330 t of mercury released since 1952 according to Maurice-Bourgoin and Quiroga, 2002), and these impacts endanger many populations of endemic species of *Trichomycterus*."

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 Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Trichomycteridae
Subfamily Trichomycterinae
Genus *Trichomycterus*
Species *Trichomycterus punctatissimus*

From Eschmeyer et al. (2016):

"**Current status:** Valid as *Trichomycterus punctatissimus* Castelnau 1855. Trichomycteridae: Trichomycterinae."

Size, Weight, and Age Range
From Froese and Pauly (2017):

"Max length : 28.0 cm TL male/unsexed; [de Pinna and Wosiacki 2003]"

Environment
From Froese and Pauly (2017):

"Freshwater; benthopelagic."

Climate/Range
From Froese and Pauly (2017):

"Tropical, preferred? […] Ecosystem: Neotropical [de Pinna and Wosiacki 2003]."

Distribution Outside the United States
Native
From Froese and Pauly (2017):

"South America: Araguaia River basin in Brazil."

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

Means of Introduction Outside the United States
This species has not been reported as introduced outside of its native range.

Short Description
From Froese and Pauly (2017):

"Family Trichomycteridae - Pencil or parasitic catfishes […] Naked and elongate body. Usually 2 pairs of barbels on maxilla, lacking on chin. Adipose fin absent. Opercle often with spines. […] A number of genera are parasitic, attacking gill tissue of larger fishes."

Biology
From Fernández and Miranda (2007):

"The genus *Trichomycterus* is the largest non-monophyletic assemblage in the Trichomycteridae, […] *Trichomycterus* shows a high potential for colonization of extreme environments such as high altitude (>4000 m), subterranean streams, island fresh waters (56 km off the Colombian coast) and, as reported in this study, warm thermal waters (>35° C) (Pouilly and Miranda, 2003; Fernández and Schaefer, 2005)."

Human Uses
No information reported for this species.

Diseases
No OIE reportable diseases (OIE 2020) have been documented for this species.

Threat to Humans
From Froese and Pauly (2017):

"Harmless"

3 Impacts of Introductions
There are no reported introductions for this species.

The importation, possession, or trade of the catfish *T. punctatissimus* is prohibited or restricted in the following states: Arizona (Arizona Secretary of State 2006), California (Dill and Cordone 1997), Florida (FFWCC 2019), Louisiana (Louisiana House of Representatives Database 2010), Mississippi (Mississippi Secretary of State 2019), Nevada (Legislative Council Bureau 2018), and Utah (Utah DNR 2012).

4 Global Distribution

No georeferenced occurrences are available for this species (GBIF Secretariat 2019).

Figure 1. Map of the Araguaia and Tocantins River basins in Brazil. *T. punctatissimus* is reported from the Araguaia River basin. Map: Kmusser. Licensed under Creative Commons BY-SA 2.5. Available: https://commons.wikimedia.org/w/index.php?curid=650718.

5 Distribution Within the United States

Trichomycterus punctatissimus is not reported as established or introduced in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) was medium in southwestern Florida, and medium-low across the remainder of peninsular Florida and in far southern Texas. The remainder of the contiguous United States had a low match. The Climate 6

score for *T. punctatissimus* was 0.000, indicating a low overall climate match to the contiguous United States. (Scores between 0.000 and 0.005, inclusive, are classified as low.)

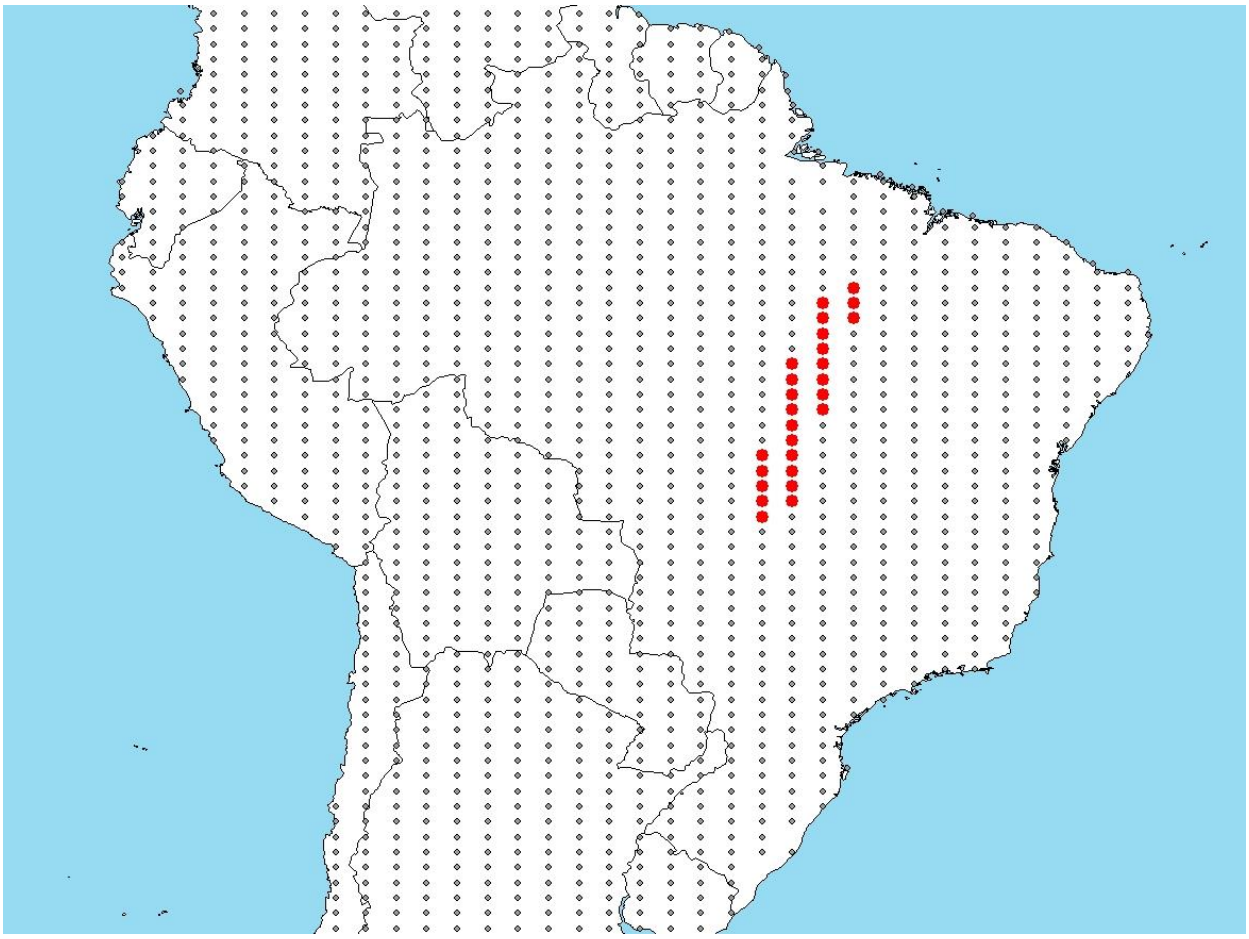

Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Brazil) and non-source locations (gray) for *Trichomycterus punctatissimus* climate matching. No georeferenced occurrences were available for this species, so source locations were estimated based on verbal description of the native range (Froese and Pauly 2017).

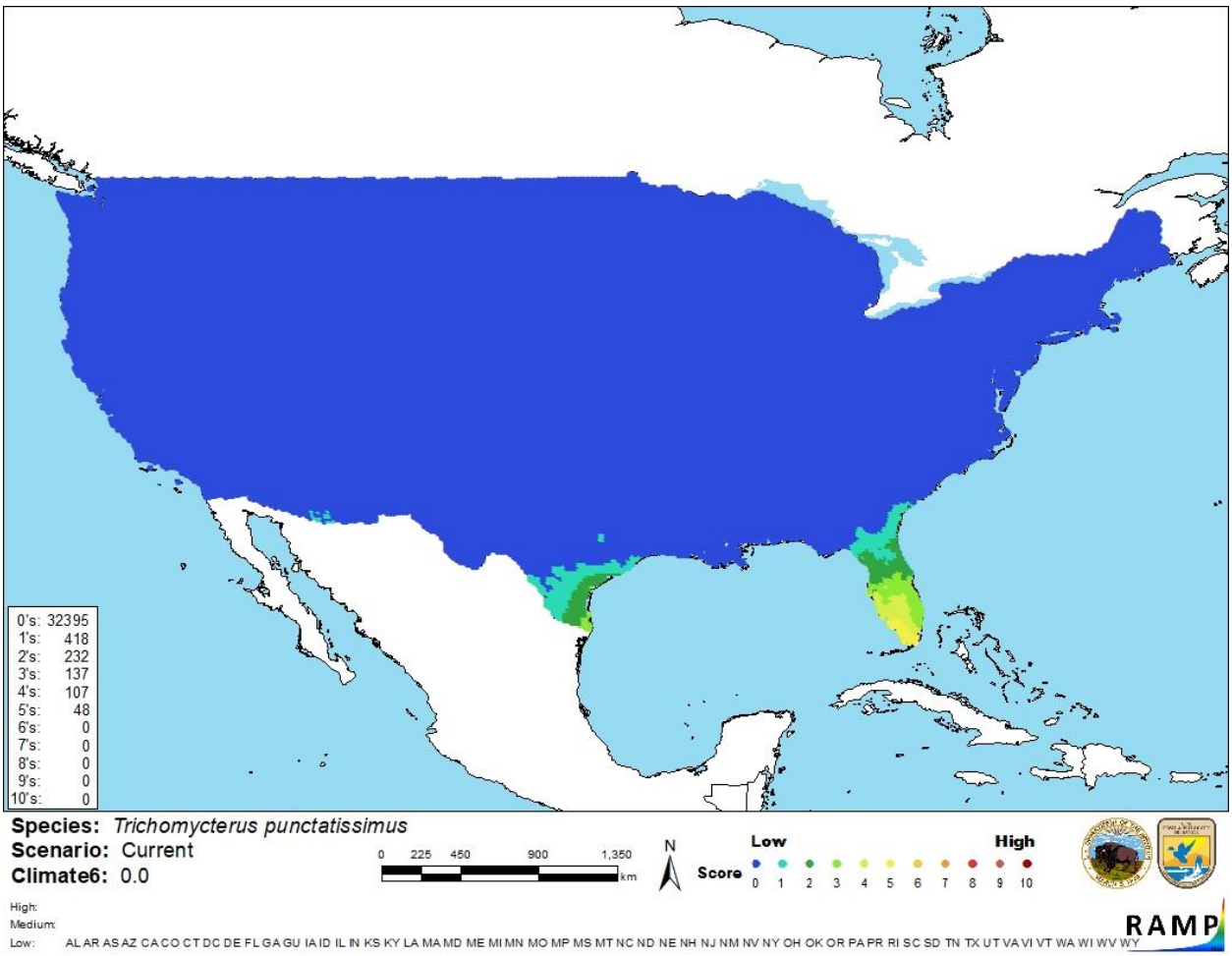

Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Trichomycterus punctatissimus* in the contiguous United States based on source locations estimated from the verbal description of the range in Froese and Pauly (2017). 0=Lowest match, 10=Highest match. Counts of climate match scores are 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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

Little information has been reported for this freshwater species since it was first collected in the mid-19th century. There are no reported incidences of this species being transported beyond its native range, so scientific information of impacts from introductions is lacking. The certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Trichomycterus punctatissimus is a tropical species of parasitic, freshwater catfish native to the Araguaia River basin in Brazil. This species is a parasite of other fish in its native range, but information is lacking about the potential risks it may pose to the contiguous United States. The climate match to the contiguous United States is low overall, with a medium match in southwestern Florida. Several U.S. States prohibit or restrict the possession, transport, or trade of this species along with other members of the family Trichomycteridae. No introductions of this species have been reported, so the history of invasiveness is uncertain and the certainty of assessment is low. Overall risk posed by this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): 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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Mississippi Secretary of State. 2019. Guidelines for aquaculture activities. Mississippi Administrative Code, Title 2, Part 1, Subpart 4, Chapter 11. Regulatory and Enforcement Division, Office of the Mississippi Secretary of State, Jackson, Mississippi.

OIE (World Organisation for Animal Health). 2020. OIE-listed diseases, infections and infestations in force in 2020. World Organisation for Animal Health, Paris. Available: http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/. (February 2020).

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Utah DNR. 2012. R657-3 – collection, importation, transportation, and possession of animals. Utah Division of Natural Resources, Salt Lake City, Utah. Available: https://wildlife.utah.gov/hunting-in-utah/guidebooks/46-rules/rules-regulations/940-r657-3--collection-importation-transportation-and-possession-of-animals.html. (May 2018).

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.

Arratia, G., and S. Menu-Marque. 1984. New catfishes of the genus *Trichomycterus* from the high Andes of South America (Pisces, Siluriformes) with remarks on distribution and

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de Pínna, M. C. C., and W. Wosiacki. 2003. Trichomycteridae (pencil or parasitic catfishes). Pages 270-290 *in* R. E. Reis, S. O. Kullander, and C. J. Ferraris, Jr., editors. Checklist of the freshwater fishes of South and Central America. EDIPUCRS, Porto Alegre, Brazil.

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