

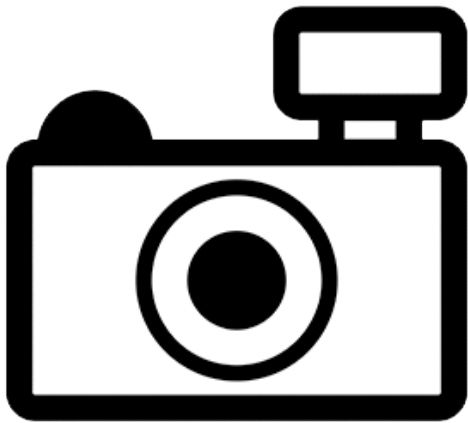
***Trichomycterus vermiculatus* (a catfish, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, March 2017

Revised, March 2018

Web Version, 11/1/2019



No Photo Available

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2016):

“South America: Paraíba do Sul River 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, according to the literature and a search of online aquarium retailers.

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 vermiculatus 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 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 or established in the United States.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2016):

“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* Valenciennes, 1832
Species *Trichomycterus vermiculatus* (Eigenmann, 1917).”

From Fricke et al. (2019):

“Current status: Valid as *Trichomycterus vermiculatus* (Eigenmann 1917). Trichomycteridae: Trichomycterinae.”

Size, Weight, and Age Range

From Froese and Pauly (2016):

“Max length : 13.1 cm male/unsexed [de Pinna and Wosiacki 2003].”

Environment

From Froese and Pauly (2016):

“Freshwater; benthopelagic”

Climate/Range

From Froese and Pauly (2016):

“22°C – 28°C [Baensch and Riehl 1997; assumed to represent recommended aquarium water temperatures]”

Distribution Outside the United States

Native

From Froese and Pauly (2016):

“South America: Paraíba do Sul River in Brazil.”

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 Eigenmann (1917):

“Head 5.4 in the length; D. 8.5; A. 8.5 counting in each case the two rudimentary rays; P. 7; width of the head nearly equal to its length; eye in middle of the head, interocular three in the length of the head. Teeth conic, in bands. Right nasal barbels reaching to above base of the opercular spines, maxillary barbels of right side nearly as long as head, reaching to the second fourth of the pectoral, both shorter on left side; pectoral rather narrow, the outer ray much prolonged, as long as head behind the nasal barbel, the fin without the filament equal to the part of head behind a point mid-way between eye and posterior nares; origin of ventrals under origin of dorsal, equidistant between base of middle caudal rays and last third of pectorals, ventrals reaching much beyond vent, almost to anal, equal to the snout in length; origin of anal under penultimate ray of the dorsal, distance between the base of its last ray and the base of the middle caudal ray a little more than five in the length ; caudal rounded, six and one third in the length ; dorsal short, rounded, the distance between its origin and the base of the middle caudal rays one and sixty-seven hundredths in the distance between its origin and the snout. Sides and back profusely covered with confluent spots which leave the light color as irregular vermiculations.”

Biology

No information reported for this species.

Human Uses

No information reported for this species.

Diseases

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

Threat to Humans

From Froese and Pauly (2016):

“Harmless”

3 Impacts of Introductions

This species has not been reported as introduced or established outside of its native range, so no information is available on impacts of introduction.

The importation, possession, or trade of the parasitic catfish *T. vermiculatus* 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



Figure 1. Known global distribution of *Trichomycterus vermiculatus*, reported from Brazil. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

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

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was high in a small area in southwest Florida, and medium in the remainder of peninsular Florida and along the east coast of Texas. Low matches occurred throughout the remainder of the contiguous United States. The Climate 6 score indicated that the contiguous United States has a medium overall climate match. The climate score for *Trichomycterus vermiculatus* was 0.008. (Scores

between 0.005 and 0.103 are classified as medium.) Individually, Florida had a high climate score; all other States had a low climate score.

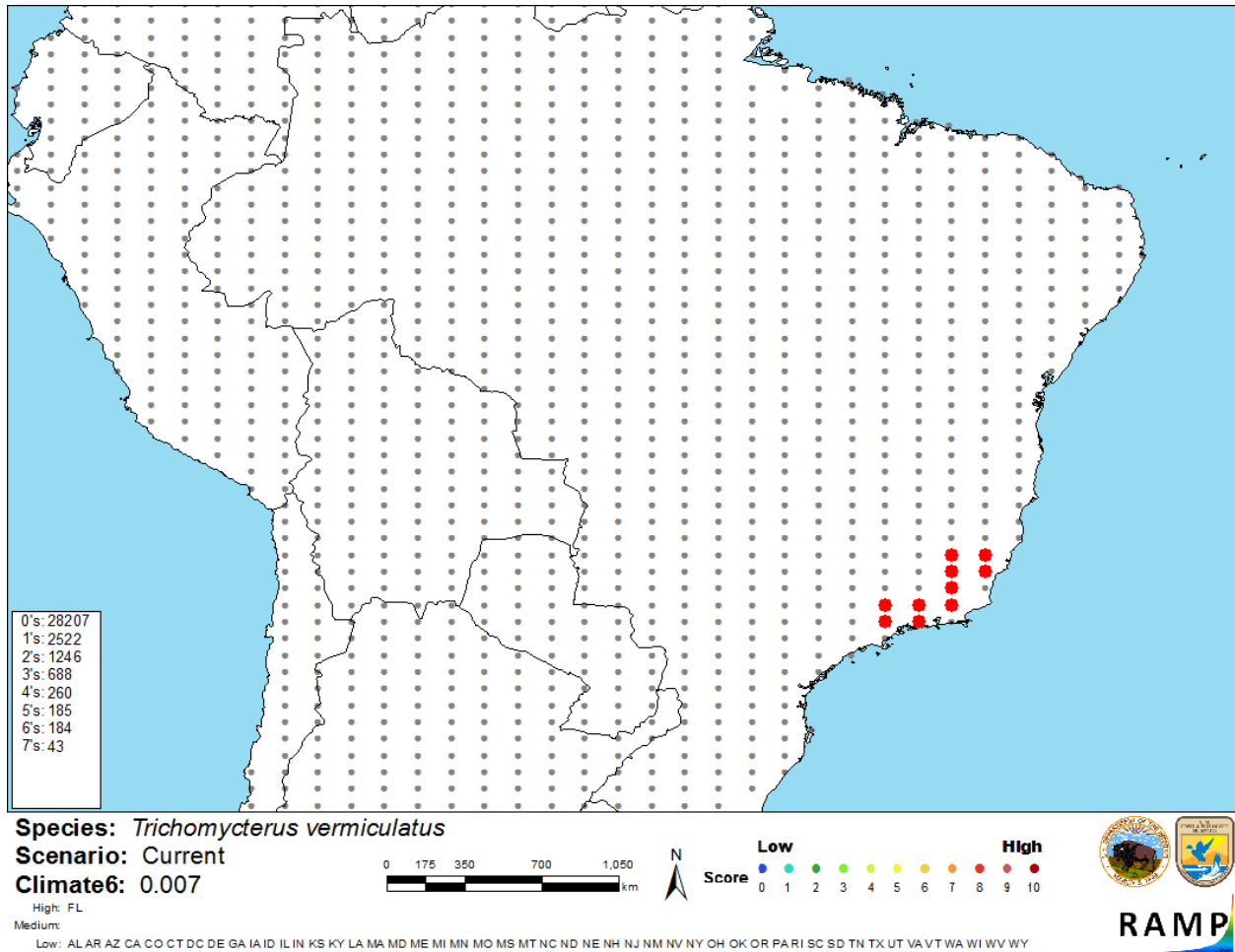


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Brazil) and non-source locations (gray) for *Trichomycterus vermiculatus* climate matching. Source locations from GBIF Secretariat (2017).

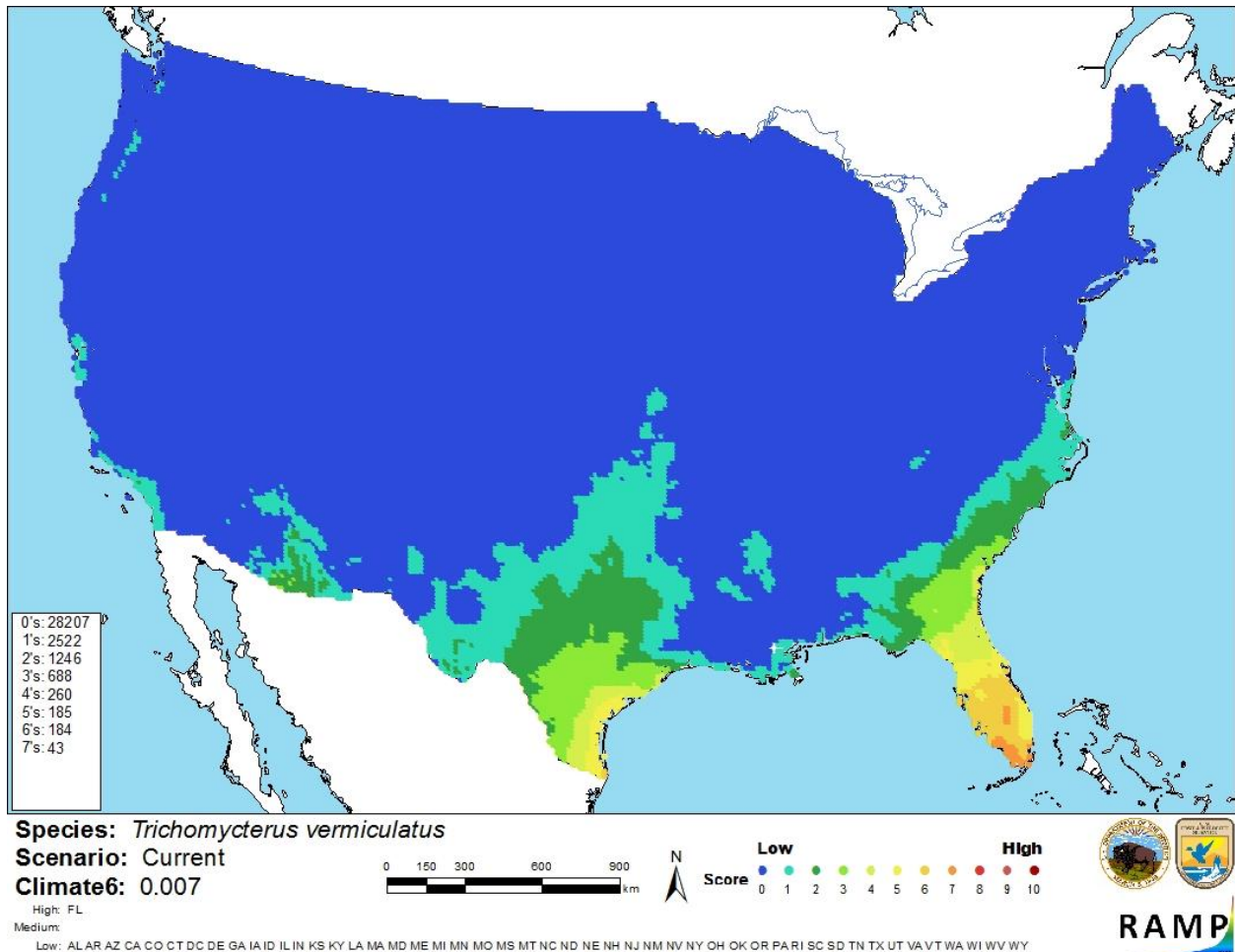


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Trichomycterus vermiculatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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

7 Certainty of Assessment

Information on the distribution and biology of *Trichomycterus vermiculatus* is lacking. No introductions of this species outside of its native range have been documented, so there is no information available on impacts of introduction. The certainty of this assessment low due to this lack of information.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Trichomycterus vermiculatus is a small catfish native to the Paraíba do Sul River in Brazil. Several U.S. States prohibit or restrict the possession, transport, or trade of this species along with other members of the family Trichomycteridae. History of invasiveness is uncertain because this species has not been documented outside of its native range. More information is needed to adequately assess the risk this species poses in introduced areas; absence of this information makes the certainty of this assessment low. *T. vermiculatus* has a medium climate match with the contiguous United States. Most of the contiguous United States had a low match, except for peninsular Florida and the Gulf Coast of Texas. Overall risk posed by this species 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**

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.

Arizona Secretary of State. 2006. Restricted live wildlife. Arizona Administrative Code, R12-4-406.

Dill, W. A., and A. J. Cordone. 1997. History and status of introduced fishes in California, 1871-1996. California Department of Fish and Game. Fish Bulletin 178.

Eigenmann, C. H. 1917. Descriptions of sixteen new species of Pygidiidae. Proceedings of the Martican Philosophical Society 56(7): 690-703 (March 2017).

FFWCC (Florida Fish and Wildlife Conservation Commission). 2019. Florida's nonnative fish and wildlife. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida. Available: <https://myfwc.com/wildlifehabitats/nonnatives/>. (November 2019).

Fricke, R., W. N. Eschmeyer, and R. van der Laan, editors. 2019. Eschmeyer's Catalog of Fishes: genera, species, references. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. (November 2019).

Froese, R., and D. Pauly, editors. 2016. *Trichomycterus vermiculatus* (Eigenmann 1917). Fishbase. Available: <http://www.fishbase.se/summary/Trichomycterus-vermiculatus.html> (March 2017).

- GBIF Secretariat. 2016. GBIF backbone taxonomy: *Trichomycterus vermiculatus* (Eigenmann 1917). Global Biodiversity Information Facility, Copenhagen. Available: <http://www.gbif.org/species/2342993> (March 2017).
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- Legislative Council Bureau. 2018. Restrictions on importation, transportation and possession of certain species. Nevada Administrative Code, Section 503.110.
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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.
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- Sanders, S., C. Castiglione, and M. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.
- 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.

- Baensch, H. A., and R. Riehl. 1997. Aquarien Atlas, volume 5. Mergus Verlag, Melle, Germany.
- 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.