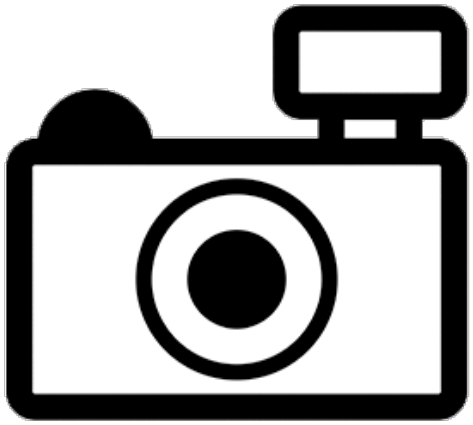
Trichomycterus itacarambiensis (a catfish, no common name)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, January 2017
Revised, June 2018
Web Version, 4/29/2021

Organism Type: Fish
Overall Risk Assessment Category: Uncertain



1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

"South America: Olhos d' Agua Cave in Minas Gerais, Brazil. [Trajano 1997b]"

Status in the United States

This species has not been reported in the United States.

From Arizona Office of the Secretary of State (2013):

"I. Fish listed below are considered restricted wildlife: […]
9. All species of the family Cetopsidae and Trichomycteridae. Common name: South American catfish."

From California Department of Fish and Wildlife (2019):

“It shall be unlawful to import, transport, or possess live animals restricted in subsection (c) below except under permit issued by the department. […] Family Trichomycteridae (Pygidiidae)-Parasitic Catfishes.: All species”

The Florida Fish and Wildlife Conservation Commission has listed *Trichomycterus itacarambiensis* as a prohibited species. Prohibited nonnative species (FFWCC 2016), "are considered to be dangerous to the ecology and/or the health and welfare of the people of Florida. These species are not allowed to be personally possessed or used for commercial activities.

From Georgia DNR (2020):

“The exotic species listed below, except where otherwise noted, may not beheld as pets in Georgia. This list is not all inclusive. […]
Parasitic catfishes; all species”

From Louisiana State Legislature (2019):

“No person, firm, or corporation shall at any time possess, sell, or cause to be transported into this state 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: freshwater electric eel (Electrophorus sp.); rudd (Scardinius erythrophthalmus); all members of the families Synbranchidae (Asian swamp eels); Channidae (snakeheads); Clariidae (walking catfishes); 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. However, species listed as prohibited may be allowed under a permitting process where environmental impact has been assessed. […]
Pencil or parasitic catfishes Family Trichomycteridae **** [indicating all species within the family are included in the regulation]”

From State of Nevada (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: […]
South American Parasitic Catfish.....All species in the families Cetopsidae and Trichomycteridae”

From Oklahoma Secretary of State (2019):

"Until such time as is necessary for the Department of Wildlife Conservation to obtain adequate information for the determination of other harmful or potentially harmful exotic species, the importation into the State and/or the possession of the following exotic fish or their eggs is prohibited: […]
Parasitic South American Catfish group (Candiru), genera & species of the Trichomycteridae family. Vandellia spp., Tridens spp., and Pyqidium spp."

From Texas Parks and Wildlife (2020):

"The organisms listed here are legally classified as exotic, harmful, or potentially harmful. No person may possess or place them into water of this state except as authorized by the department. Permits are required for any individual to possess, sell, import, export, transport or propagate listed species for zoological or research purposes; for aquaculture(allowed only for Blue, Nile, or Mozambique tilapia, Triploid Grass Carp, or Pacific White Shrimp); or for aquatic weed control (for example, Triploid Grass Carp in private ponds). […]
South American Parasitic Candiru Catfishes, Family Trichomycteridae All species"

From Utah Office of Administrative Rules (2019):

"All species of fish listed in Subsections (2) through (30) are classified 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 in the United States.

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2018), *Trichomycterus itacarambiensis* Trajano and de Pinna, 1996 is the current valid name and original name for this species.

From ITIS (2018):

Kingdom Animalia
  Subkingdom Bilateria
    Infrakingdom Deuterostomia
      Phylum Chordata
        Subphylum Vertebrata
          Infraphylum Gnathostomata

Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Trichomycteridae
Subfamily Trichomycterinae
Genus *Trichomycterus*
Species *Trichomycterus itacarambiensis* Trajano and de Pinna, 1996

Size, Weight, and Age Range

From Froese and Pauly (2017):

"Max length : 8.3 cm SL male/unsexed; [Trajano 1997a]
Max. reported age: 7 years [Trajano 1997b]"

Environment

From Froese and Pauly (2017):

"Freshwater; benthopelagic."

Climate

From Froese and Pauly (2017):

"Tropical, preferred ?; 15°S - 16°S"

From Trajano (1997b):

"The climate is tropical semiarid, with a well defined dry period between April and September (Nimer 1979)."

Distribution Outside the United States

Native

From Froese and Pauly (2017):

"South America: Olhos d' Agua Cave in Minas Gerais, Brazil. [Trajano 1997b]"

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 Trajano (1997b):

"About one third of the population is truly albinic; the remainder may exhibit partial depigmentation."

From Trajano (1997a):

"The pigmentation degree is variable in *T. itacarambiensis*, a third of the population being true albinos; the eyes vary from normal to externally invisible."

Biology

From Froese and Pauly (2017):

"A cave-restricted species. Found mostly near the bottom and in the water column. Breeding is synchronized with the rainy season for maximum survival of the young. [Trajano 1997a]"

From Trajano (1997b):

"Individual growth in *T. itacarambiensis* probably occurs in pulses, during the rainy seasons; interruption of growth in the dry season is attributed to the pronounced food shortage. The mean longevity was estimated as seven years. Differences between pigmented and albino individuals include a higher frequency of downstream movements and slightly higher growth rates in the latter."

"*Trichomycterus itacarambiensis* was the only fish species observed in Olhos d'Água cave. These fishes were found throughout the cave, from the resurgence to the siphon at its distal end, in habitats as diverse as shallow running water or deep pools, soft- gravel- or rocky-bottomed. They only seemed to avoid areas with large amounts of iron bacteria. Some catfishes were observed stationary on the bottom, others swimming slowly either near the bottom, or in the water column or near the surface."

"It is possible that, as observed for other trichomycterids (Arratia 1983), juveniles of *T. itacarambiensis* have habits different from those of adults, hiding more frequently in soft substrate or crevices, or use inaccessible parts of the cave."

From Trajano (1997a):

"As expected for a cave-dwelling fish, *T.itacarambiensis* is a carnivorous generalist, which preys mainly on autochthonous insects and earthworms. It is a chemically oriented predator of bottom and surface animals, using foraging tactics also used by other cave catfishes, such as the *pimelodids Pimelodella kronei* and *Imparfinis sp*. However, bottom feeding seems to be more important for *T. itacarambiensis* than for the latter. There is a severe feeding stress during the dry season, when few individuals are able to get food."

"It is estimated that up to 50% of the female *T. itacarambiensis* can reproduce every year, a high proportion for a troglobitic fish species. At least during the study period, pigmented individuals reproduced more frequently than the albinos."

Human Uses
Trichomycterus itacarambiensis is in the international aquarium trade (e.g. SWIE AQUATICA 2021).

Diseases
No information available. **No records of OIE-reportable diseases (OIE 2021) were found for *Trichomycterus itacarambiensis*.**

Threat to Humans
From Froese and Pauly (2017):

"Harmless"

3 Impacts of Introductions
This species has not been reported as introduced outside of its native range, so impacts of introductions are unknown.

Trichomycterus itacarambiensis is regulated in multiple States.

4 History of Invasiveness
This species has not been reported as introduced outside of its native range. *Trichomycterus itacarambiensis* is present in the international aquarium trade; however, no specific information regarding volume or duration of trade was found. Therefore, the history of invasiveness is classified as No Known Nonnative Populations.

5 Global Distribution

Figure 1. Known global distribution of *Trichomycterus itacarambiensis*. Locations are in southern Brazil. Map from GBIF Secretariat (2018). The western observation is outside the described range of this species and was not confirmed elsewhere in the literature. Therefore, it was not used to select source locations for the climate match.

6 Distribution Within the United States

This species has not been reported within the United States.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Trichomycterus itacarambiensis* was generally low with medium climate match scores in the southern tips of Florida and Texas. There were no areas of high match. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean Distance) for the contiguous United States was 0.000, low (scores less than or equal to 0.005 are considered low). All States had low individual climate 6 scores.

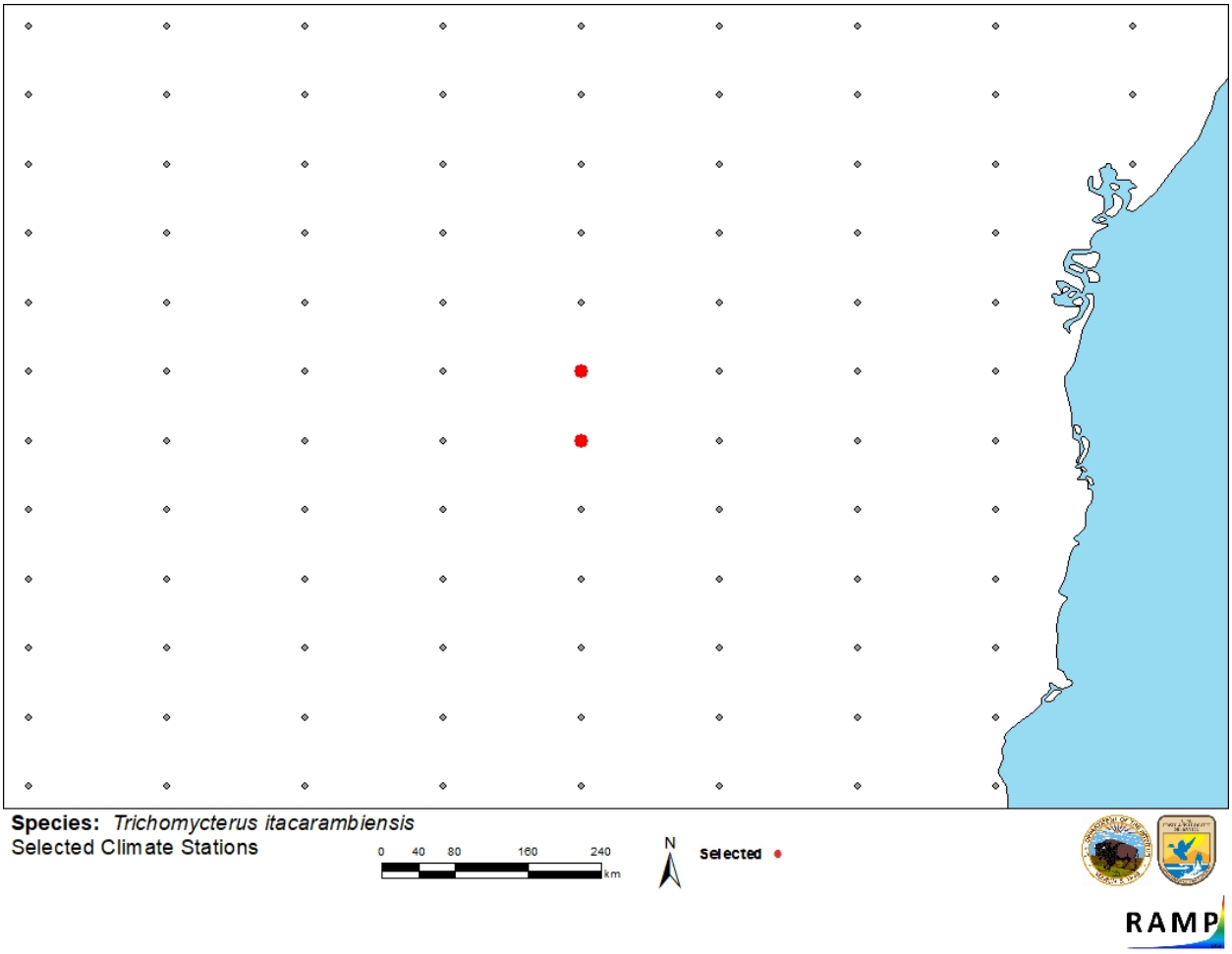


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in southern Brazil selected as source locations (red) and non-source locations (gray) for *Trichomycterus itacarambiensis* climate matching. Source locations from GBIF Secretariat (2018). Selected source locations are within 100 km of one or more species occurrences and do not necessarily represent the locations of occurrences themselves.

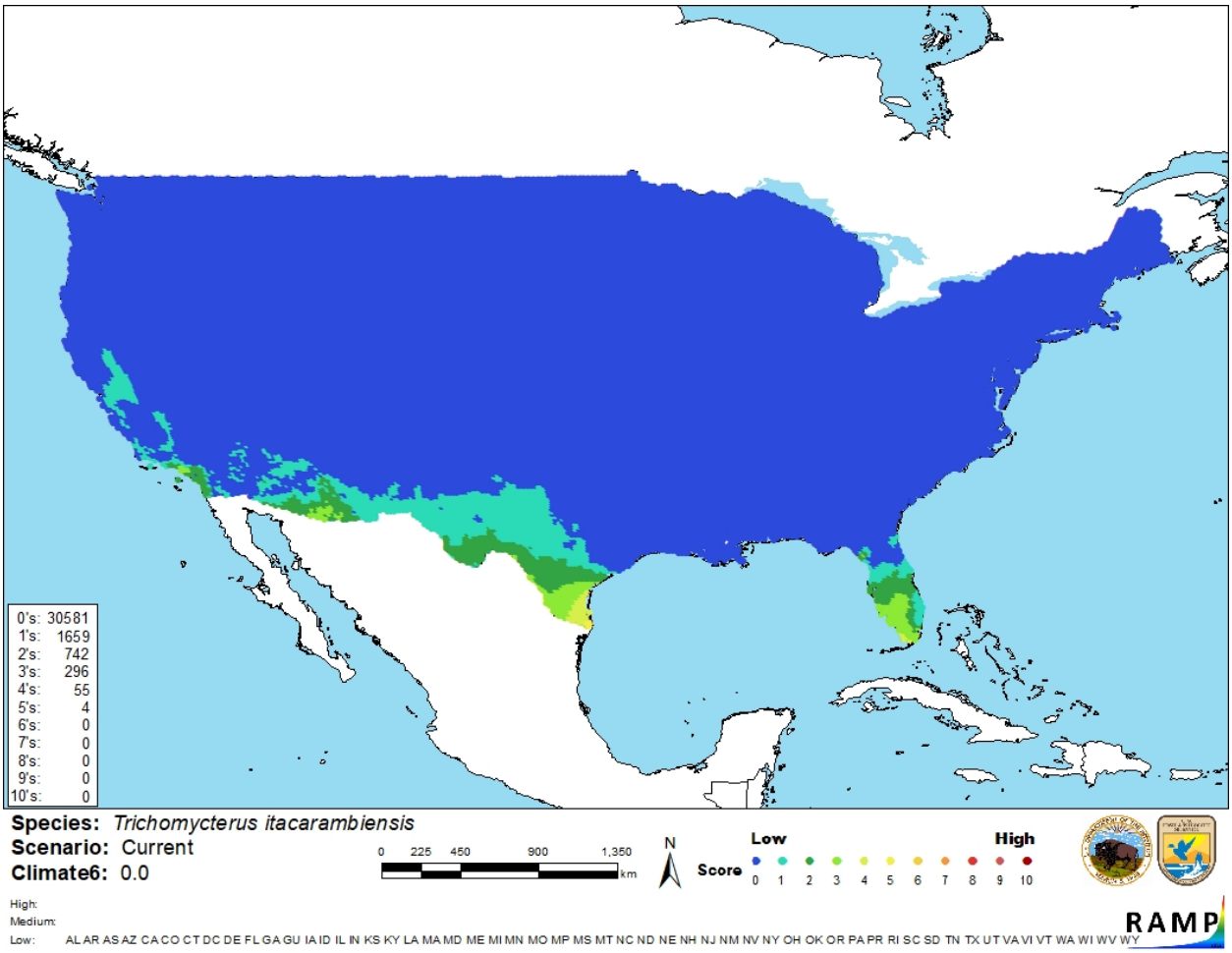


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Trichomycterus itacarambiensis* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
0.000≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

8 Certainty of Assessment

There was limited information available on the species *Trichomycterus itacarambiensis.* This species has not been reported outside of its native range so impacts of introduction are unknown. With such little information known on this species, the certainty of this assessment is low.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Trichomycterus itacarambiensis is a South American catfish found in the Olhos d' Agua Cave in Minas Gerais, Brazil. Within the cave, *T. itacarambiensis* is found in a variety of habitats from shallow running water to deep pools with soft, gravel, or rocky bottoms and seem to avoid areas with large amounts of iron bacteria. Individuals of this species have been observed swimming throughout the water column, from bottom habitats to surface waters. *T. itacarambiensis* is a carnivorous generalist, preying mainly on autochthonous insects and earthworms throughout the water column, though bottom feeding seems to be more important foraging tactic to this species compared to other cave catfish species. There have been no reports of this fish outside of its native range. It is present in the international aquarium trade. *T. itacarambiensis* is regulated in multiple States. The history of invasiveness is No Known Nonnative Population. The overall climate match was low. There were two small areas of medium match in southern Florida and Texas. Due to the lack of information on the history of invasiveness the certainty of assessment is low. The overall risk for this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): No known nonnative populations**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information:** *Trichomycterus itacarambiensis* is regulated in multiple States.
- **Overall Risk Assessment Category: Uncertain**

10 Literature Cited

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 11.

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Froese R, Pauly D. 2017. *Trichomycterus itacarambiensis* (Trajano & de Pinna, 1996). FishBase. Available: http://www.fishbase.org/summary/Trichomycterus-itacarambiensis.html (January 2017).

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Oklahoma Secretary of State. 2019. List of restricted exotic species. Oklahoma Administrative Code, Title 800, Chapter 20-1-2.

Sanders S, Castiglione C, Hoff M. 2018. Risk Assessment Mapping Program: RAMP. Version 3.1. U.S. Fish and Wildlife Service.

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Texas Parks and Wildlife. 2020. Invasive, prohibited and exotic species. Austin: Texas Parks and Wildlife. Available: https://tpwd.texas.gov/huntwild/wild/species/exotic/prohibited_aquatic.phtml (November 2020).

Trajano E. 1997a. Food and reproduction of *Trichomycterus itacarambiensis*, cave catfish from south-eastern Brazil. Journal of fish biology 51:53–63.

Trajano E. 1997b. Population ecology of *Trichomycterus itacarambiensis*, a cave catfish from eastern Brazil (Siluriformes, Trichomycteridae). Environmental Biology of Fishes 50:357–369.

Utah Office of Administrative Rules. 2019. Classification and specific rules for fish. Utah Administrative Code, Rule R657-3-23.

11 Literature Cited in Quoted Material

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.

Trajano E, de Pinna MCC. 1996. A new cave species of *Trichomycterus* from eastern Brazil (Siluriformes, Trichomycteridae). Revue française d'Aquariologie Herpétologie 23:85–90.