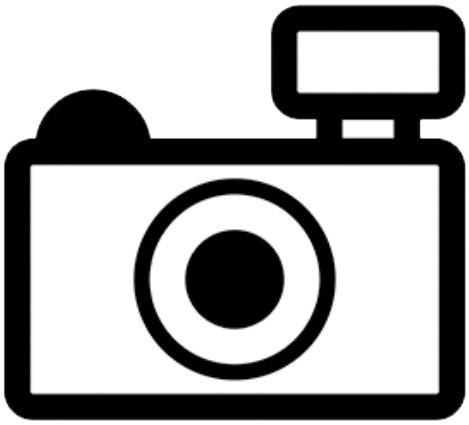
Trichomycterus trefauti (a catfish, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2017
Revised, February 2018
Web Version, 2/28/2020



1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2016):

"South America: known only from the type-locality : Riacho Andrequicé, Trinta Réis, Minas Gerais, Brazil."

From Eschmeyer et al. (2017):

"Distribution: Riacho Andrequicé, upper São Francisco River basin, Minas Gerais State, 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 trefauti 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 or established in the United States.

Remarks

From Wosiacki (2004):

"*Trichomycterus trefauti*, new species, is described based on eight specimens from the rio São Francisco basin, Minas Gerais, Brazil."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2017):

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 trefauti*

From Eschmeyer et al. (2017):

"Current status: Valid as *Trichomycterus trefauti* Wosiacki 2004. Trichomycteridae: Trichomycterinae."

Size, Weight, and Age Range
From GBIF Secretariat (2016):

"35–55 mm standard length"

Environment
From Froese and Pauly (2016):

"Tropical"

From Wosiacki (2004):

"The specimens were collected in a stream 2-4m wide, with an average depth of 10cm, and with a bottom of pebbles of variable size and rocks, at an elevation of approximately 1000m. The vegetation was of 'campos reupestres'."

Climate/Range
From Froese and Pauly (2016):

"Freshwater; benthopelagic."

Distribution Outside the United States
Native
From Froese and Pauly (2016):

"South America: known only from the type-locality: Riacho Andrequicé, Trinta Réis, Minas Gerais, Brazil."

From Eschmeyer et al. (2017):

"Distribution: Riacho Andrequicé, upper São Francisco River basin, Minas Gerais State, 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 Froese and Pauly (2016):

"Dorsal spines (total): 2; Dorsal soft rays (total): 7; Anal spines: 1; Anal soft rays: 6. *Trichomycterus trefauti* differs from all other known members of the sub-family Trichomycterinae by the autapomorphic presence of an elliptical, vertically elongated, brown

spot, at caudal-fin base (*vs.* without elliptical spot at caudal-fin base), and the combination of homogeneously gray color pattern (*vs.* yellowfish, presence of stripes or bands, or lack of color pattern), first pectoral-fin ray prolonged as a filament (*vs.* not prolonged), subterminal mouth (*vs.* inferior or terminal mouth), two supraorbital pores at interorbital space (*vs.* one supraorbital pore at mesial line), caudal fin truncate with attenuated edges (*vs.* caudal fin rounded), pelvic fins covering anus and urogenital openings (*vs.*not covering), interorbital space very wide 39.8-45.9% HL(*vs.* more or less than 39.8-45.9% HL), maxillary barbels very long 84.2-93.0% HL (*vs.*more or less than 84.2-93.0% HL), rictal barbels very long 67.6-74.3% HL (*vs.*more or less than 67.6-74.3%HL)."

From Wosiacki (2004):

"Body elongate, roughly cylindrical close to head and gradually more compressed towards caudal fin. Dorsal and ventral profiles of trunk slightly convex. Dorsal and ventral profiles of caudal peduncle straight […] Integument thick, especially over base of pectoral and caudal fins. Small papillae on lips, and scattered on dorsal surface of head."

"Head wide and depressed, trapezoidal, slightly longer than wide, transverse section at posterior tip of opercle wider than anteriorly at nostril, anterior margin slightly rounded. Head lateral to eye slightly swollen by jaw muscles in large and small specimens. Dorsal and ventral profiles of head convex. Eyes rounded, dorsolaterally oriented. Eye covered by thin skin, transparent at its center, gradually opaque towards rim, distinctly separated from surface of eyeball. Ocular structures readily visible on surface of skin, not deeply sunken. Orbital rim not free. Anterior nare slightly larger than posterior, surrounded by fleshy flap of integument. Posterior nare surrounded anteriorly by thin flap of integument. Anterior and posterior nares about one third of eye diameter. Gill membranes thick, united to isthmus only at anteriormost point, forming small free fold across the isthmus. Gill openings not constricted. Branchiostegal rays 6-8 (6 in Holotype) visible from below (7-8 in C&S). Mouth subterminal, its corners laterally oriented. Lower lip with conspicuous lateral fleshy lobes, internal to origin of rictal barbels. Anterior margin of upper lip slightly rounded. Small papillae on external surface of upper lip and large papillae inside mouth at region of teeth attachment. Barbels long (nasal 74.3-69.8; maxillary 93.0-84.2; and rictal barbel length 74.3-67.6 % of head length). Barbels with broad bases, gradually narrowing towards tip. Nasal barbels reaching median odontodes of interopercle; maxillary barbels reaching base of pectoral fin; rictal barbels reaching last interopercular odontode. Origin of nasal barbels on posterolateral portion of integument flap around anterior nostril. Interopercular patch of odontodes rounded, with 34-36 conical odontodes. Opercular patch of odontodes rounded, with 14-16 conical odontodes. Supraorbital canal complete and infraorbital incomplete. Infraorbital anterior section pores i1 and i3, and posterior section pores i10 and i11. Supraorbital pores s1, s2 and s4. Two pores s4 at interorbital space."

"Pectoral-fin margin truncate, I/6 rays, first ray longest with filamentous extension. Dorsal fin with margin semicircular when expanded, II/7 rays, third and fourth rays longest. Anal fin slightly elongate in overall shape, smaller than dorsal fin, I/6 rays, third ray longest, origin at vertical through sixth dorsal-fin ray. Pelvic fins with origin anterior to dorsal-fin origin, rounded margin beyond urogenital and anal openings when extended, 5 rays, second and third rays longest. Caudal fin truncate with attenuated margin edges, distinctly wider than remaining caudal

region, I/11/I principal rays, principal central rays splitting once and dorsal and ventral principal rays splitting twice. Only first dorsal and ventral caudal-fin accessory rays visible. Anal and urogenital openings mid-way between pelvic fin base and anal-fin origin."

"Free vertebrae 37. Ribs 13-14 pairs, first thickest, second to 12-13th pairs slightly longest, the last pair rudimentary and free. Dorsal pterygiophores 8, first in front of neural spine of 21th free vertebrae. Anal pterygiophores 6, first in front of haemal spine of 24th free vertebrae. Procurrent rays of dorsal lobe 14-16. Procurrent rays of ventral lobe 12-16. Caudal skeleton pleurostyle, hypurals 4+5, hypural 3, and fused parahypural and hypurals 1+2."

Biology
No information reported for this species.

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 (2016):

"Harmless"

3 Impacts of Introductions
This species has not been reported as introduced or established outside of its native range.

The importation, possession, or trade of the catfish *T. trefauti* 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 trefauti*, reported from Brazil. Map from GBIF Secretariat (2016).

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 low throughout the contiguous United States, except for a region of medium match in southwestern Florida. Climate 6 score indicated that the contiguous United States has a low overall climate match. (Scores between 0.000 and 0.005, inclusive, are classified as low.) The Climate 6 score for *Trichomycterus trefauti* was 0.000. All States had individually low climate scores.

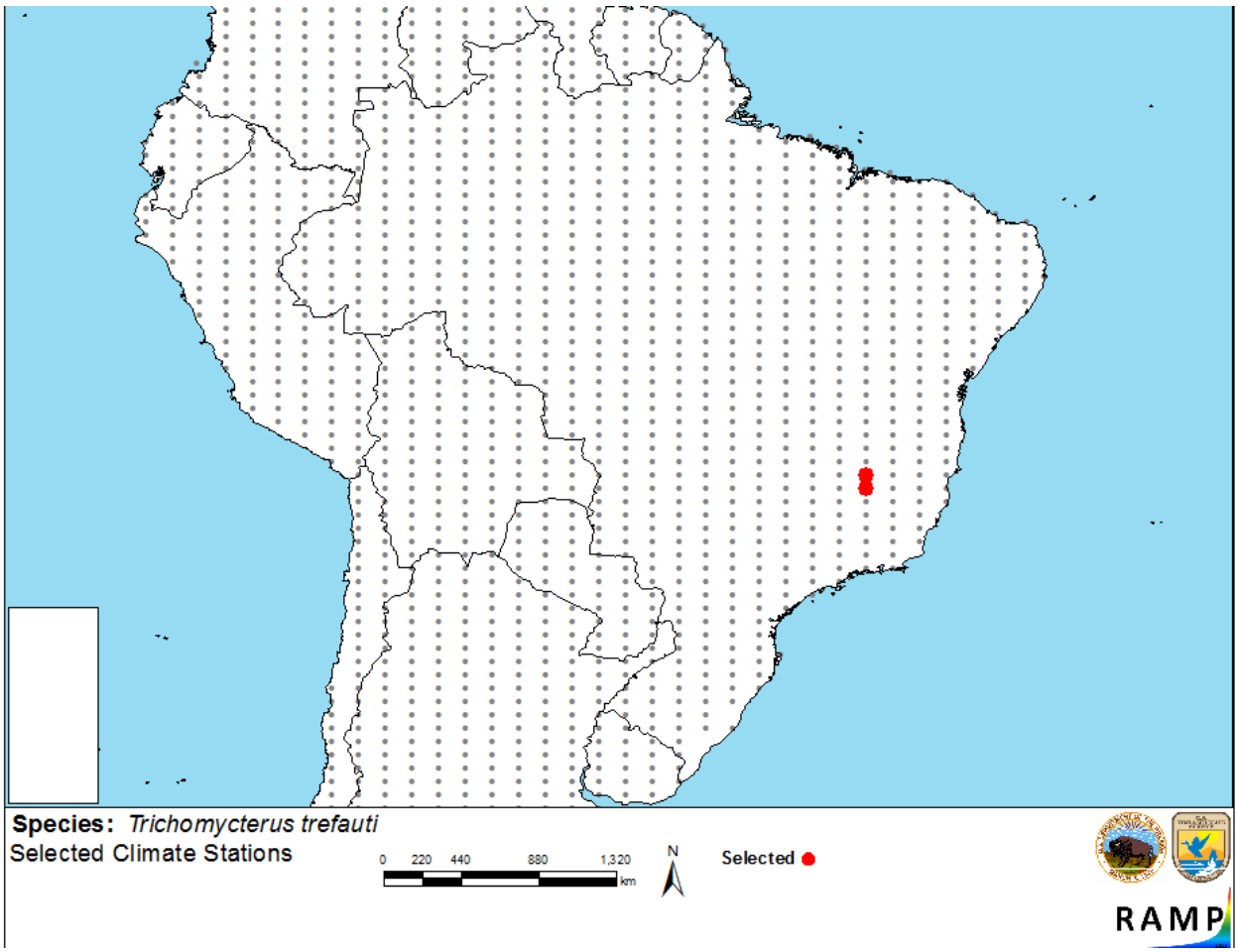


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Brazil) and non-source locations (gray) for *Trichomycterus trefauti* climate matching. Source locations from GBIF Secretariat (2016).

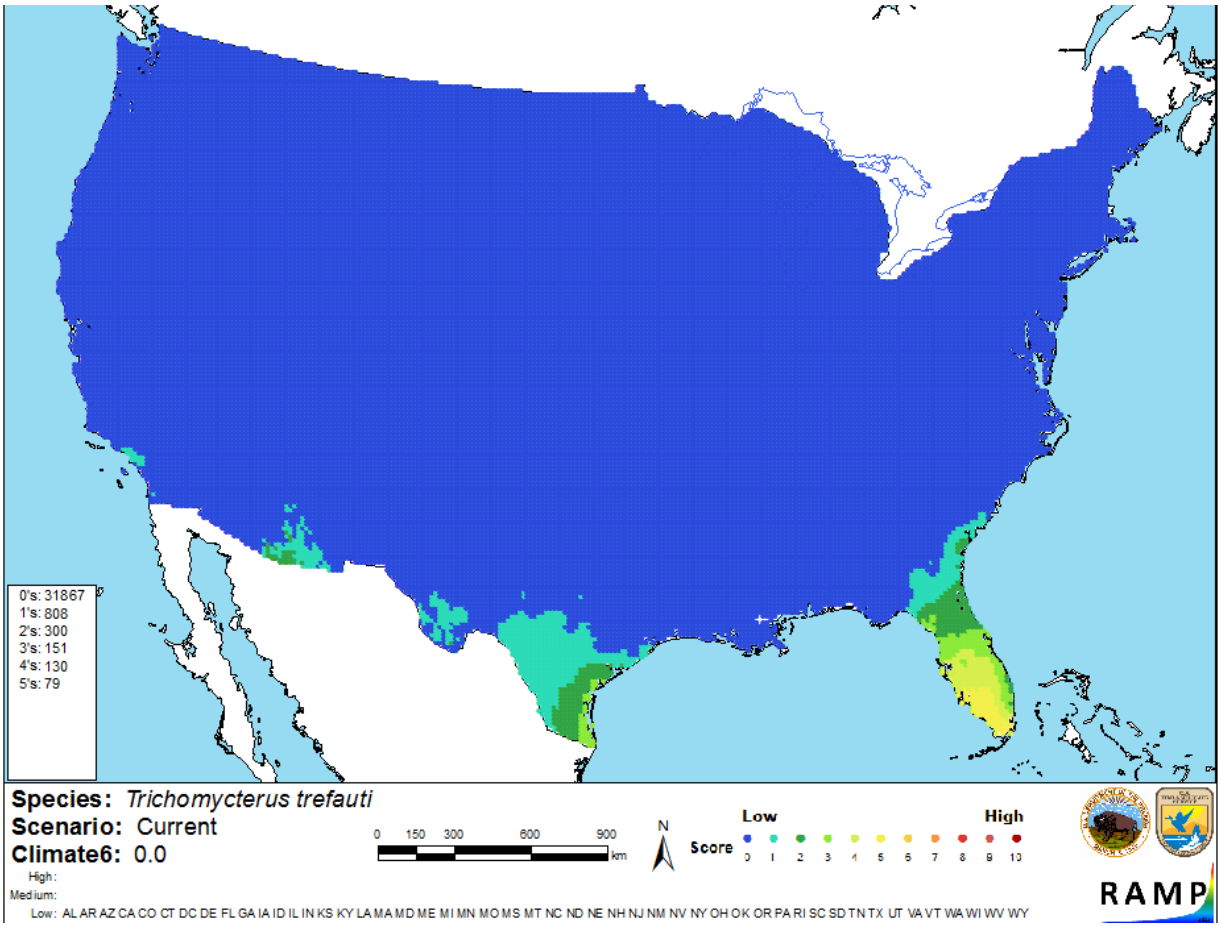


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Trichomycterus trefauti* in the contiguous United States based on source locations reported by GBIF Secretariat (2016). 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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

Information on the biology of *T. trefauti* is lacking. This species has not been documented as introduced outside of its native range. Data on the impacts of introductions are lacking. Absence of this information makes the certainty of this assessment low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Trichomycterus trefauti is a small catfish native to the São Francisco basin, Minas Gerais, Brazil. It is known only from its type locality. There has been no documentation of introductions outside of its native range, so history of invasiveness is uncertain. Several U.S. States prohibit or restrict the possession, transport, or trade of this species along with other members of the family Trichomycteridae. *T. trefauti* has a low climate match with the contiguous United States, although there is an area of medium match in southwestern Florida. Certainty of this assessment low due to lack of information. 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

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