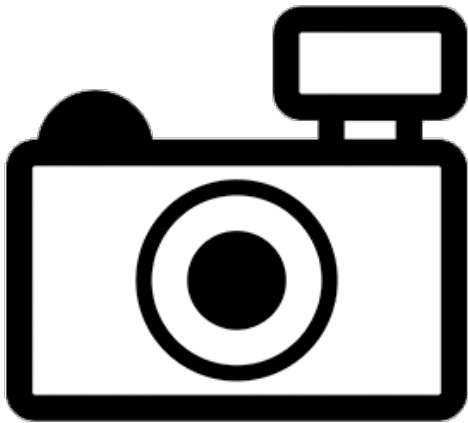


Margay Pencil Catfish (*Trichomycterus maracaya*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, January 2017
Revised, May 2018
Web Version, 9/28/2021

Organism Type: Fish
Overall Risk Assessment Category: Uncertain



No Photo Available

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

“South America: Rio Pardo drainage, upper Rio Paraná, southeastern Brazil.”

From Bockmann and Sazima (2004):

“Known only from an unnamed streamlet running along the foothill of the Morro do Ferro, município de Poços de Caldas, State of Minas Gerais, southeastern Brazil. The streamlet is a tributary of the rio Pardo system (upper rio Paraná).”

Status in the United States

This species has not been reported in the wild or in trade 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 all species in the family Trichomycteridae as prohibited species. Prohibited nonnative species (FFWCC 2021), “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.”

From Georgia DNR (2020):

“The exotic species listed below, except where otherwise noted, may not be held 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 *Pygidium* 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 maracaya* Bockmann and Sazima 2004 is the current valid name for this species and is the 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 maracaya* Bockmann and Sazima 2004

Size, Weight, and Age Range

From Froese and Pauly (2017):

“Max length : 5.1 cm SL male/unsexed; [Bockmann and Sazima 2004]”

Environment

From Froese and Pauly (2017):

“Freshwater; demersal; depth range ? - 1 m [Bockmann and Sazima 2004]”

From Bockmann and Sazima (2004):

“*Trichomycterus maracaya* was found along a stretch of about 400 m of a streamlet 60-210 cm wide with maximum depth about 140 cm running through a semi-deciduous gallery forest.”

Climate

From Froese and Pauly (2017):

“Tropical, [...]”

Distribution Outside the United States

Native

From Froese and Pauly (2017):

“South America: Rio Pardo drainage, upper Rio Paraná, southeastern Brazil.”

From Bockmann and Sazima (2004):

“Known only from an unnamed streamlet running along the foothill of the Morro do Ferro, município de Poços de Caldas, State of Minas Gerais, southeastern Brazil. The streamlet is a tributary of the rio Pardo system (upper rio Paraná).”

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):

“Vertebrae: 42. Belongs to the *Trichomycterus brasiliensis* species-complex based on the possession of the following apomorphic characters unique in *Trichomycterus*: four longitudinal rows of well-defined blotches formed by very dense concentration of dark chromatophores in the deeper layer of skin; and pectoral fin with I+5-6 rays. Members of this putative clade, except *T. iheringi*, may be further distinguished from other species of *Trichomycterus* in having the bases of the pelvic fins very close to each other, sometimes in contact. Differs from the remaining species of *Trichomycterus* (except *T. brasiliensis* and *T. potschi*) in retaining the primordial epiphyseal cartilaginous bar separating the anterior and posterior cranial fontanelles even in larger individuals. Distinguished further from other species of the *T. brasiliensis* species-complex and from all congeners in the following putative autapomorphies: row of blotches on lateral surface not forming a lateral stripe in any stage during ontogeny; and superficial layer of pigmentation of juveniles and larger, presumably adult, specimens formed by scattered chromatophores. [Bockmann and Sazima 2004]”

Biology

From Froese and Pauly (2017):

“A rheophilic [organism that lives in flowing water] species which dwells on limonite rocky bottom streamlet with pebbles and sand, and pools with muddy bottom and accumulated plant debris. Crepuscular and nocturnal, it forages on the bottom and picks mostly benthic prey. Feeds on immature aquatic insects (ephemeropterans, trichopterans, and plecopterans) with larger individuals preying on small tadpoles. [Bockmann and Sazima 2004]”

From Bockmann and Sazima (2004):

“Small individuals (up to 32.5 mm SL) were found among submerged roots near the bank as well as buried in plant litter in small pools 30-50 cm deep. Larger individuals (up to 51.3 mm SL), in contrast, were found only among plant litter in larger pools up to 100 cm deep.”

Human Uses

No information available.

Diseases

No OIE-reportable diseases (OIE 2021) were found to be associated with *Trichomycterus maracaya*. No disease information available.

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 maracaya is regulated in multiple States.

4 History of Invasiveness

This species has not been reported as introduced outside of its native range, so the history of invasiveness is classified as No Known Nonnative Population.

5 Global Distribution



Figure 1. Known global distribution of *Trichomycterus maracaya*. Locations are in southern Brazil. Map from GBIF Secretariat (2018).

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 majority of the contiguous United States had a low match. Medium and high climate match occurred in the peninsular Florida. The overall Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean Distance) for the contiguous United States was 0.003, low. (Scores between 0.000 and 0.005, inclusive, are classified as low.) Florida had a high individual Climate 6 score. All other States had low individual scores.

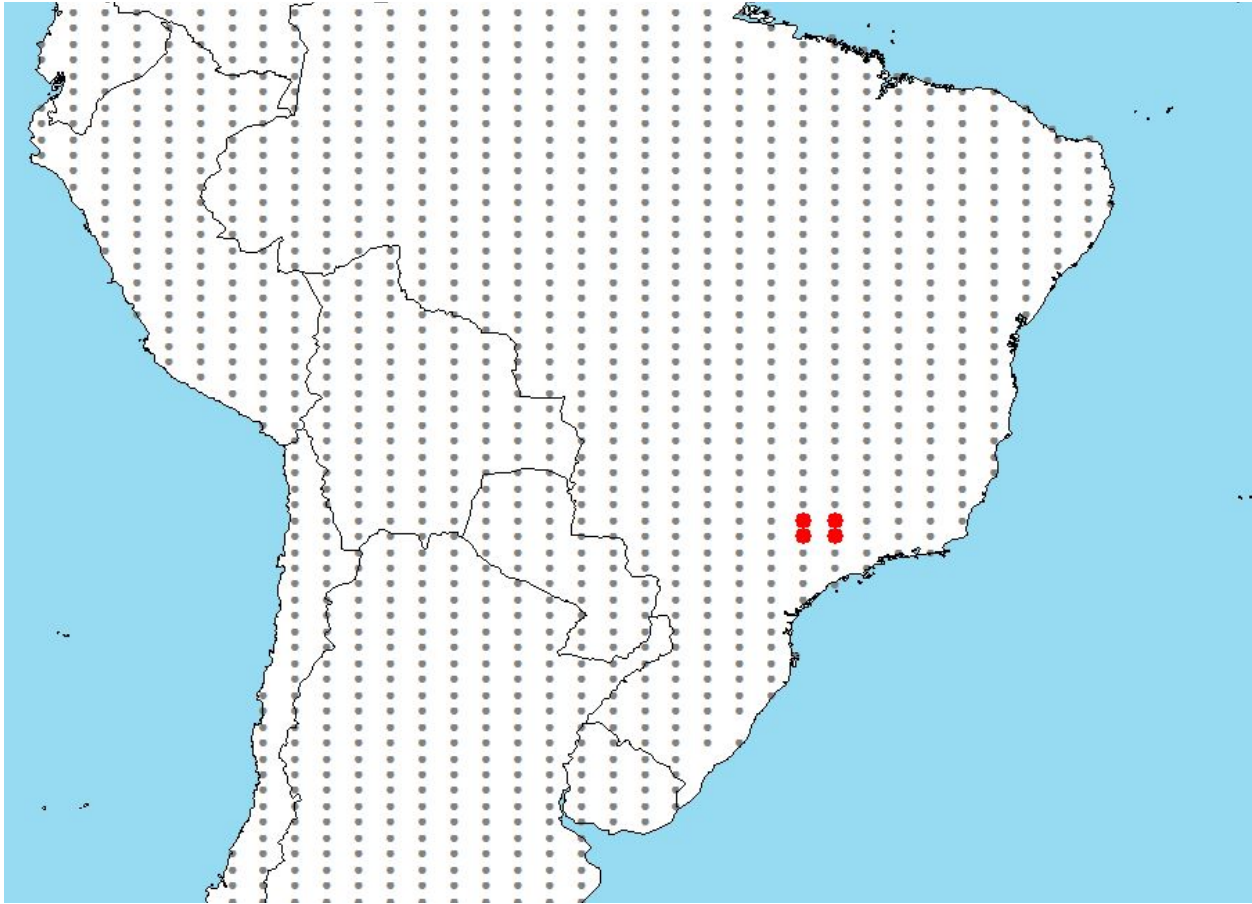


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in South America selected as source locations (red: Brazil) and non-source locations (gray) for *Trichomycterus maracaya* climate matching. Source locations from GBIF Secretariat (2018). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

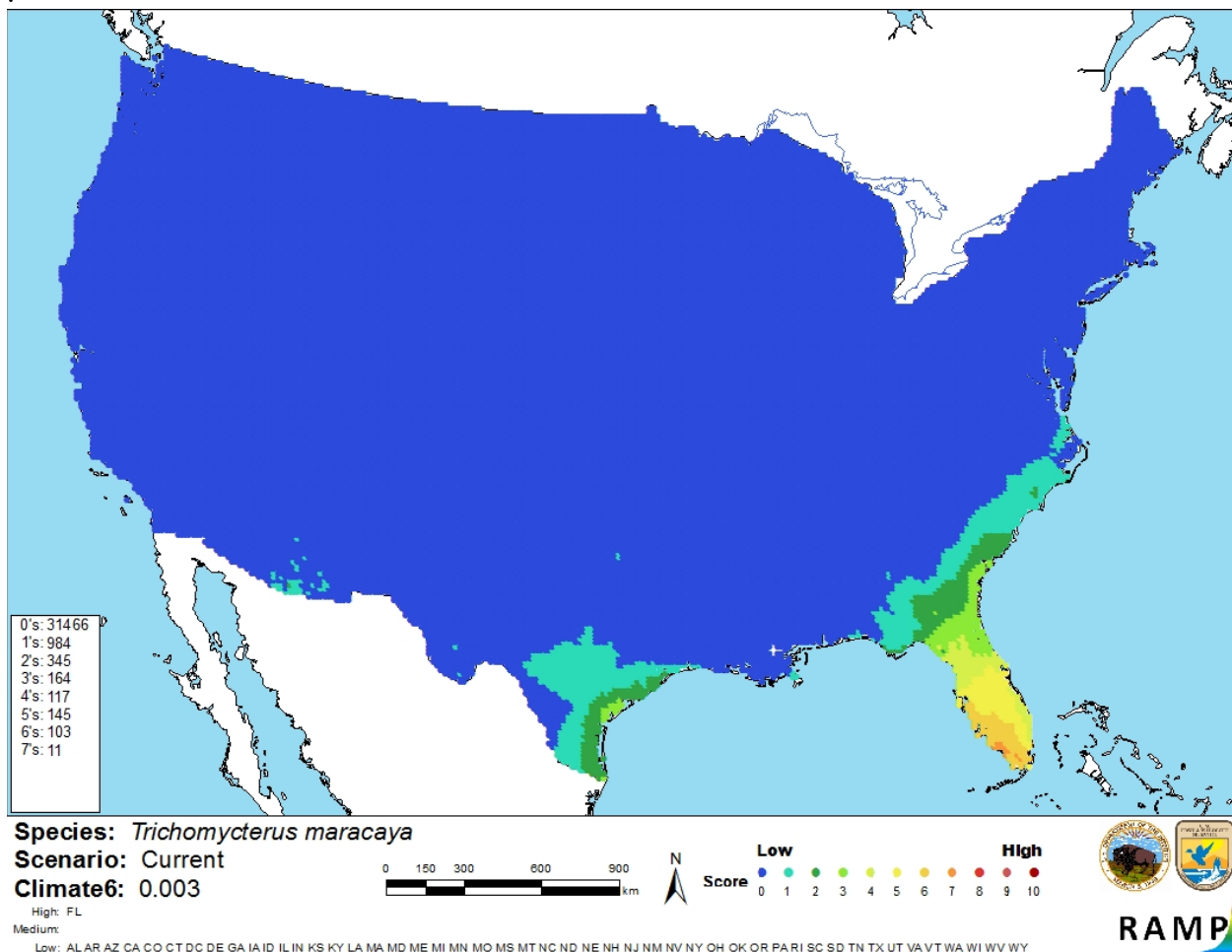


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Trichomycterus maracaya* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

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

8 Certainty of Assessment

There was limited information available on the species *Trichomycterus maracaya*. 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 maracaya is a South American, trichomycterid catfish found only in an unnamed streamlet that is a tributary of the rio Pardo system in Southeastern Brazil. *T. maracaya* inhabits the limonite rocky bottom of the streamlet and hides among the plant litter. It is a nocturnal, benthic forager, feeding on immature aquatic insects and small tadpoles. *Trichomycterus maracaya* is regulated in multiple States. There have been no reports of this fish outside of its native range. Therefore, the history of invasiveness is classified as No Known Nonnative Population. The overall climate match is Low. The only areas of medium and high match were found in peninsular Florida. The certainty of assessment is Low due to a general lack of information. The overall risk for this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): No Known Nonnative Population**
- **Overall Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information: No additional remarks**
- **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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Eschmeyer WN, Fricke R, van der Laan R, editors. 2018. Catalog of fishes: genera, species, references. California Academy of Science. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (May 2018).

[FFWCC] Florida Fish and Wildlife Conservation Commission. 2021. Prohibited nonnative species list. Tallahassee: Florida Fish and Wildlife Conservation Commission. Available: <https://myfwc.com/wildlifehabitats/nonnatives/prohibited-species-list/> (August 2021).

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- 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.

No additional references.