

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

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, December 2016

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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2016):

“South America: western Peru.”

From Eschmeyer et al. (2016):

“Distribution: Western Peru.”

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 punctulatus 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 in the United States.

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 punctulatus*

From Eschmeyer et al. (2016):

“**Current status:** Valid as *Trichomycterus punctulatus* Valenciennes 1846. Trichomycteridae: Trichomycterinae.”

Size, Weight, and Age Range

From Froese and Pauly (2016):

“Max length : 14.5 cm male/unsexed; [de Pinna and Wosiacki 2003].”

Environment

From Froese and Pauly (2016):

“Freshwater; benthopelagic.”

Climate/Range

From Froese and Pauly (2016):

“Tropical, preferred ? [...] Ecosystem: Neotropical [de Pinna and Wosiacki 2003].”

Distribution Outside the United States

Native

From Froese and Pauly (2016):

“South America: western Peru.”

From Eschmeyer et al. (2016):

“Distribution: Western Peru.”

Introduced

There is one reported occurrence of this species outside its native range in Lake Titicaca, Bolivia (GBIF Secretariat 2019). No established populations beyond the species' native range have been documented.

Means of Introduction Outside the United States

No information reported for this species.

Short Description

From Froese and Pauly (2016):

“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 (2016):

“Harmless”

3 Impacts of Introductions

No established populations beyond the species’ native range have been documented and data on impacts of introductions are lacking.

The importation, possession, or trade of the catfish *T. punctulatus* 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. Map of known global distribution of *Trichomycterus punctulatus*. Map from GBIF Secretariat (2019).

5 Distribution Within the United States

Trichomycterus punctulatus 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 on the coast of southern California. The rest of the contiguous United States had locally low matches. The Climate 6 score for *T. punctulatus* was 0.000, indicating a low overall climate match. (Scores between 0.000 and 0.005, inclusive, are classified as low.) All States were classified as having a low climate match except for California, which had a medium climate match.

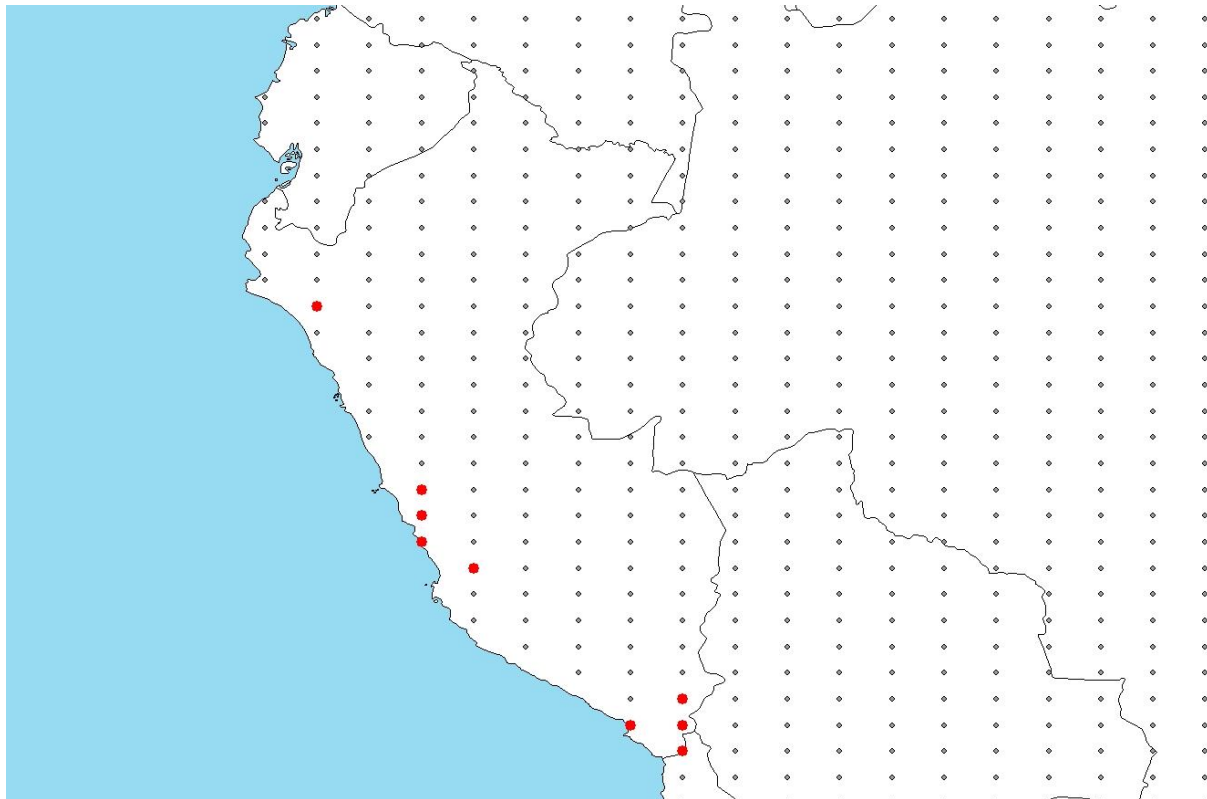


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Peru) and non-source locations (gray) for *Trichomycterus punctulatus* climate matching. Source locations from GBIF Secretariat (2019).

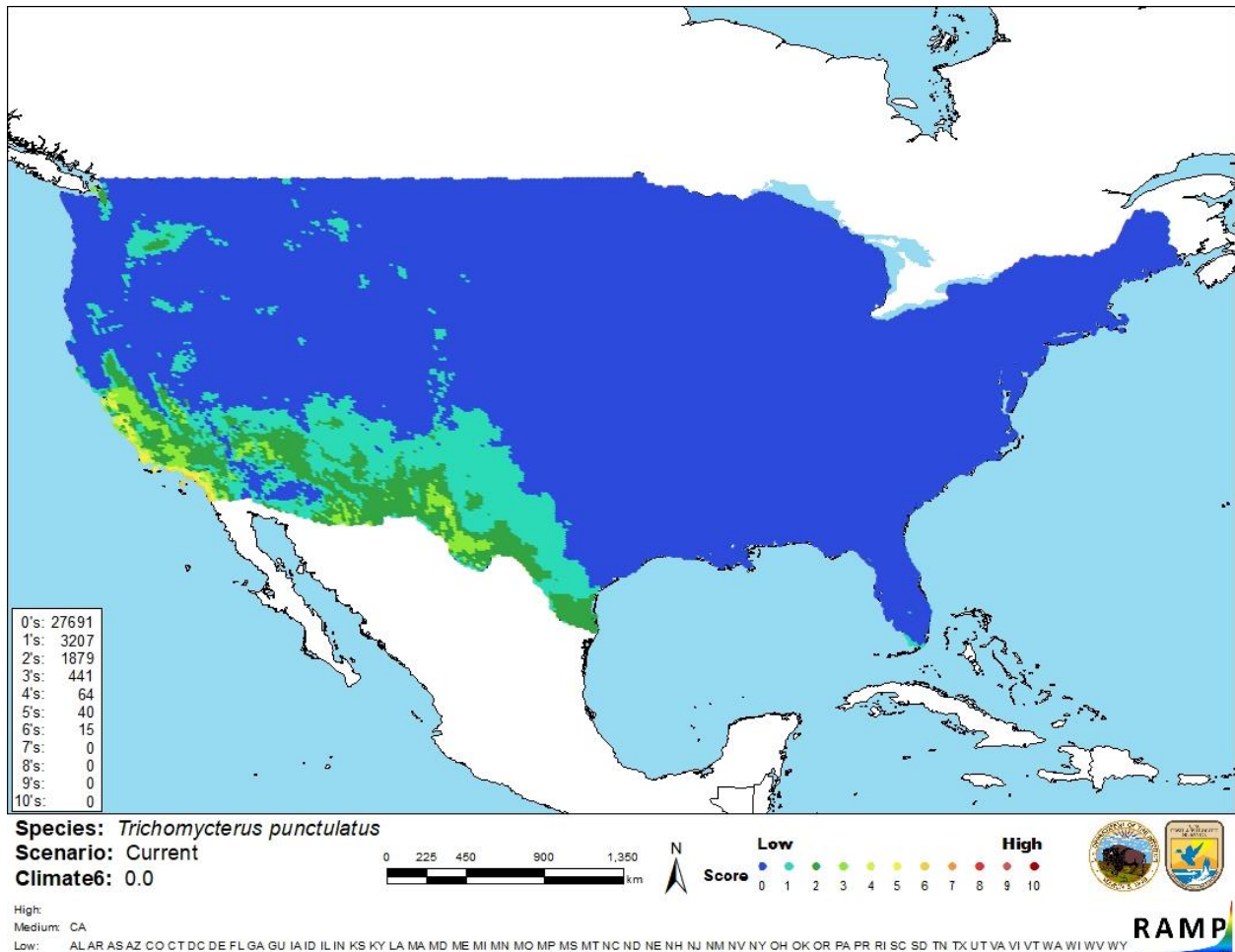


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Trichomycterus punctulatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). Counts of climate match scores are tabulated on the left: 0=Lowest match, 10=Highest match.

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 of *Trichomycterus punctulatus* is available, but other information on the biology and ecology of this species is lacking. One specimen was reportedly collected beyond the species’ native range in Lake Titicaca in Bolivia, but there is no evidence to suggest that an established population exists there or that the species has had impacts outside its native range. The certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Trichomycterus punctulatus is a tropical species of parasitic catfish native to freshwater drainages of western Peru. One specimen was reported outside of its native range in Bolivia, but no evidence exists suggesting that there is an established population in Bolivia, or elsewhere outside of its native range. Beyond its recognition as a parasite of other fish in its native range, little else is reported about this species and its potential role as a vector for disease pathogens, or the potential risks it may pose to the United States. 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. Certainty of this assessment is low due to lack of information on introductions. The climate match with the contiguous United States is low; only the southern California coast had a medium match. 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.

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.

Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2016. Catalog of fishes: genera, species, references. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp/>. (December 2016).

Fernández, L., and G. Miranda. 2007. A catfish of the genus *Trichomycterus* from a thermal stream in southern South America (Teleostei, Siluriformes, Trichomycteridae), with comments on relationships within the genus. *Journal of Fish Biology* 71:1303–1316.

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).

- Froese, R., and D. Pauly, editors. 2016. *Trichomycterus punctulatus* Valenciennes, 1846. FishBase. Available: <http://fishbase.org/summary/Trichomycterus-punctulatus.html/>. (December 2016).
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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).
- Sanders, S., C. Castiglione, and M. Hoff. 2018. Risk Assessment Mapping Program: RAMP, version 3.1. 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.

- Fernández, L., and S. A. Schaefer. 2005. New *Trichomycterus* (Siluriformes: Trichomycteridae) from an offshore island of Colombia. *Copeia* 2005:68–76.
- 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.

Pouilly, M., and G. Miranda. 2003. Morphology and reproduction of the cavefish *Trichomycterus chaberti* and the related epigean *Trichomycterus cf. barbouri*. *Journal of Fish Biology* 63:490–505.