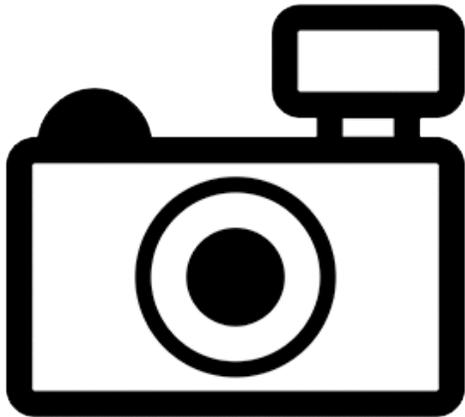


***Trichomycterus duellmani* (a catfish, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, December 2016
Revised, May 2018
Web Version, 8/8/2019



No Photo Available

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“South America: Tupiza River basin in Bolivia.”

Status in the United States

This species has not been reported as introduced in the United States. There is no evidence that this species is in trade in the United States, based on a search of the literature and 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 (2016):

“Prohibited nonnative species 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.

[The list of prohibited nonnative species includes:]

Parasitic catfishes [...]

Trichomycterus duellmani”

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 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 Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Trichomycteridae
Subfamily Trichomycterinae
Genus *Trichomycterus*
Species *Trichomycterus duellmani* Arratia and Menu-Marque, 1984”

From Fricke et al. (2019):

“**Current status:** Valid as *Trichomycterus duellmani* Arratia & Menu-Marque 1984.
Trichomycteridae: Trichomycterinae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length: 4.8 cm TL male/unsexed; [de Pínna and Wosiacki 2003]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic.”

Climate/Range

From Froese and Pauly (2018):

“Tropical”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“South America: Tupiza River basin in Bolivia.”

Introduced

No introductions of this species have been reported

Means of Introduction Outside the United States

No introductions of this species have been reported

Short Description

From Arritia and Menu-Marque (1984):

“A small species (no longer than 60 mm in total length) [...] Pectoral filament absent. Distal tip of pelvic fin approaching anal-fin origin. Anus covered by pelvic fins. Caudal fin truncated. Short lateral line (4 pores), partially enclosed by 5 or 6 ossicles. Skin of head and body with few, small conic papillae. No lateral crest on supraoccipital. Large, rectangular premaxilla; maxilla smaller than premaxilla (about 75% of premaxillary length); 4 or 5 rows of premaxillary teeth [...]

Elongate with dorsal margin of body almost straight (Fig. 13A). Body proportions with intraspecific variation (Table 5) similar to that described for other trichomycterids. [...] Nasal barbel reaching posteriorly behind orbit and may reach occiput; maxillary barbel reaching posteriorly to or beyond base of pectoral fin; submaxillary barbel a little shorter. [...]

Dorsal and anal fins with fleshy bases, their distal margins slightly truncated or rounded. Caudal fin truncated, lobes often asymmetrical. In posterior part of body a large fold over dorsal and ventral border persists in many specimens over 34 mm in standard length. [...]

Coloration: pale brownish or orangeish with two longitudinal darker lines on flanks (Fig 14); on dorsal part of head present a small dark triangle; the ventral part of body slightly yellowish. [...]

Trichomycterus duellmani n. sp. presents a characteristic coloration different from other known species.”

Biology

From Arritia and Menu-Marque (1984):

“*Trichomycterus duellmani* was collected in Rio Tupiza at 2,920 m and in Betanzos, at 3,300 m of altitude, both in Potosi, southern Bolivia (Fig. 16). Fishes were in a small pool of quiet clear water of stony bottom [personal communication from Duellman].

T. boylei and *T. duellmani* occupy upper levels of rivers belonging to the biogeographic region names Paraná-Platense Province [Arratia et al. 1984]. These 2 species do not seem to inhabit lower levels of the Paraná-Plata basin, being adapted to torrential rivers of Andean and preandean regions. Both species occur at the limit of the Titicaca and Paraná-Platense Provinces (Fig.16).”

Human Uses

No information available.

Diseases

No information available. No OIE-listed diseases (OIE 2019) have been documented in this species.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No introductions of *T. duellmani* have been reported outside its native range, so no impacts of introduction are known.

The importation, possession, or trade of the parasitic catfish *T. duellmani* is prohibited or restricted in the following states: Arizona (Arizona Secretary of State 2006), California (Dill and Cordone 1997), Florida (FFWCC 2016), 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. Reported global established locations of *Trichomycterus duellmani*, reported from Bolivia. Map from GBIF Secretariat (2016).

5 Distribution Within the United States

No currently known distributions within 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 overall for the contiguous United States, reflected in a Climate 6 score of 0.001. Scores between 0.000 and 0.005, inclusive, are classified as low. Locally, the climate match was medium in parts of the Southwest, scattered areas of the eastern Rocky Mountains and western Great Plains, and coastal California as far north as San Francisco. The climate match was low throughout the remainder of the contiguous United States. All States had a low climate score except for New Mexico, which had a medium score.

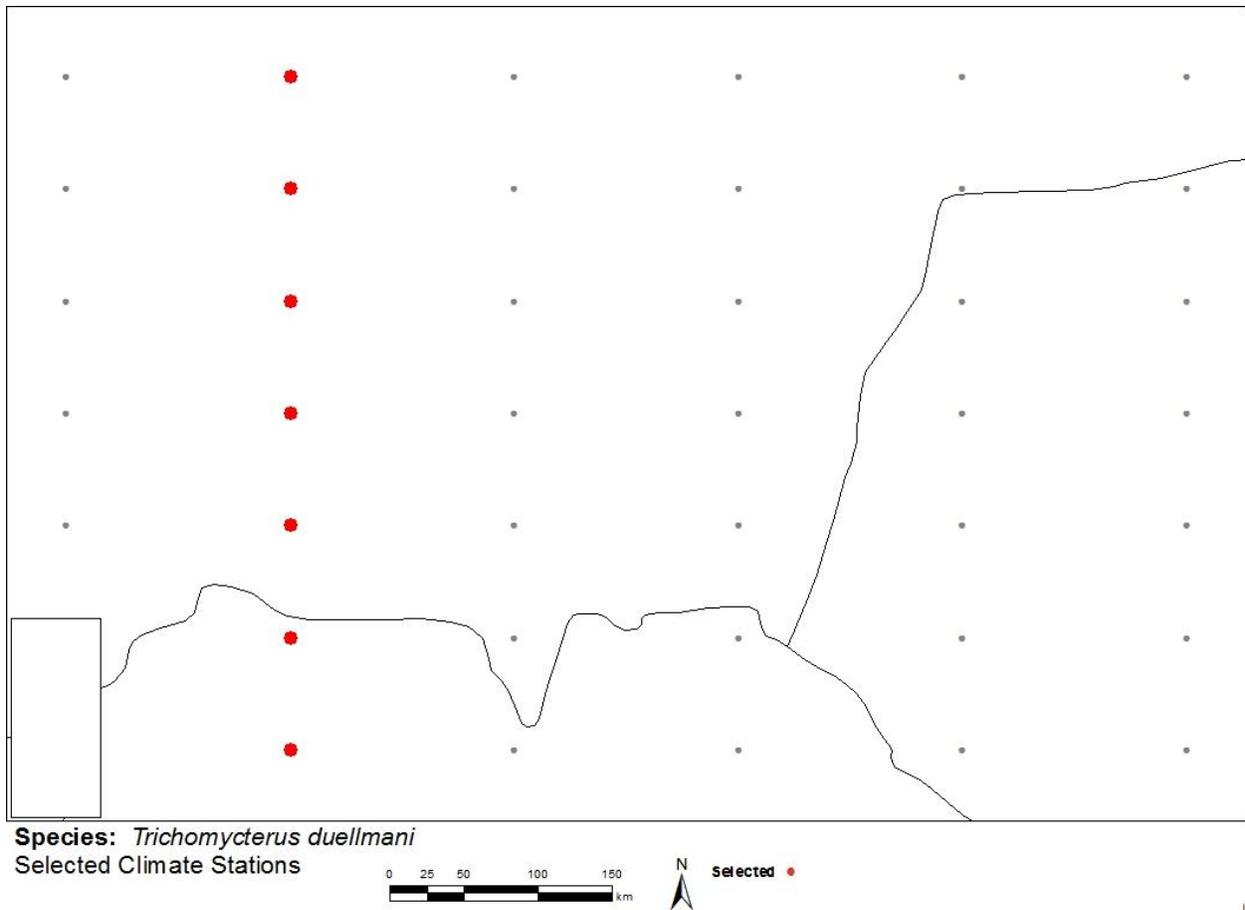


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in southern Bolivia, northern Argentina, and western Paraguay selected as source locations (red; Bolivia, Argentina) and non-source locations (gray) for *Trichomycterus duellmani* climate matching. Source locations from GBIF Secretariat (2016). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

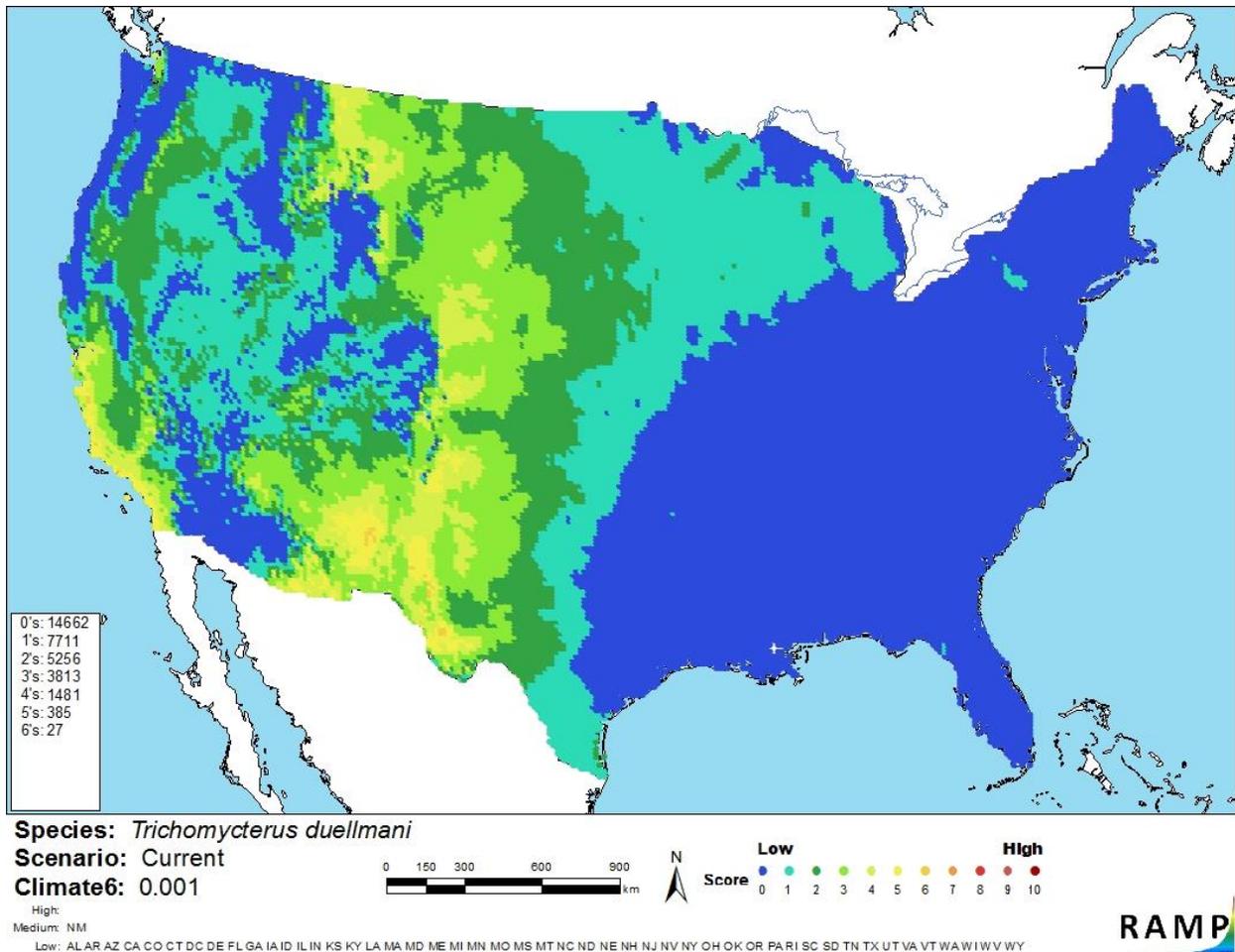


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Trichomycterus duellmani* in the contiguous United States based on source locations reported by GBIF Secretariat (2016). 0=Lowest match, 10=Highest match.

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

7 Certainty of Assessment

There is little knowledge on the biology and ecology of *Trichomycterus duellmani*. There are no records showing introductions of this species outside of its native range. Little information is known to conclude what kind of effect it could have if it were introduced. Due to lack of information, the certainty of assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Trichomycterus duellmani is a freshwater parasitic catfish from South America. It has not been reported outside of its native range of the Tupiza River basin in Bolivia. Due to lack of introduction history, the history of invasiveness is uncertain. This species has a low climate match with the contiguous United States. New Mexico was the only State with a medium climate score. Due to the lack of information about potential introductions, the certainty of assessment is low. The 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.

Arratia, G., and S. Menu-Marque. 1984. New catfishes of the genus *Trichomycterus* from the High Andes of South America (Pisces, Siluriformes) with remarks on distribution and ecology. Zoological Yearbook 111:493-520.

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.

FFWCC (Florida Fish and Wildlife Conservation Commission). 2016. Prohibited species list. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida. Available: <http://myfwc.com/wildlifehabitats/nonnatives/regulations/prohibited/>. (December 2016).

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>. (August 2019).

Froese, R., and D. Pauly, editors. 2018. *Trichomycterus duellmani* Arratia & Menu-Marque, 1984. FishBase. Available: <https://www.fishbase.de/summary/Trichomycterus-duellmani.html>. (May 2018).

- GBIF Secretariat. 2016. GBIF backbone taxonomy: *Trichomycterus duellmani* Arratia & Menu-Marque, 1984. Global Biodiversity Information Facility, Copenhagen. Available: <http://www.gbif.org/species/2343112>. (December 2016).
- ITIS (Integrated Taxonomic Information System). 2018. *Trichomycterus duellmani* Arratia & Menu-Marque, 1984. Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=682204#null. (May 2018).
- Legislative Council Bureau. 2018. Restrictions on importation, transportation and possession of certain species. Nevada Administrative Code, Section 503.110.
- Louisiana House of Representatives Database. 2010. Exotic fish; importation, sale, and possession of certain exotic species prohibited; permit required; penalty. Louisiana Revised Statutes, Title 56, Section 319.
- 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). 2019. OIE listed diseases, infections and infestations in force in 2019. Available: <http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/>. (August 2019).
- Sanders, S., C. Castiglione, and M. H. 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>. (March 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.

- Arratia, G., B. Penafort, and S. Menu-Marque. 1984. Fishes from the southeastern region of the Andes and their probable current biogeographical relationships. *Deserta* 34.
- de Pínna, M. C. C., and W. Wosiacki. 2003. Trichomycteridae (pencil or parasitic catfishes). Checklist of the Freshwater Fishes of South and Central America. EDIPUCRS, Porto Alegre, Brazil.