

## *Trichomycterus barbouri* (a catfish, no common name) Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, December 2016

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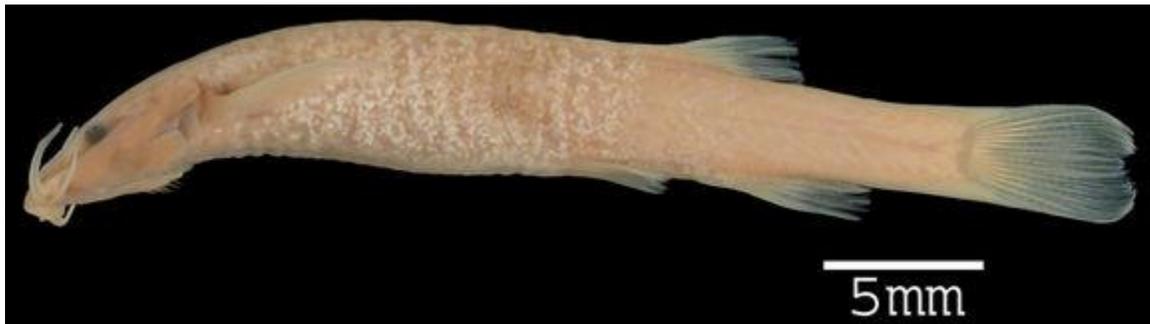


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### 1 Native Range and Status in the United States

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#### Native Range

From Miranda-Chumacero et al. (2015):

“The species were originally described (Eigenmann 1911) from individuals in the Beni watershed [in Bolivia] obtained by Thomas Barbour. [...] However, the species is also present in the Suaruro, Pilcomayo, Capararí, Achira, Mizque, Hantahuatana, Limatambo, Wilaqhachy and Waykhu rivers [in Bolivia] (Arraya et al. 2009), and therefore present in the Amazon and del Plata watersheds. Fernández (2000) indicates that the species is also present in the Cochuna, Medina, Calera, Lules, Potrero de las Tablas, Belén, Segundo and Tala rivers in the del Plata watershed in the Tucumán, Córdoba and Salta provinces in Argentina.”

#### Status in the United States

This species has not been reported in the U.S. There is no evidence that this species is in trade in the U.S.

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. Very limited exceptions may be made by permit from the

Executive Director [...] [The list of prohibited nonnative species includes] *Trichomycterus barbouri*”

## Means of Introductions in the United States

This species has not been reported in the U.S.

## Remarks

From GBIF (2016):

“BASIONYM

*Pygidium barbouri* Eigenmann, 1911”

From Miranda-Chumacero et al. (2015):

“In Rurrenabaque this species is called *chipi chipi* meaning “the smallest” in the local indigenous Tacana language.”

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2016):

“Kingdom Animalia

Subkingdom Bilateria

Infra kingdom Deuterostomia

Phylum Chordata

Subphylum Vertebrata

Infraphylum Gnathostomata

Superclass Osteichthyes

Class Actinopterygii

Subclass Neopterygii

Infra class Teleostei

Superorder Ostariophysii

Order Siluriformes

Family Trichomycteridae

Subfamily Trichomycterinae

Genus *Trichomycterus*

Species *Trichomycterus barbouri* (Eigenmann, 1911)”

“Taxonomic Status: valid”

## **Size, Weight, and Age Range**

From Miranda-Chumacero et al. (2015):

“The maximum reported size in published studies is 110.02 mm standard length and 128 mm total length (Fernández 2000). In the majority of studies, reported standard length measurements are between 40 and 60 mm (Arraya et al. 2009).”

## **Environment**

From Froese and Pauly (2016):

“Freshwater; benthopelagic.”

## **Climate/Range**

From Froese and Pauly (2016):

“Tropical, preferred ?”

## **Distribution Outside the United States**

Native

From Miranda-Chumacero et al. (2015):

“The species were originally described (Eigenmann 1911) from individuals in the Beni watershed [in Bolivia] obtained by Thomas Barbour. [...] However, the species is also present in the Suaruro, Pilcomayo, Capararí, Achira, Mizque, Hantahuatana, Limatambo, Wilaqhachy and Waykhu rivers [in Bolivia] (Arraya et al. 2009), and therefore present in the Amazon and del Plata watersheds. Fernández (2000) indicates that the species is also present in the Cochuna, Medina, Calera, Lules, Potrero de las Tablas, Belén, Segundo and Tala rivers in the del Plata watershed in the Tucumán, Córdoba and Salta provinces in Argentina.”

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 Eigenmann (1911):

“Head 4.66; depth 7; D. 8; A. 6; eye 3 in snout, 7 in head, 2.5 in space between the eyes.”

“Width of head equals its length behind the posterior nares, the body tapering to the caudal; nasal barbels reaching to posterior margin of the eye, the longer maxillary barbel scarcely to the gill-opening when laid straight back. Teeth minute, in bands.”

“First pectoral ray prolonged, not equal to the head in length; dorsal subtruncate, none of its rays prolonged; distance of origin of dorsal from caudal 2.6 in the length; origin of anal from base of middle caudal rays 3.75 in the length; caudal emarginate; accessory rays not evident; ventrals not reaching the short, scarcely rounded anal. A dark median band from the gill-opening to the tip of the middle caudal rays, a light stripe above it; the back chocolate.”

From Miranda-Chumacero et al. (2015):

“For the sizes of individuals used for Eigenmann (1911) probably the original description was made with juvenile individuals.”

“[...] characterized by the presence of a black lateral line extending to the tail.”

## **Biology**

From Fernández and Bechara (2010):

“Invertivore”

From Miranda-Chumacero et al. (2015):

“Following flooding peaks in the Beni River, a massive upstream migration event involving juvenile pencil catfish (*Trichomycterus barboursi*) or chipi chipi is described for the first time. The annual migration begins in the floodplains of the Beni River, where enormous schools of juveniles form to travel upstream through the straits of the last foothills of the Andes into Andean foothill forest streams and rivers. Observations and local knowledge suggest a migration distance of at least 370 km over an average of 32 days in February and March with an average speed of 12 km/day. The migrating juveniles weigh less than 0.38 g and measure less than 33 mm in standard length. As such, considering body length and body weight to distance travelled ratios they are one [*sic*] have one of the greatest migration efforts of any freshwater fish.”

“We suggest that floodplains are maternity sites where eggs and larvae have more space and resources to grow, as occurs with *Arapaima gigas* and *Colossoma macropomum* (Araujo-Lima and Goulding 1997; De Lima and Araujo Lima 2004; Vendel and Chaves 2006). When the flooding events begin to recede individuals leave the floodplain and meet in the main Beni River channel to begin their upstream migration. It remains unclear about what occurs before flooding, as well as what happens when schools reach their destinations in the headwaters of the Beni watershed.”

“A qualitative examination of stomach contents of some individuals showed only the presence of dipterid larvae, some vegetation, organic material and sediments.”

## **Human Uses**

From Miranda-Chumacero et al. (2015):

“Local people harvest juveniles across the migration route, but especially in Rurrenabaque, where they are considered a seasonal dish. [...] Some families fish up to 50 kg of chipi chipi

during the period that they travel past Rurrenabaque, which according to average weight represents 166,000 individuals. Considering the number of families fishing chipi chipi this amounts to a harvest of millions of individuals representing an important economic value in terms of protein consumption.”

## Diseases

No information available.

## Threat to Humans

From Froese and Pauly (2016):

“Harmless”

## 3 Impacts of Introductions

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No introductions of this species have been reported. The Florida Fish and Wildlife Conservation Commission (2016) has listed the parasitic catfish *T. barbouri* as a prohibited species.

## 4 Global Distribution

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**Figure 1.** Known global distribution of *T. barbouri*. Map from GBIF (2016). Points in Peru and Ecuador do not represent established populations and were not included in climate matching. Only points in Bolivia were included. Although *T. barbouri* is also known from Argentina, no georeferenced occurrences were available from Argentina.

## 5 Distribution Within the United States

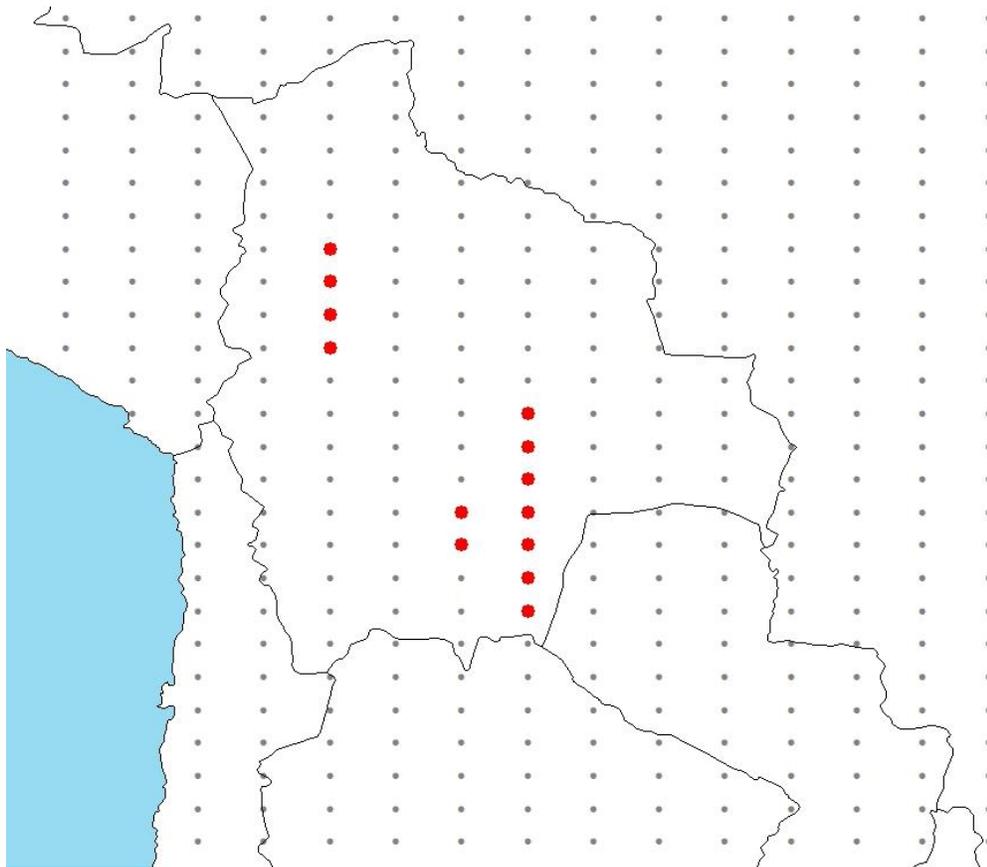
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This species has not been reported in the U.S.

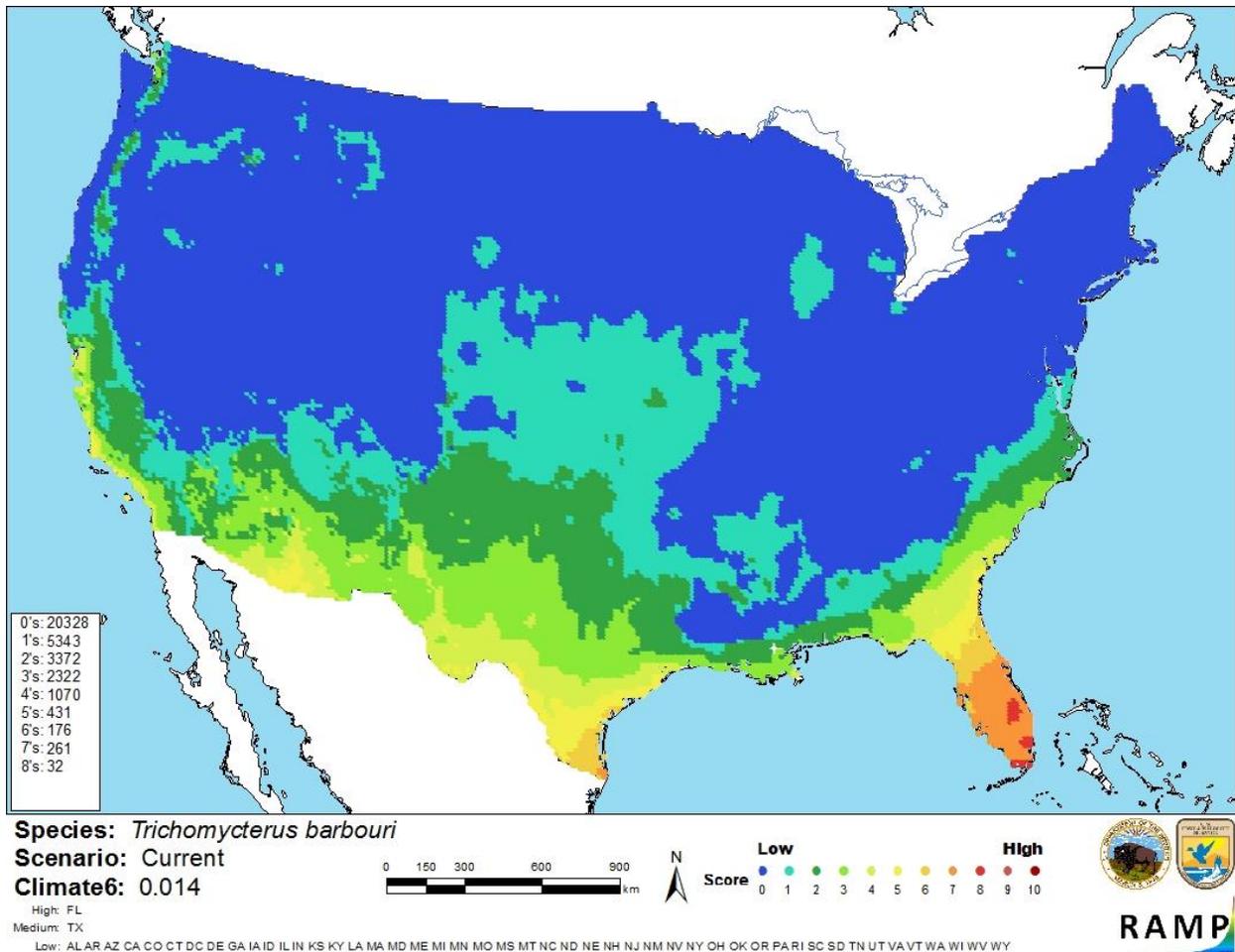
## 6 Climate Matching

### Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was high in most of peninsular Florida and extreme southern Texas; medium in most of northern Florida, southern Georgia, southern Texas, southern New Mexico, and coastal California; and low elsewhere. Climate 6 proportion indicated a medium climate match overall for the contiguous U.S. Proportions between 0.005 and 0.103 indicate a medium match; the Climate 6 proportion for *T. barbouri* was 0.014.



**Figure 2.** RAMP (Sanders et al. 2014) source map showing weather stations in Bolivia selected as source locations (red) and non-source locations (gray) for *T. barbouri* climate matching. Source locations from GBIF (2016).



**Figure 3.** Map of RAMP (Sanders et al. 2014) climate matches for *T. barbouri* in the contiguous United States based on source locations reported by GBIF (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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 7 Certainty of Assessment

The biology and ecology of *T. barbouri* are poorly known. It has never been reported outside its native range, so impacts of introduction are unknown. The certainty of this assessment is low.

## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Trichomycterus barbouri* is a trichomycterid catfish native to Bolivia and Argentina. The species undergoes a massive juvenile migration annually and is harvested as a source of food by the local Bolivians. *T. barbouri* has not been introduced outside of its native range. Without being able to observe introductions in other parts of the world, it is impossible to know the potential impacts of introduction of *T. barbouri* to the U.S. The Florida Fish and Wildlife Conservation Commission has listed the parasitic catfish *T. barbouri* as a prohibited species. Climate match of *T. barbouri* to the contiguous U.S. is medium, with high match in Florida where it is also listed as a prohibited species. The overall risk posed by this species is uncertain.

### Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **Overall Risk Assessment Category: Uncertain**

## 9 References

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**Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.**

- Eigenmann, C. H. 1911. Description of a new species of *Pygidium*. *Annals of the Carnegie Museum* 7(2):214, plate 32.
- Fernández, L., and J. A. Bechara. 2010. An assessment of fish communities along a Piedmont river receiving organic pollution (Aconquija Mountains, Argentina). *Acta Biológica Colombiana* 15(2):79-100.
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- Froese, R., and D. Pauly, editors. 2016 *Trichomycterus barbouri* (Eigenmann, 1911). FishBase. Available: <http://www.fishbase.org/summary/trichomycterus-barbouri.html>. (December 2016).
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Miranda-Chumacero, G., G. Álvarez, V. Luna, R. B. Wallace, and L. Painter. 2015. First observations on annual massive upstream migration of juvenile catfish *Trichomycterus* in an Amazonian River. *Environmental Biology of Fishes* 98:1913-1926.

Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

## 10 References Quoted But Not Accessed

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**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.**

Araujo-Lima, C., and M. Goulding. 1997. So fruitful a fish. Ecology, conservation, and aquaculture of the Amazon's tambaqui. Columbia University Press, New York.

Arraya, M., M. Maldonado, F. M. Carvajal-Vallejos, and L. Fernández. 2009. Contribución al conocimiento de los peces del género *Trichomycterus* (Siluriformes: Trichomycteridae) en los Andes de Bolivia. *Revista Boliviana de Ecología y Conservación Ambiental* 45-52.

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Fernández, L. A. 2000. Redescription of the teleost *Trichomycterus barbouri* (Eigenmann, 1911), occurrence in Argentina and comparison with related species (Ostariophysi: Siluriformes: Trichomycteridae). *Studies on Neotropical Fauna and Environment* 35:27-33.

Vendel, A., and P. Chaves. 2006. Use of an estuarine environment (Barra do Saí lagoon, Brazil) as nursery by fish. *Revista Brasileira de Zoologia* 23:1117-1122.