

# ***Hatcheria macraei* (catfish, no common name)**

## **Ecological Risk Screening Summary**

U.S. Fish & Wildlife Service, August 2011

Revised, November 2016, March 2017

Web Version, 12/28/2017



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

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### **Native Range**

From Unmack et al. (2009):

“Its recorded distribution is mostly within Argentina and to a lesser extent in Chile. Within Argentina *H. macraei* (Patagonian catfish) is widespread and typically common in Atlantic draining rivers from the Río Colorado south to the Río Chubut [...] It is also known in Argentina from the headwaters of most Pacific draining rivers from the Río Manso south to Río Blanco [...] In Chile the distribution is poorly documented.”

“*H. macraei* is now recorded within Chilean Province, far north of its previous distributional limit in Patagonian Province.”

## Status in the United States

This species has not been reported in the United States.

From FFWCC (2017):

“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 [...] Freshwater Aquatic Species [...] Parasitic catfishes [...] *Hatcheria macraei*”

## Means of Introduction into the United States

This species has not been reported in the United States.

## Remarks

From Baigún and Ferriz (2003):

“[...] we suggest that distribution limits for several [Patagonian fish] species are still not well known. This is evidenced not only by range expansions for species on north-south axes, but also in an east-west direction, as shown by the finding of *Hatcheria macraei* in the Ecker River at the boundary of the plateau.”

From Unmack et al. (2009):

“We suspect that some fish identified as *T. areolatus* from Argentina (Arratia & Menu-Marque 1981; Baigún & Ferriz 2003) may be based on *H. macraei* that have low dorsal ray counts and thicker caudal peduncles which making them quite similar in appearance to *T. areolatus*.”

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2016):

“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 Hatcheria  
Species *Hatcheria macraei* (Girard, 1855)”

“Current Standing: valid”

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

From Froese and Pauly (2016):

“Max length : 20.8 cm male/ unsexed; [de Pinna and Wosiacki 2003]”

### **Environment**

From Froese and Pauly (2016):

“Freshwater; demersal.”

From Chiarello-Sosa et al. (2016):

“[...] inhabits fast flowing, cold and well oxygenated waters (Ringuelet et al., 1967)”

### **Climate/Range**

From Froese and Pauly (2016):

“Tropical, preferred ?; 29°S - 45°S”

From Gomez (1990):

“*Hatcheria macraei* (juvenile stages) is recorded for the first time for Buenos Aires Lake (46°32’S, 71°37’W-Argentina) located in the patagonian region, near the southernmost range of living ostariophysans (47°30’S, 72°W). Critical Thermal Maximum technique is employed in order to determine lethal temperature, with an acclimation temperature of 9.2°C an [sic] a constant heating rate of 1°C.h<sup>-1</sup> [...] Test carried on *H. macraei* showed high Death Temperature value ( $\overline{DT}$ = 31.16°C), close to those of warm-temperate fish, but with very low loss of Equilibrium Temperature ( $\overline{LET}$ = 22.16°C).”

## Distribution Outside the United States

### Native

From Unmack et al. (2009):

“Its recorded distribution is mostly within Argentina and to a lesser extent in Chile. Within Argentina *H. macraei* (Patagonian catfish) is widespread and typically common in Atlantic draining rivers from the Río Colorado south to the Río Chubut [...] It is also known in Argentina from the headwaters of most Pacific draining rivers from the Río Manso south to Río Blanco [...] In Chile the distribution is poorly documented.”

“*H. macraei* is now recorded within Chilean Province, far north of its previous distributional limit in Patagonian Province.”

### Introduced

No introductions of this species have been reported.

## Short Description

From Unmack et al. (2009):

“The best diagnostic character we observed to distinguish *H. macraei* from *T. areolatus* was the difference in the overall shape of the dorsal fin between the two species. The dorsal fin of *T. areolatus* is shaped like an isosceles triangle (two sides of the same length), with the fin base being longer, with the leading edge of the fin, and margin of the fin being approximately the same length [...] In contrast, the dorsal fin in *H. macraei* is shaped like a scalene triangle (where all sides are different lengths), with the base being longest, the fin margin is a little bit shorter, and the front edge of the fin is quite short [...] In other words, the dorsal fin of *H. macraei* is not very tall, but it is quite long (relative to its height); whereas in *T. areolatus* the fin is higher and shorter.”

“The second best character to quantify for identification was dorsal fin ray number. Almost all *H. macraei* had dorsal ray counts of 13 or higher, while almost all *T. areolatus* from the region of sympatry with *H. macraei* have counts of 10 or lower.”

## Biology

From Cussac et al. (2016):

“Larval *H. macraei* prefer shallow marginal pools and feed mainly on small Chironomidae larvae. Juveniles and adults, on the other hand, prefer zones with high water velocity, such as riffles or runs, with large interstitial space, and prey on Ephemeroptera nymphs and chironomid larvae. Small individuals prefer [*sic*] gravel-pebbles and cobbles while larger fish choose cobbles and boulders (Barriga & Battini, 2009; Barriga et al., [2013]).”

From Chiarello-Sosa et al. (2016):

“Absolute fecundity in mature females varied from 115 to 480 oocytes. *Hatcheria macraei* has multiple spawning during a protracted reproductive season that extends from December to April. This, together with its small size, is characteristic of an opportunistic reproductive strategy, commonly found in species that inhabit adverse and unpredictable environments, such as the low-order rivers of Patagonia.”

From Unmack et al. (2009):

“*H. macraei* appears to be quite rare relative to *T. [Trichomycterus] areolatus*, with most populations being represented by three or fewer individuals [...] This is not simply due to differences in the habitats sampled. Both species are typically abundant in similar habitats when they occur allopatrically, and at most sites all available habitats were sampled. *Hatcheria macraei* may simply be rare due to competition with *T. areolatus*, as typically, *H. macraei* are more common where they occur in allopatry.”

## Human Uses

No information available.

## 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.

From FFWCC (2017):

“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 [...] Freshwater Aquatic Species [...] Parasitic catfishes [...] *Hatcheria macraei*”

## 4 Global Distribution

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**Figure 1.** Known global established locations of *Hatcheria macraei* in South America. Map from GBIF (2016). Occurrence reported in the South Atlantic was not included in climate matching because it is inaccurately located.

## 5 Distribution Within the United States

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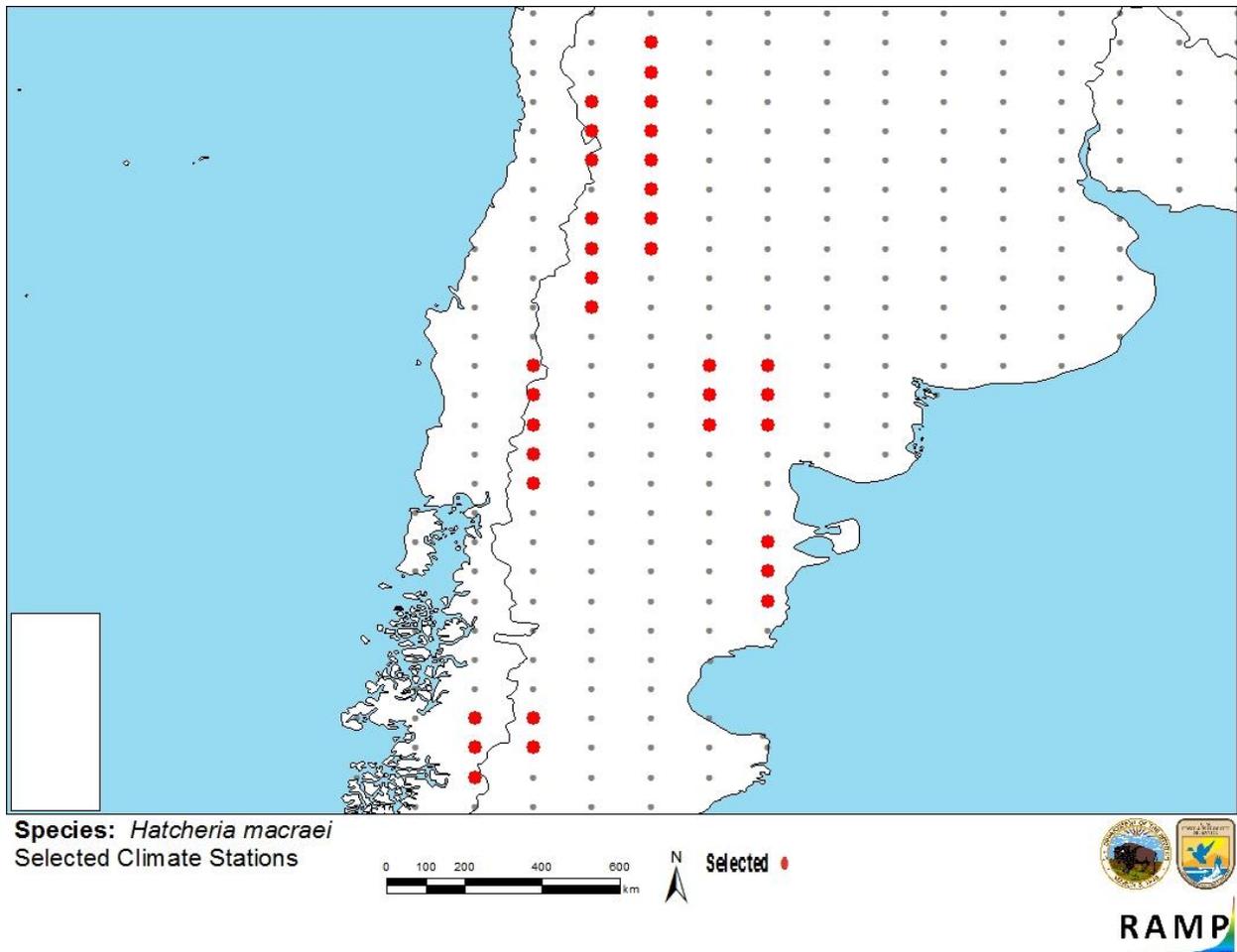
This species has not been reported in the United States.

## 6 Climate Match

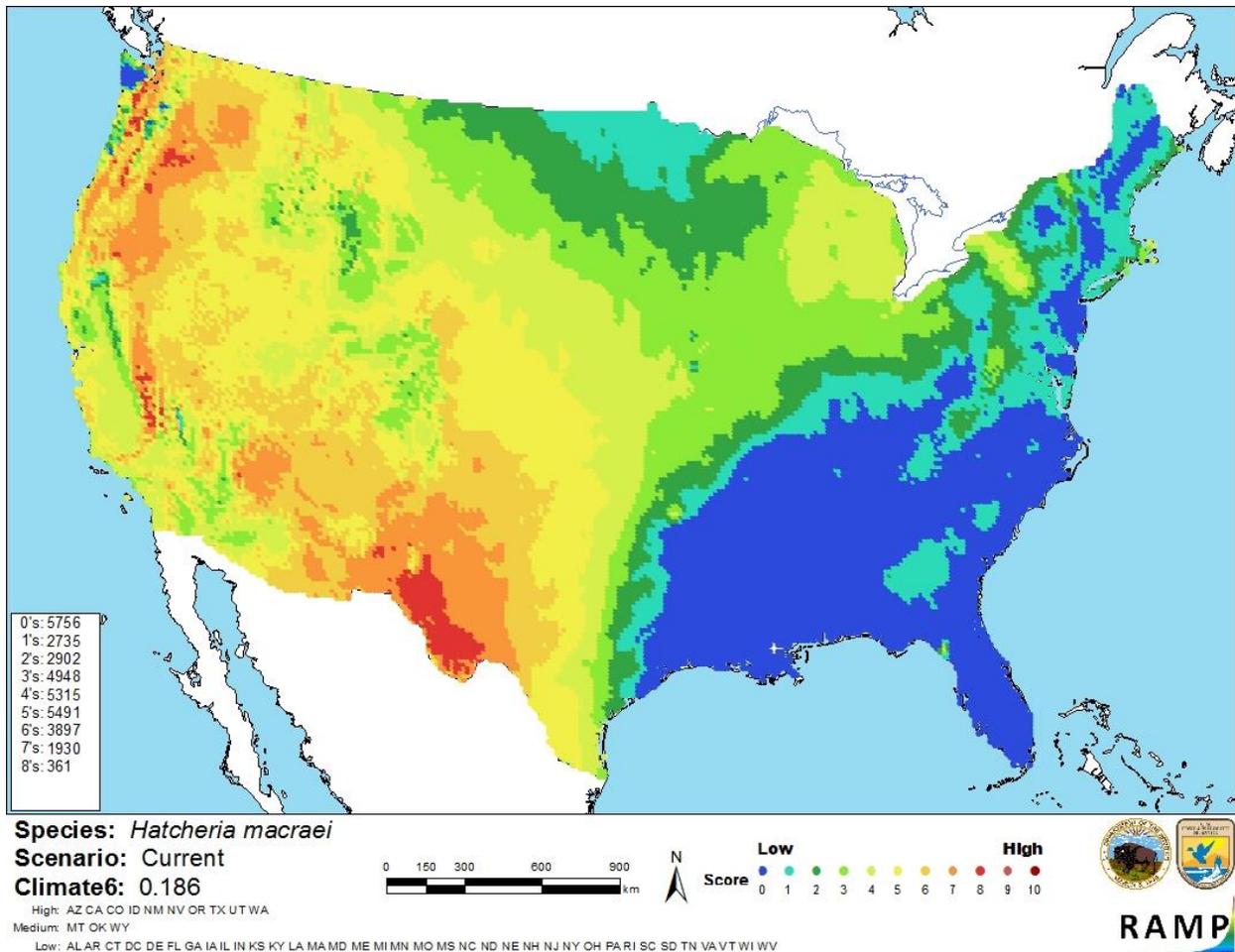
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### Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was high in western Texas and parts of the Pacific Northwest and Interior West. The remainder of the western contiguous U.S. showed a medium climate match, while climate match was low in the eastern half of the United States. Climate 6 score indicated that the contiguous U.S. is a high climate match. The range of scores indicating a high climate match is 0.103 and greater; the Climate 6 score of *Hatcheria macraei* is 0.186.



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



**Figure 3.** Map of RAMP (Sanders et al. 2014) climate matches for *Hatcheria macraei* 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
$0.000 < X < 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 7 Certainty of Assessment

The extent of the native distribution of *H. macraei* remains uncertain, and relatively little information is available on the biology of the species. No introductions of this species have been reported, so potential impacts of introductions remain unknown. Certainty of this assessment is low.

## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Hatcheria macraei* is a Patagonian catfish about which relatively little is known of its biology or distribution. No introductions of this species have been reported. *H. macraei* preys on invertebrates and exhibits an opportunistic reproductive strategy. Climate match to the contiguous U.S. is high, with all areas of high match occurring in the western U.S. Overall risk assessment for *H. macraei* is uncertain.

### Assessment Elements

- **History of Invasiveness: Uncertain**
- **Climate Match: High**
- **Certainty of Assessment: 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.**

Baigún, C., and R. Ferriz. 2003. Distribution patterns of native freshwater fishes in Patagonia (Argentina). *Organisms Diversity and Evolution* 3:151-159.

Chiarello-Sosa, J. M., M. A. Battini, and J. P. Barriga. 2016. Reproductive strategy of the Patagonian catfish *Hatcheria macraei*. *Journal of Fish Biology* 89:1810-1827.

Cussac, V. E., E. Habit, J. Ciancio, M. A. Battini, C. Riva Rossi, J. P. Barriga, C. Baigún, and S. Crichigno. 2016. Freshwater fishes of Patagonia: conservation and fisheries. *Journal of Fish Biology* 89:1068-1097.

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ITIS (Integrated Taxonomic Information System). 2016. *Hatcheria macraei* (Girard, 1855). Integrated Taxonomic Information System, Reston, Virginia. Available: [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=682107#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=682107#null). (November 2016).

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Unmack, P. J., E. M. Habit, and J. B. Johnson. 2009. New records of *Hatcheria macraei* (Siluriformes, Trichomycteridae) from Chilean Province. *Gayana* 73(1):102-110.

## 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.**

Arratia, G., and S. Menu-Marque. 1981. Revision of the freshwater catfishes of the genus *Hatcheria* (Siluriformes, Trichomycteridae) with commentaries on ecology and biogeography. *Zoologisches Anzeiger* 207:88-111.

Barriga, J. P., and M. A. Battini. 2009. Ecological significances of ontogenetic shifts in the stream-dwelling catfish, *Hatcheria macraei* (Siluriformes, Trichomycteridae), in a Patagonian river. *Ecology of Freshwater Fish* 18:395-405.

Barriga, J. P., N. A. Espinós, J. M. Chiarello-Sosa, and M. A. Battini. 2013. The importance of substrate size and interstitial space in the microhabitat selection by the stream-dwelling catfish *Hatcheria macraei* (Actinopterygii, Trichomycteridae). *Hydrobiologia* 705:191-206.

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, Brasil.

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