

Umbrella cichlid (*Apistogramma borellii*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, September 2017

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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

“South America: Paraguay River basin and along the lower Paraná River in Argentina”

Status in the United States

Apistogramma borellii is not established in the United States. It is in trade in the United States as an aquarium fish.

Means of Introductions in the United States

Apistogramma borellii is not established in the United States. It is in trade in the United States as an aquarium fish.

Remarks

Apistogramma borellii is also commonly referred to as Borelli's dwarf cichlid and yellow dwarf cichlid (Froese and Pauly 2017).

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2018), *Apistogramma borellii* (Regan 1906) is the valid name for this species. It was originally described as *Heterogramma borellii* Regan 1906.

From ITIS (2017):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Labroidei
Family Cichlidae
Genus *Apistogramma*
Species *Apistogramma borellii* (Regan, 1906)”

Size, Weight, and Age Range

From Froese and Pauly (2017):

“Max length : 3.9 cm SL male/unsexed”

Environment

From Froese and Pauly (2017):

“Freshwater; benthopelagic; pH range: 6.0 - 8.0; dH range: 5 – 19. [...]; 24°C - 25°C [assumed to be recommended aquarium temperature range] [Riehl and Baensch 1991]”

Climate/Range

From Froese and Pauly (2017):

“Subtropical; [...] [Riehl and Baensch 1991]”

Distribution Outside the United States

Native

From Froese and Pauly (2017):

“South America: Paraguay River basin and along the lower Paraná River in Argentina”

From Zarucki et al. (2010):

“Specimens were recently collected in [Uruguay in] Laguna Redonda (Franquia) a floodplain lagoon of the Uruguay River close to the Cuareim River outlet.”

Introduced

From Liew et al. (2012):

“Singapore: stream in Upper Seletar Reservoir Park, outflow of Nee Soon Swamp Forest, coll. H. H. Tan et al., 8 Sep.1999”

“Six species of cichlid fishes: *Apistogramma borellii*, *Astronotus ocellatus*, *Cichla temensis*, *Herichthys carpintis*, *Maylandia estherae*, and *Pterophyllum scalare*, and an artificial hybrid, the ‘blood parrot’, are recorded from Singapore based on single or few specimens. They are believed to be discarded pets or escapees, and there is as yet no evidence of them having established self-sustaining populations in Singapore’s waterways.”

Means of Introduction Outside the United States

No information on means of introduction outside the United States were found.

Short Description

From Zarucki et al. (2010):

“Specimens recorded present the first branchial arch with dermal lobe, characteristic of Geophaginae plus scales of the anterior section of lateral line separated from dorsal fin base by 1 scale and body side blue characteristic of *A. borellii*.”

From Liew et al. (2012):

“Body elongate and laterally compressed, with rounded caudal fin. Dorsal and pelvic fins often with elongated protruding rays in larger individuals. Males usually blue, females yellow; a black bar beneath the eye, and a lateral black bar along the length of the body. A large ocellus present on the caudal peduncle of some individuals.”

Biology

From Froese and Pauly (2017):

“Feeds on worms, crustaceans and insects [Mills and Vevers 1989]. Aquarium keeping: in pairs; minimum aquarium size 60 cm [BMELF 1999]. Eggs are deposited on the ceiling of caves and are tendered by the female parent [Riehl and Baensch 1991].”

“Produces 50-70 eggs. The eggs are attached to the ceiling of caves, female cares for eggs and larvae. [Riehl and Baensch 1991].”

From Römer and Beisenherz (1996):

“Our experiments prove that sex is determined in most, if not all, *Apistogramma*-species [...] by environmental factors such as temperature and pH and [environmental sex determination] in fish may be more common than currently appreciated.”

“[...] In *A. borellii* both, high temperature and low pH level, revealed a high percentage of males.”

Human Uses

From Froese and Pauly (2017):

“Fisheries: of no interest; aquarium: commercial”

From Ramsay (2010):

“*Apistogramma borellii* is a small South American cichlid and a popular aquarium fish.”

Diseases

There were no records found of OIE-reportable diseases for this species.

From Froese and Pauly (2017):

“White spot Disease, Parasitic infestations (protozoa, worms, etc.)
Costia Disease, Parasitic infestations (protozoa, worms, etc.)
Turbidity of the Skin (Freshwater fish), Parasitic infestations (protozoa, worms, etc.)
Bacterial Infections (general), Bacterial diseases
Ichthyobodo Infection, Parasitic infestations (protozoa, worms, etc.)
Fungal Infection (general), Fungal diseases”

Threat to Humans

From Froese and Pauly (2017):

“Harmless.”

3 Impacts of Introductions

There is no known established introduced population of *Apistogramma borellii*. There are no known impacts of introduction.

4 Global Distribution



Figure 1. Known global established locations of *Apistogramma borellii* in South America. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

Apistogramma borellii has not been reported in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match was medium with pockets of high match in Florida and Texas along the coast. The south east and lower Midwest had medium match. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.033, medium, and Florida, Texas, and Georgia had individually high Climate 6 scores.

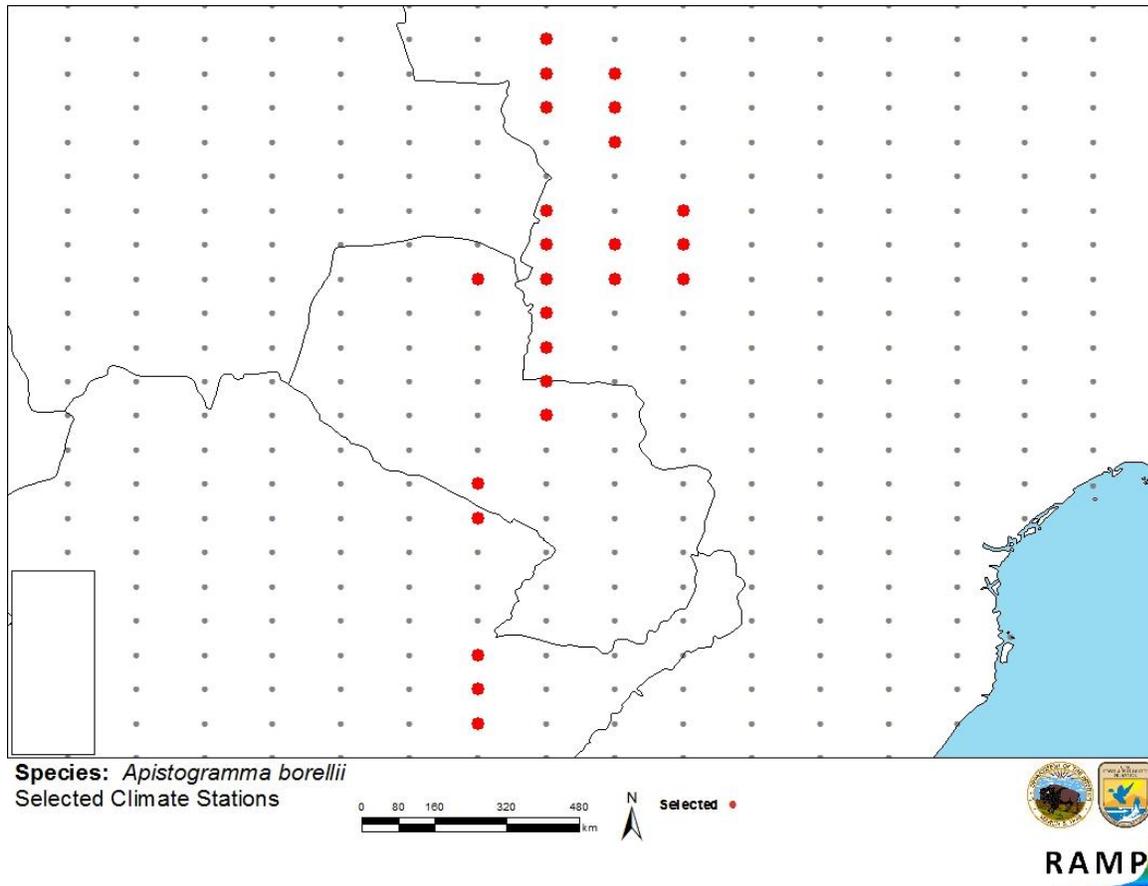


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in South America selected as source locations (red; Argentina, Brazil, Paraguay) and non-source locations (gray) for *Apistogramma borellii* climate matching. Source locations from GBIF Secretariat (2017).

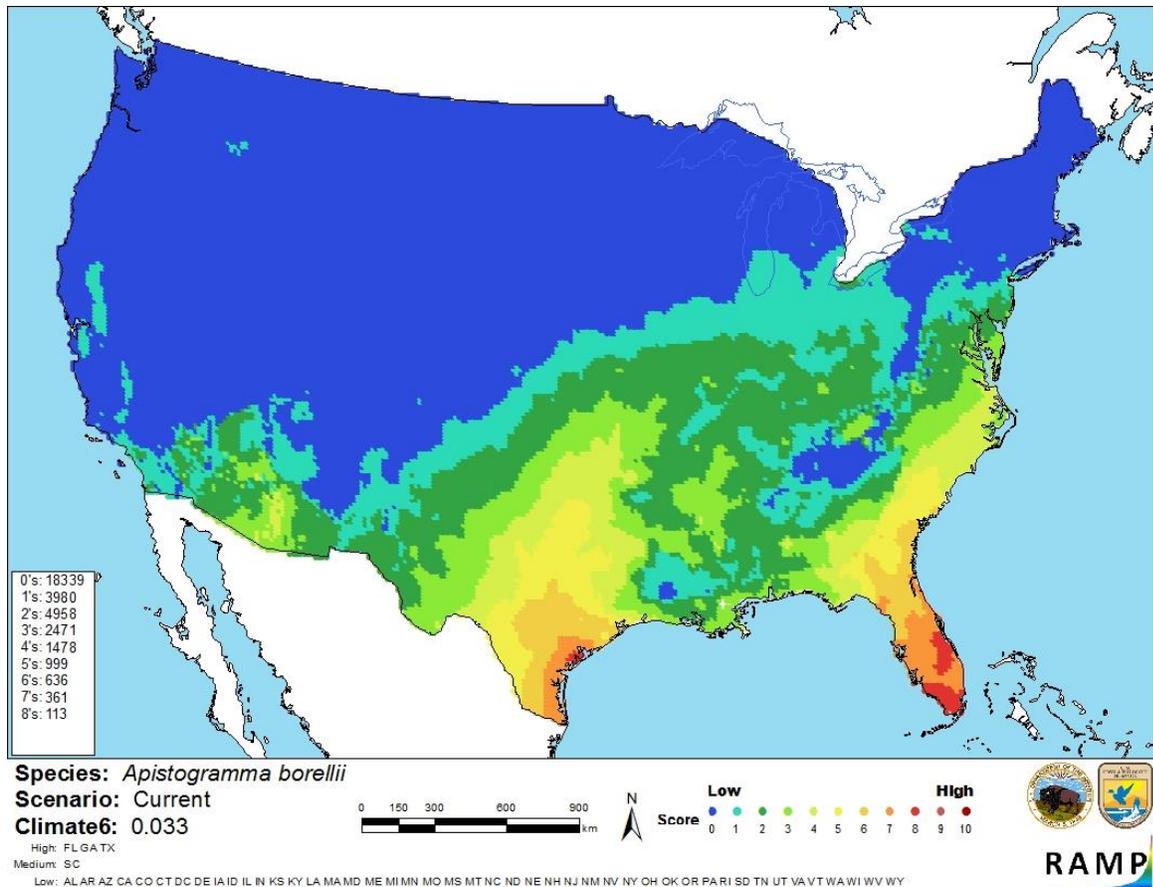


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Apistogramma borellii* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0 = Lowest match, 10 = Highest match. Counts of climate match scores are tabulated on the left.

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
≥ 0.103	High

7 Certainty of Assessment

Information about this species' biology and known distribution is available but limited. It is popular in the aquarium trade (Ramsay 2010) but the propagule pressure of this species is unknown. It is not known to have established outside of its native range. There is only one record of introduction available (Liew et al. 2012) and the authors are not certain of the current status of the population. There are no documented impacts, but there are also no documented instances of introduction without impacts. Certainty for this assessment is medium.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Apistogramma borellii is a freshwater subtropical fish native to South America. It does not have any known established populations outside of its native range. *A. borellii* appears to be popular in the aquarium trade, but the extent of its trade in the United States is unknown. The lack of information on its invasiveness and the medium climate match with the contiguous United States makes the risk for this species Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Low**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Medium**
- **Remarks/Important additional information N/A**
- **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.

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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.

BMELF (Bundesministerium für Ernährung, Landwirtschaft und Forsten). 1999. Gutachten über Mindestanforderungen an die Haltung von Zierfischen (Süßwasser). Bundesministerium für Ernährung, Landwirtschaft und Forsten, Bonn.

Mills, D., and G. Vevers, 1989. *The Tetra encyclopedia of freshwater tropical aquarium fishes*. Tetra Press, New Jersey.

Regan, C. T. 1906. A revision of the South-America cichlid genera *Retroculus*, *Geophagus*, *Heterogramma*, and *Biotoecus*. *Annals and Magazine of Natural History* 17(97):49–66.

Riehl, R., and H. A. Baensch. 1991. *Aquarien atlas. Band. 1*. Melle: Mergus, Verlag für Natur- und Heimtierkunde, Germany.