

***Cichlasoma dimerus* (a cichlid, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, August 2011

Revised, October 2012, August 2018

Web Version, 9/11/2018



Photo: Pandolfi et al. (2009). Licensed under CC BY-NC 4.0. Available: <http://ref.scielo.org/bhxc5w>. (August 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“South America: Paraná River basin, in the Paraguay River drainage in Brazil, Bolivia and Paraguay, and the Paraná River drainage of Argentina.”

From Pandolfi et al. (2009):

“The natural range of this species encompasses the entire system of the Paraguay river, the lower Alto Paraná, and the rest of the Paraná river basin up to the vicinity of Buenos Aires city (Kullander, 1983). Locality records are known from four countries (Bolivia, Brazil, Paraguay and Argentina) where it inhabits a wide variety of both lentic and lotic environments.”

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.

Means of Introductions in the United States

This species has not been reported as introduced or established in the United States.

Remarks

From Pandolfi et al. (2009):

“Its common names are “chanchita” (Spanish) and “acará” (Portuguese) (Staeck and Linke, 1995; Casciotta et al., 2005).”

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 Acanthopterygii
Order Perciformes
Suborder Labroidei
Family Cichlidae
Genus *Cichlasoma*
Species *Cichlasoma dimerus* (Heckel, 1840)”

From Eschmeyer et al. (2018):

“Current status: Valid as *Cichlasoma dimerus* (Heckel 1840). Cichlidae: Cichlinae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length: 11.7 cm SL male/unsexed; [Kullander 2003].”

From Pandolfi et al. (2009):

“It is a medium sized fish (12 cm standard length) [...]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic; pH range: 7.0 - ? ; dH range: 20 - ?. [...] 23°C - 27°C [Baensch and Riehl 1991; assumed to be recommended aquarium temperature range]”

From Pandolfi et al. (2009):

“[...] it tolerates a wide range of water compositions and temperatures (10 to 30°C, the optimal breeding temperature is 26°C) (Meijide and Guerrero, 2000).”

Climate/Range

From Froese and Pauly (2018):

“Tropical;”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“South America: Paraná River basin, in the Paraguay River drainage in Brazil, Bolivia and Paraguay, and the Paraná River drainage of Argentina.”

From Pandolfi et al. (2009):

“The natural range of this species encompasses the entire system of the Paraguay river, the lower Alto Paraná, and the rest of the Paraná river basin up to the vicinity of Buenos Aires city (Kullander, 1983). Locality records are known from four countries (Bolivia, Brazil, Paraguay and Argentina) where it inhabits a wide variety of both lentic and lotic environments.”

Introduced

This species has not been reported as introduced or established outside of its native range.

Means of Introduction Outside the United States

This species has not been reported as introduced or established outside of its native range.

Short Description

From Pandolfi et al. (2009):

“Its ground color is very variable, depending both on the specimen's "mood" and social status. Its body may vary from greenish to light or dark grey and it may also show golden-yellow and light blue reflections. It shows several dark-brown vertical bands and two blotches, one in the middle region of the trunk and the other in the caudal peduncle. The eyes may show a bright red border, particularly in reproductively active individuals [...]. This species has a moderately developed sexual dimorphism, with the males growing larger than the females. In males, soft rays of the distal edge of the dorsal and anal fins may be extended as filaments (Alonso et al., 2007).”

From Froese and Pauly (2018):

“Older males get a notable hump on their heads but nothing like the [*sic*] some Central American cichlids.”

Biology

From Meijide and Guerrero (2000):

“The South American cichlid *C. dimerus* is common in quiet shallow waters of the Paraguay and most of the Paraná river basins (Kullander, 1983) and lives in pairs which defend territories. The females lay their eggs on a cleaned substrate and one or more pits are dug on the bottom, to which the offspring are transferred by mouth after hatching. Both parents fan the eggs and the young fry, and guard their young when these, in a school, start swimming around (Staeck & Linke, 1995).”

“Among substrate-spawning cichlids, two quite distinct systems for egg attachment are recognizable (Wickler, 1956a,b). In the primitive Asian and Madagascan cichlids the eggs are non-adhesive and are attached to the substrate, or to one another, by a tuft of filaments arising from the pole opposite the micropyle. A different system seems to characterize most African and Neotropical species; in these fishes the eggs are attached along their longitudinal axes by an encasing mucous layer and numerous surface filaments. In coincidence with this classification, the eggs of *C. dimerus* are extremely sticky and adhere to the substrate and to each other by a distinctive mucous layer with fine filament threads which are almost invisible with a normal microscope [...]. The eggs of *C. dimerus* are unusual in possessing a particular filament tuft around the micropylar area [...]. It has generally been assumed that the function of the chorionic fibrils is to attach the oviposited egg to the substrate (Brummett & Dumont, 1981). However, since the oocytes of *C. dimerus* adhere along their longitudinal axes, there is no contact between these filaments and the substrate. In addition, there is some evidence that fertilization is aided by the presence of sperm attractants in the micropylar region of the chorion (Suzuki, 1958). Then, the micropyle and its adjacent structures may not only serve as an access route to the oocyte but may also facilitate fertilization by attracting sperm to the appropriate region of the chorion (Dumont & Brummett, 1985). Further analysis is required to elucidate the functional significance of these threads.”

“Within the first 5 days from hatching, the larvae of *C. dimerus* attach themselves to the substrate with the sticky secretions from six cephalic adhesive glands [...]. During this period the larvae lie in a hiding-place, guarded by the parents. In this way, in the natural environment, the adhesive glands help prevent dispersion by currents and facilitate parental care. The glands then go through a gradual regression until they completely atrophy a few days after the onset of free-swimming [...].”

Diseases

No information available. No OIE-reportable diseases have been documented for this species.

Human Uses

From Froese and Pauly (2018):

“This fish is not very colorful and interesting for the aquarium trade [Axelrod 1993].”

From Pandolfi et al. (2009):

“Many characteristics of the South American teleost fish *Cichlasoma dimerus* (body size, easy breeding, undemanding maintenance) make it amenable to laboratory studies.”

Pandolfi et al. (2009) report several laboratory studies using *C. dimerus*.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

This species has not been reported as introduced or established outside of its native range.

4 Global Distribution

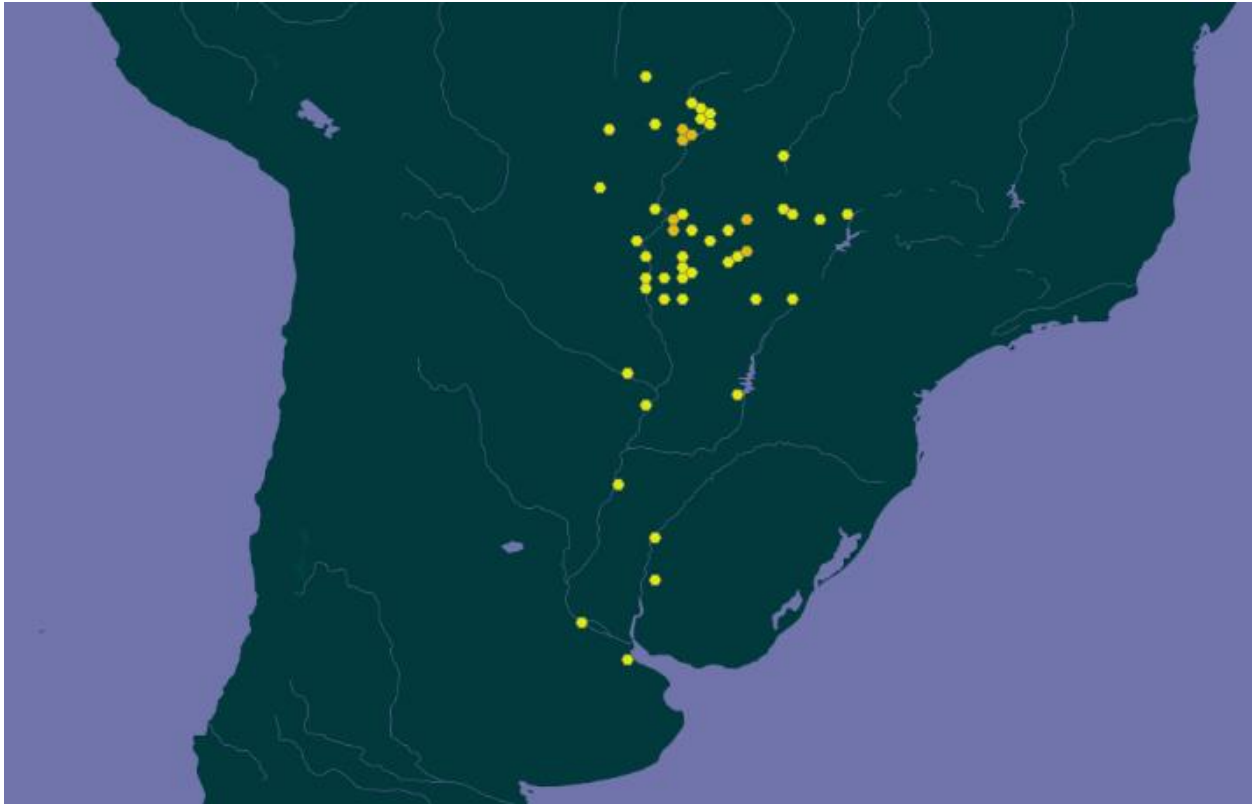


Figure 1. Known global distribution of *Cichlasoma dimerus*, reported from Bolivia, Brazil, Paraguay, Uruguay, and Argentina. Map from GBIF Secretariat (2017). Occurrences in Uruguay were excluded from the climate matching analysis because they are outside the known established range of *C. dimerus*.

5 Distribution Within the United States

This species has not been reported as introduced or established in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.090, which is a medium climate match. A Climate 6 score between 0.005 and 0.103 indicates a medium climate match. The climate match was high along the southeastern coast from the southern tip of Maryland to Texas. The inland southeastern United States from New Jersey to Texas had a generally medium climate match. There was also a medium match up to southern Lake Michigan and through parts of Arizona. The climate match across the rest of the contiguous United States was generally low.

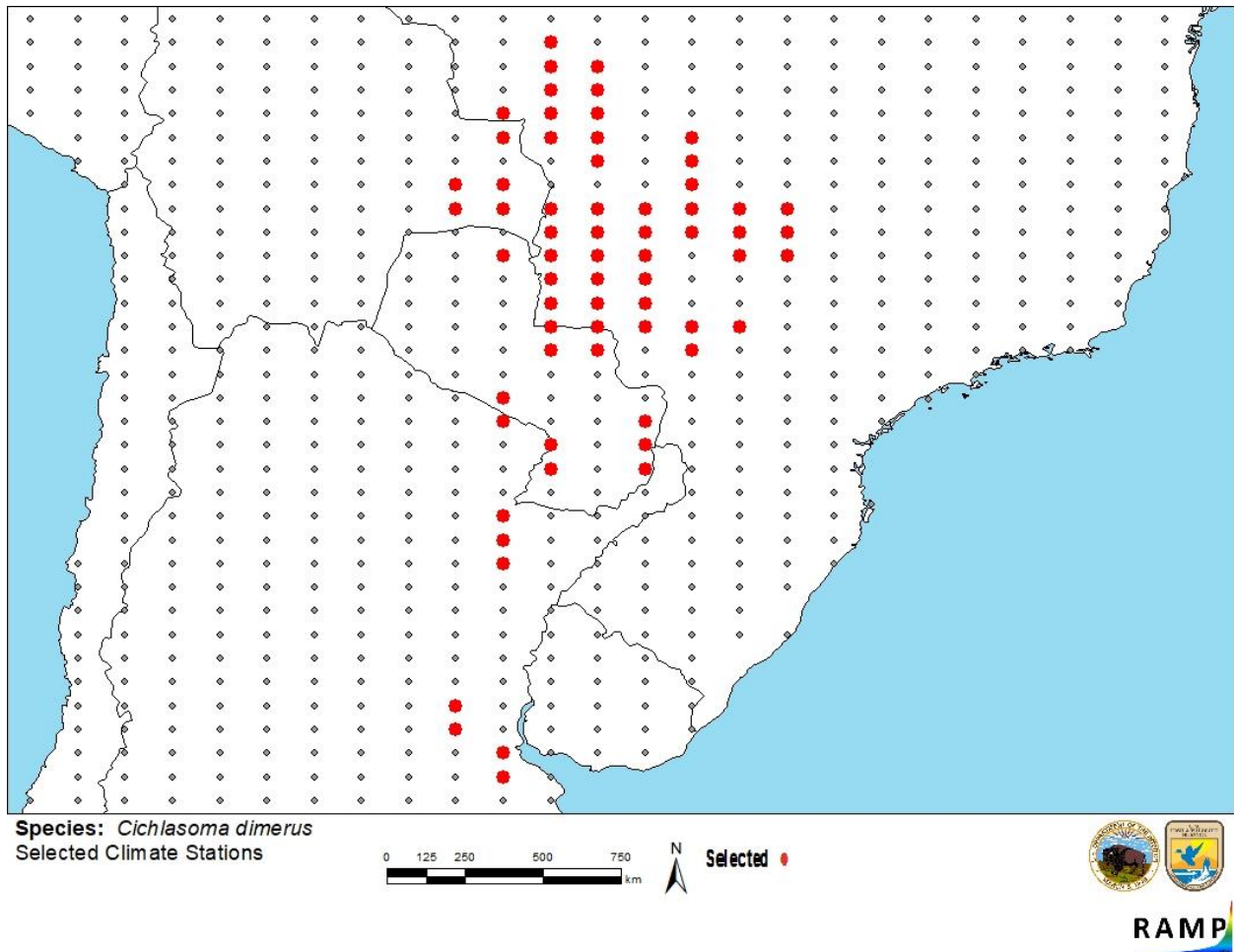


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Bolivia, Brazil, Paraguay, Argentina) and non-source locations (gray) for *Cichlasoma dimerus* climate matching. Source locations from GBIF Secretariat (2017).

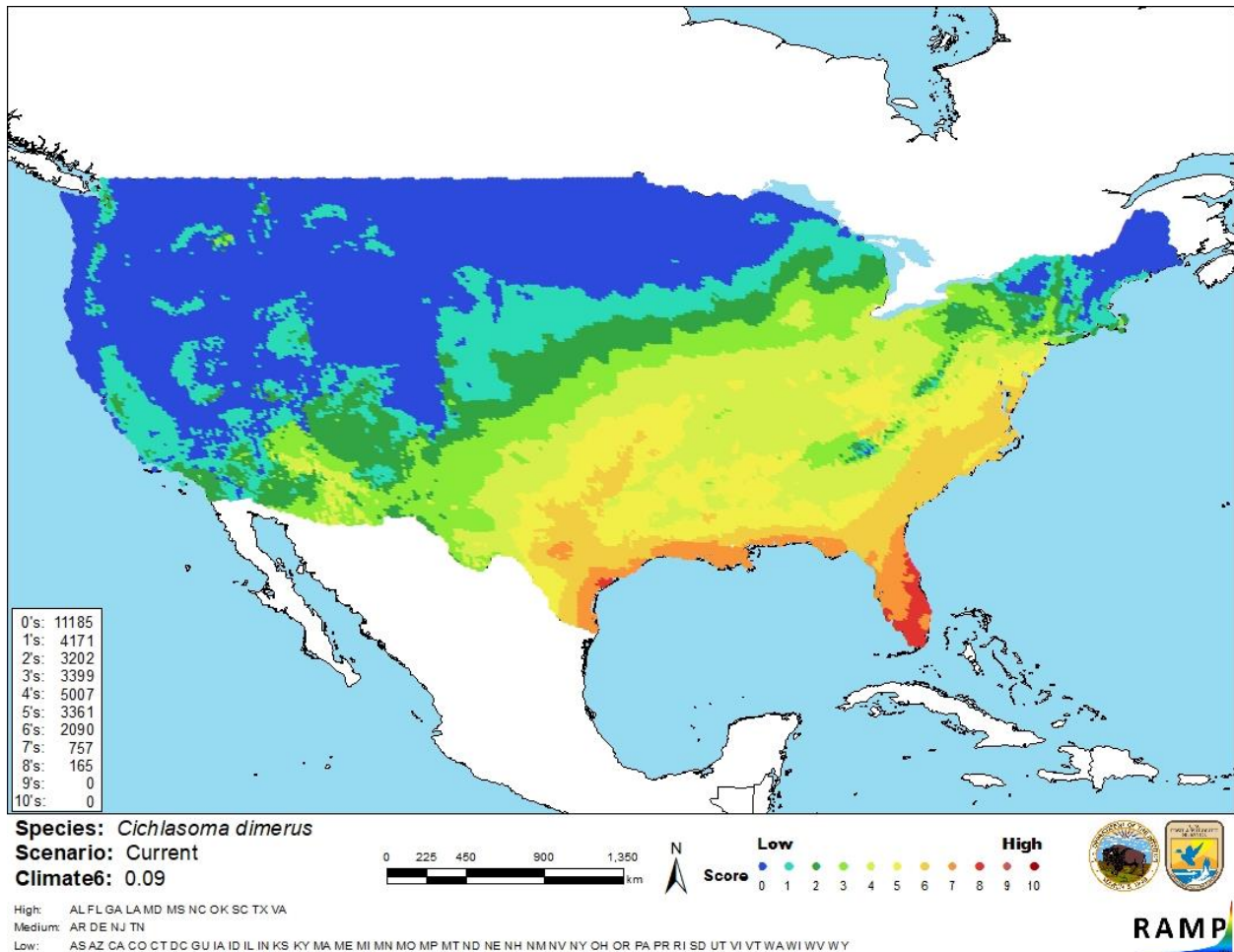


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Cichlasoma dimerus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10= Highest match.

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

7 Certainty of Assessment

There is adequate information available about the biology of *Cichlasoma dimerus*. Its range in South America is well-known. Because it has never been reported as introduced or established outside of its native range, no information is available on impacts of this species’ introduction. Further information is needed to adequately assess the risk this species poses to the contiguous United States. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Cichlasoma dimerus is a cichlid species native to the Paraná and Paraguay Rivers in central South America. It is not considered colorful or interesting for the aquarium trade but has been useful for laboratory studies. There is no information available on this species' trade status in the United States. It has never been reported as introduced to the United States or anywhere else outside of its native range. *C. dimerus* has a medium climate match with the contiguous United States. The southeastern United States had a generally medium to high climate match. Although the biology and range of this species are well-known, there is no information available about this species' invasiveness because it has not been reported as introduced outside its native range. Certainty of this assessment is therefore low. The overall risk assessment category 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

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.

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