

Cascarudo (*Callichthys callichthys*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2011
Revised, July 2017
Web Version, 10/30/2017



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1 Native Range and Status in the United States

Native Range

From Nico (2017):

“Tropical America. Widespread in South America including, but not limited to, the Amazon, Orinoco, and La Plata-Parana basins, the Guianas, and Trinidad (Burgess 1989).”

Status in the United States

From Nico (2017):

“A fish tentatively identified as this species was collected in a canal along Jog Road in Palm Beach County, **Florida** in the early 1970s (Courtenay and Hensley 1979). A single fish (102 mm TL) allegedly was caught by an angler in Great South Bay off Copiague in western Suffolk

County, Long Island, **New York**, in June 1978 (P.T. Briggs, personal communication; Courtenay and Hensley 1979).”

Means of Introduction into the United States

From Nico (2017):

“Florida records may represent escape from fish farms or aquarium release. New York record, if valid, is a probable aquarium release.”

Remarks

From Nico (2017):

“The identity of the New York fish was confirmed by James Atz of the American Museum of Natural History; the specimen was later returned to the angler for mounting (Briggs, personal communication). Nevertheless, doubt remains about the actual capture of this tropical freshwater fish as it was reportedly taken in Great South Bay, which has relatively cool (about 13°C) saline waters. Given the abundance of a similar confamilial species, *Hoplosternum littorale*, in Florida today, the Florida specimen may represent an early record for that species. As there are no known voucher specimens, the identity is uncertain.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2017):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Callichthyidae
Subfamily Callichthyinae
Genus *Callichthys*
Species *Callichthys callichthys* (Linnaeus, 1758)”

“Current Standing: valid”

Size, Weight, and Age Range

From Froese and Pauly (2017):

“Max length : 17.0 cm SL male/unsexed; [Britski et al. 2007]; max. published weight: 80.0 g [Zaniboni Filho et al. 2004]”

Environment

From Froese and Pauly (2017):

“Freshwater; demersal; pH range: 5.8 - 8.3; dH range: ? - 30.”

Climate/Range

From Froese and Pauly (2017):

“Subtropical; 18°C - 28°C [Riehl and Baensch 1991]”

Distribution Outside the United States

Native

From Nico (2017):

“Tropical America. Widespread in South America including, but not limited to, the Amazon, Orinoco, and La Plata-Parana basins, the Guianas, and Trinidad (Burgess 1989).”

Introduced

No introductions outside the United States have been reported.

Means of Introduction Outside the United States

No introductions outside the United States have been reported.

Short Description

From Froese and Pauly (2017):

“Dorsal soft rays (total): 6-8”

From ScotCat (2016):

“D 1/6; A 1/5-6; 26-29 bony scutes in the upper lateral series, 25-28 in the lower. Body elongate, of almost uniform depth, tapering in breadth posteriorly. Head broad, flattened dorsally. Two rows of bony scutes on the flanks, arranged like tiles on a roof. Caudal fin rounded. 2 pairs of maxillary barbels which reach to the pectoral fins when laid back. Eyes small.”

Biology

From Froese and Pauly (2017):

“Found in extreme environments, from anoxic conditions (slack water zones bordered by dense vegetation) [Le Bail et al. 2000] to slightly turbid but free flowing streams [Kenny 1995]. When the biotope becomes dry, it can move out of the water, due to its ability to breathe intestinally, in order to find another aquatic environment [Le Bail et al. 2000]. Feeds at night on fish, insects and plant matter [Mills and Vevers 1989]. Juveniles feed on rotifers, in addition to the micro-crustaceans and aquatic insect larvae they find when digging into the substrate [Le Bail et al. 2000]. During reproduction, the male's belly turns orange and its pectoral spines become longer and thicker. The male builds a bubble nest with some floating plants, strongly guarding it after the female lays down her eggs (up to 120) [Le Bail et al. 2000]. [...] Eggs hatch in 4 to 6 days.”

Human Uses

From Froese and Pauly (2017):

“Fisheries: minor commercial; aquarium: commercial”

Diseases

From Arredondo and Gil de Pertierra (2012):

“*Margaritaella gracilis* gen. n. et sp. n. (Proteocephalidea: Proteocephalinae) found in the intestine of *Callichthys callichthys* (Linnaeus) from the Paraná River basin is described. [...] Cestodes of the order Proteocephalidea Mola, 1928 are widely distributed in the Neotropical region. They are mainly parasites of siluriform fishes inhabiting the great river basins of South America (de Chambrier and Vaucher 1999, Rego et al. 1999, de Chambrier et al. [2006]).”

Eiras et al. (2016) report *C. callichthys* as a host for the nematode *Eustrongylides* sp. (larva) in Brazil.

Sanyal et al. (1987) report isolation of *Salmonella javiana* from *C. callichthys*.

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

Threat to Humans

From Froese and Pauly (2017):

“Harmless”

3 Impacts of Introductions

From Nico (2017):

“Impact of Introduction: Unknown.”

4 Global Distribution



Figure 1. Known global distribution of *C. callichthys*. Map from GBIF (2016). The southernmost point on the map and two points in North America (unpictured) were excluded from climate matching because they do not represent current established populations.

5 Distribution Within the United States



Figure 2. Known records of *C. callichthys* in the U.S. None of the records represent established populations. Map from Nico (2017).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was high in Florida and along the Gulf Coast of Texas. Medium matches were found in the southern Midwest and the Mid-Atlantic south to the Gulf Coast. The Pacific coastline near Seattle also showed a medium match. Low matches covered the West, the Upper Midwest, and the Northeast. Climate 6 score indicated that the contiguous U.S. is a medium climate match overall. The range indicating a medium climate match is 0.005-0.103; Climate 6 score for *C. callichthys* was 0.083.

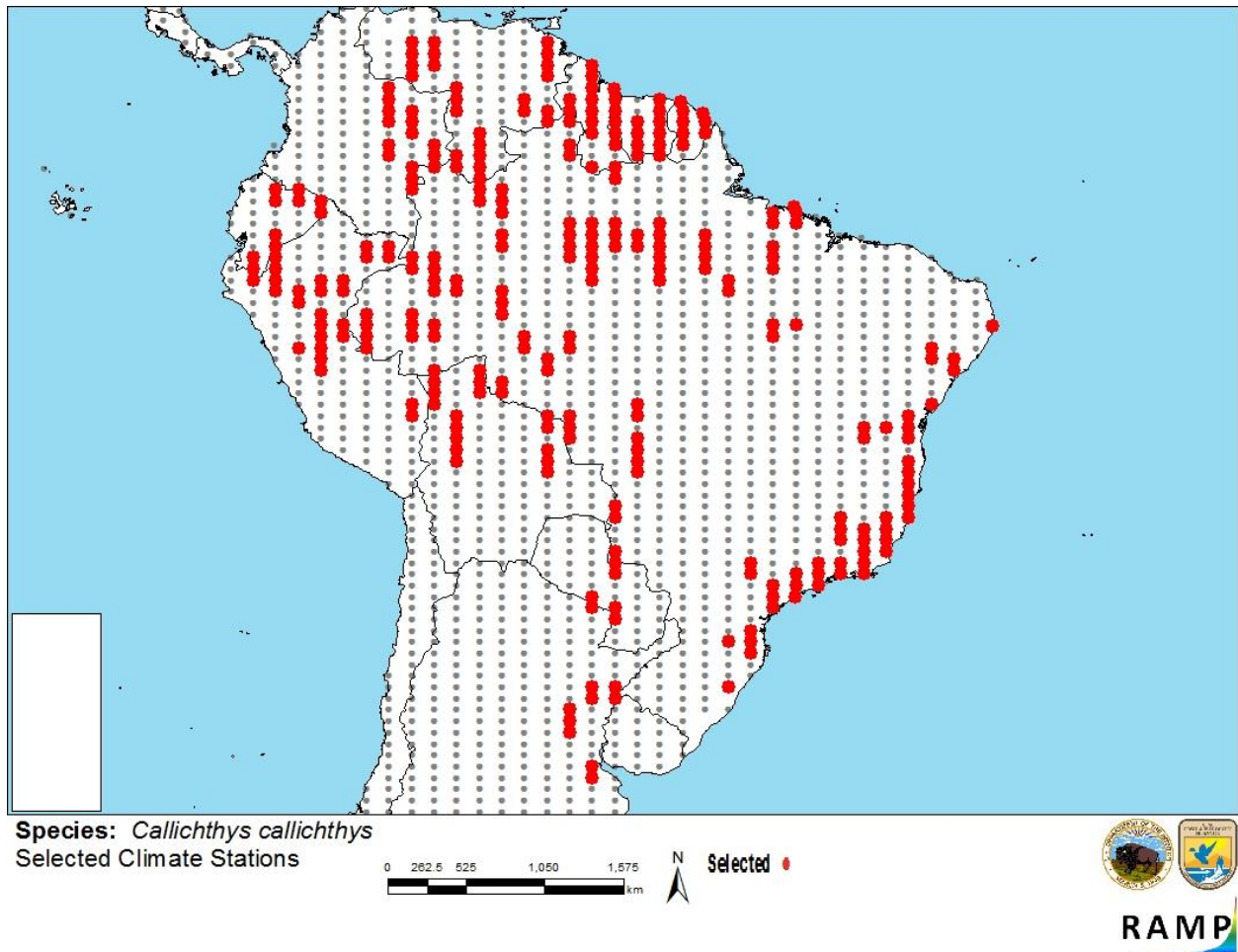


Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *C. callichthys* climate matching. Source locations from GBIF (2016).

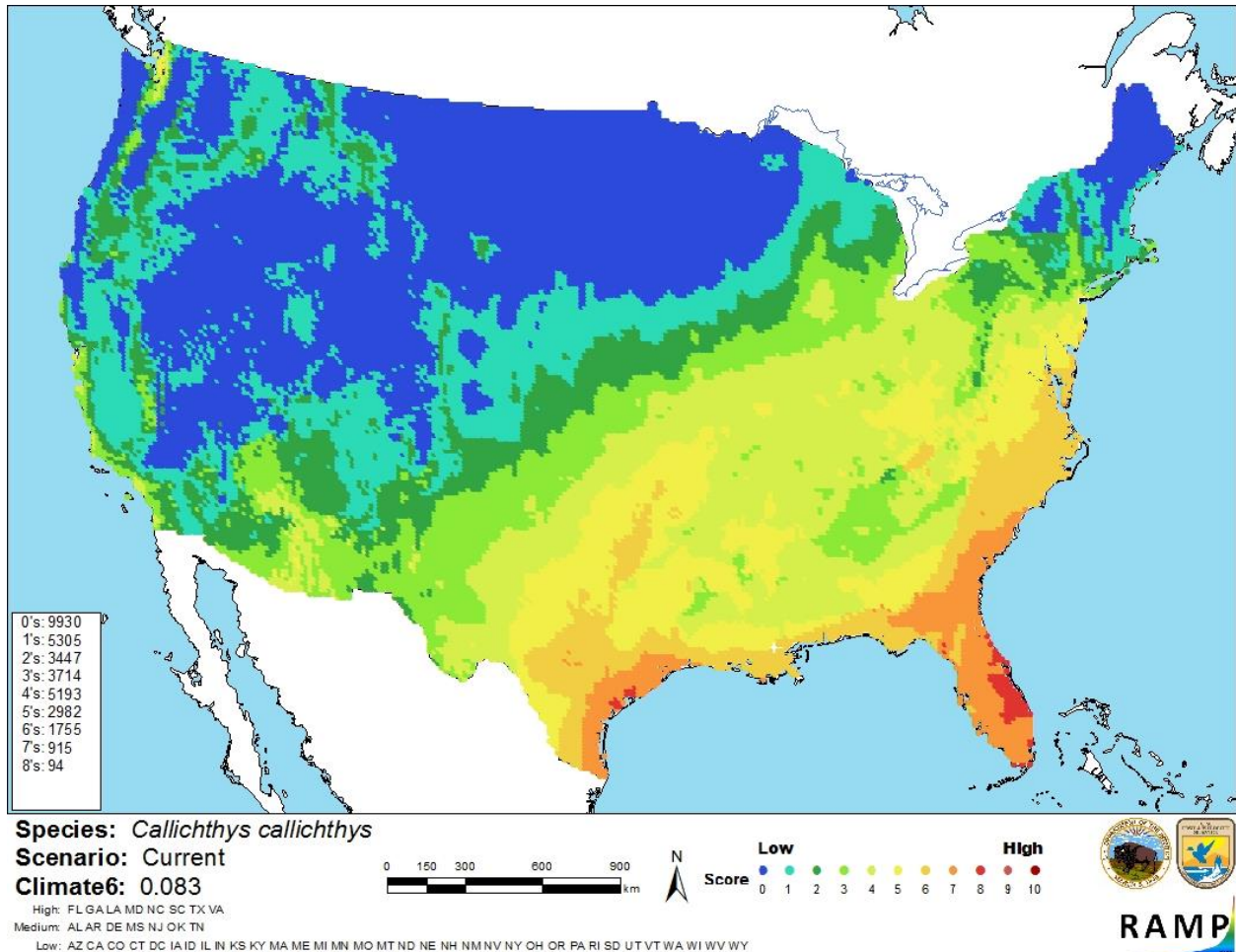


Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *C. callichthys* in the contiguous United States based on source locations reported by GBIF (2016). 0=Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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
≥ 0.103	High

7 Certainty of Assessment

Information is available on the biology, ecology, and distribution of *C. callichthys*. However, the introduction history of *C. callichthys* is limited and no information is available on any impacts of introduction. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Callichthys callichthys is an armored catfish widely distributed across South America. The species is present in the aquarium trade, and aquarium release is the likely source of one or both of two occurrences of *C. callichthys* in the United States. *C. callichthys* is not established in the U.S. or elsewhere outside its native range, and no information is available on the impacts of introduction of this species. Climate match to the contiguous U.S. is medium, with Florida and coastal Texas showing the highest matches. Overall risk assessment category for *C. callichthys* is uncertain.

Assessment Elements

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

Britski, H. A., K. Z. de Silimon, and B. S. Lopes. 2007. Peixes do Pantanal: manual de identificação, 2nd edition., Embrapa Informação Tecnológica, Brasília, Brazil.

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Courtenay, W. R., Jr., and D. A. Hensley. 1979. Survey of introduced non-native fishes. Phase I report. Introduced exotic fishes in North America: status 1979. Report submitted to National Fishery Research Laboratory, U.S. Fish and Wildlife Service, Gainesville, Florida.

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