

# ***Sarotherodon caudomarginatus* (tilapia, no common name)**

## **Ecological Risk Screening Summary**

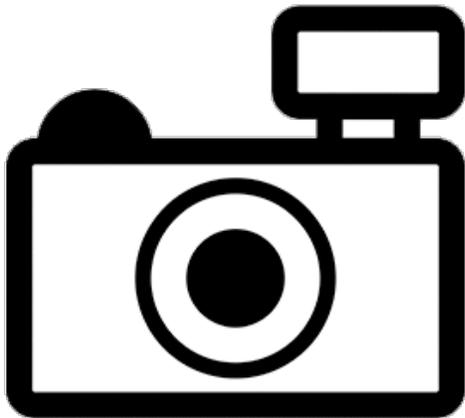
U.S. Fish & Wildlife Service, May 2012

Revised, October 2018

Web Version, 2/17/2021

Organism Type: Fish

Overall Risk Assessment Category: Uncertain



No Photo Available

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

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### **Native Range**

From Froese and Pauly (2018):

“Africa: Corubal River system in Guinea Bissau to the Saint Paul's River in western Liberia.”

### **Status in the United States**

No records of *Sarotherodon caudomarginatus* in the wild or in trade in the United States were found.

The Florida Fish and Wildlife Conservation Commission has listed the tilapia *Sarotherodon caudomarginatus* as a prohibited species. Prohibited nonnative species (FFWCC 2020), “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.”

From Louisiana State Legislature (2019):

“No person, firm, or corporation shall at any time possess, sell, or cause to be transported into this state by any other person, firm, or corporation, without first obtaining the written permission of the secretary of the Department of Wildlife and Fisheries, any of the following species of fish: freshwater electric eel (*Electrophorus* sp.); rudd (*Scardinius erythrophthalmus*); all members of the families *Synbranchidae* (Asian swamp eels); *Channidae* (snakeheads); *Clariidae* (walking catfishes); *Trichomycteridae* (pencil catfishes); all species of tilapia [*Sarotherodon caudomarginatus* is a species of tilapia], [...]”

*Sarotherodon caudomarginatus* falls within Group IV of New Mexico’s Department of Game and Fish Director’s Species Importation List (New Mexico Department of Game and Fish 2010). “The importation of these species [Group IV] are prohibited for the general public but may be allowed for, scientific study, department approved restoration and recovery plans, zoological display, temporary events/entertainment, use as service animal or by a qualified expert.”

From State of Nevada (2018):

“Except as otherwise provided in this section and NAC 504.486, the importation, transportation or possession of the following species of live wildlife or hybrids thereof, including viable embryos or gametes, is prohibited: [...] All species in the genera *Tilapia* and *Sarotherodon*”

Tilapia species are prohibited to be sold and used as bait or stocked in heated-water reservoirs in the State of Oklahoma (Oklahoma Secretary of State 2019).

All species in the genus *Sarotherodon* are listed as prohibited in Texas (Texas Parks and Wildlife 2020).

From Utah Office of Administrative Rules (2019):

“All species of fish listed in Subsections (2) through (30) are classified as prohibited for collection, importation and possession, [...] (30) *Tilapia*, (*Tilapia* and *Sarotherodon*) (All species) family Cichlidae.”

A permit is required to import, possess, or sell any species of tilapia in Virginia (Virginia Department of Game and Inland Fisheries 2020).

All species in the genus *Sarotherodon* are considered regulated Type A species in Washington. Regulated Type A species (Washington State Senate 2019) are “nonnative aquatic animal species that pose a low to moderate invasive risk that can be managed based on intended use or geographic scope of introduction, have a beneficial use, and are a priority for department-led or department-approved management of the species' beneficial use and invasive risks.”

## **Means of Introductions in the United States**

No records of *Sarotherodon caudomarginatus* in the wild in the United States were found.

## Remarks

No additional remarks.

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2018), *Sarotherodon caudomarginatus* (Boulenger 1916) is the current valid name for this species. *Sarotherodon caudomarginatus* was originally described as *Tilapia caudomarginata* (Boulenger 1916).

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 *Sarotherodon*

Species *Sarotherodon caudomarginatus* (Boulenger, 1916)

### Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length: 15.6 cm SL male/unsexed [Trewavas and Teugels 1991].

### Environment

From Froese and Pauly (2018):

“Freshwater; demersal. [...] 24°C - 26°C [assumed to be recommended aquarium temperature] [Baensch and Riehl 1995]”

### Climate

From Froese and Pauly (2018):

“Tropical; [...] 14°N - 5°N”

## Distribution Outside the United States

### Native

From Froese and Pauly (2018):

“Africa: Corubal River system in Guinea Bissau to the Saint Paul's River in western Liberia.”

### Introduced

No records of *Sarotherodon caudomarginatus* introductions were found.

## Means of Introduction Outside the United States

No records of *Sarotherodon caudomarginatus* introductions were found.

## Short Description

From Froese and Pauly (2018):

“Dorsal spines (total): 15 - 16; Dorsal soft rays (total): 12-14; Anal spines: 3; Anal soft rays: 11 - 13; Vertebrae: 30 - 31. Diagnosis: mouth small; 3 full rows of scales on cheek [Trewavas 1983; Teugels and Thys van den Audenaerde 2003]. Preorbital bone deep; toothed area of lower pharyngeal bone heart-shaped with slender, bevelled teeth with no minor cusp [Trewavas 1983]. Caudal fin strongly emarginated [Teugels and Thys van den Audenaerde 2003]. Fold of skin above upper lip bright yellow in life; margins of dorsal, caudal and anal fins black [Trewavas 1983].”

## Biology

From Froese and Pauly (2018):

“Foraging behaviour reported as sifting of the bottom with the downward-orientated mouth [Lamboj 2004].”

## Human Uses

From Froese and Pauly (2018):

“Fisheries:”

From Lalèyè (2010):

“This species is harvested for human consumption.”

## Diseases

**No OIE-reportable diseases (OIE 2021) were reported for *Sarotherodon caudomarginatus*.**

According to Pariselle et al. (2003) *Sarotherodon caudomarginatus* is the host to the parasite *Cichlidogyrus giostrai*; it can be found in the gills between the secondary gill lamellae.

## Threat to Humans

From Froese and Pauly (2018):

“Harmless”

## 3 Impacts of Introductions

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No data or information available.

## 4 History of Invasiveness

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There are No Known Nonnative Populations of *Sarotherodon caudomarginatus*.

## 5 Global Distribution

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**Figure 1.** Known global distribution of *Sarotherodon caudomarginatus*. Locations are in Guinea, Sierra Leone, and Liberia. Map from GBIF Secretariat (2018).

## 6 Distribution Within the United States

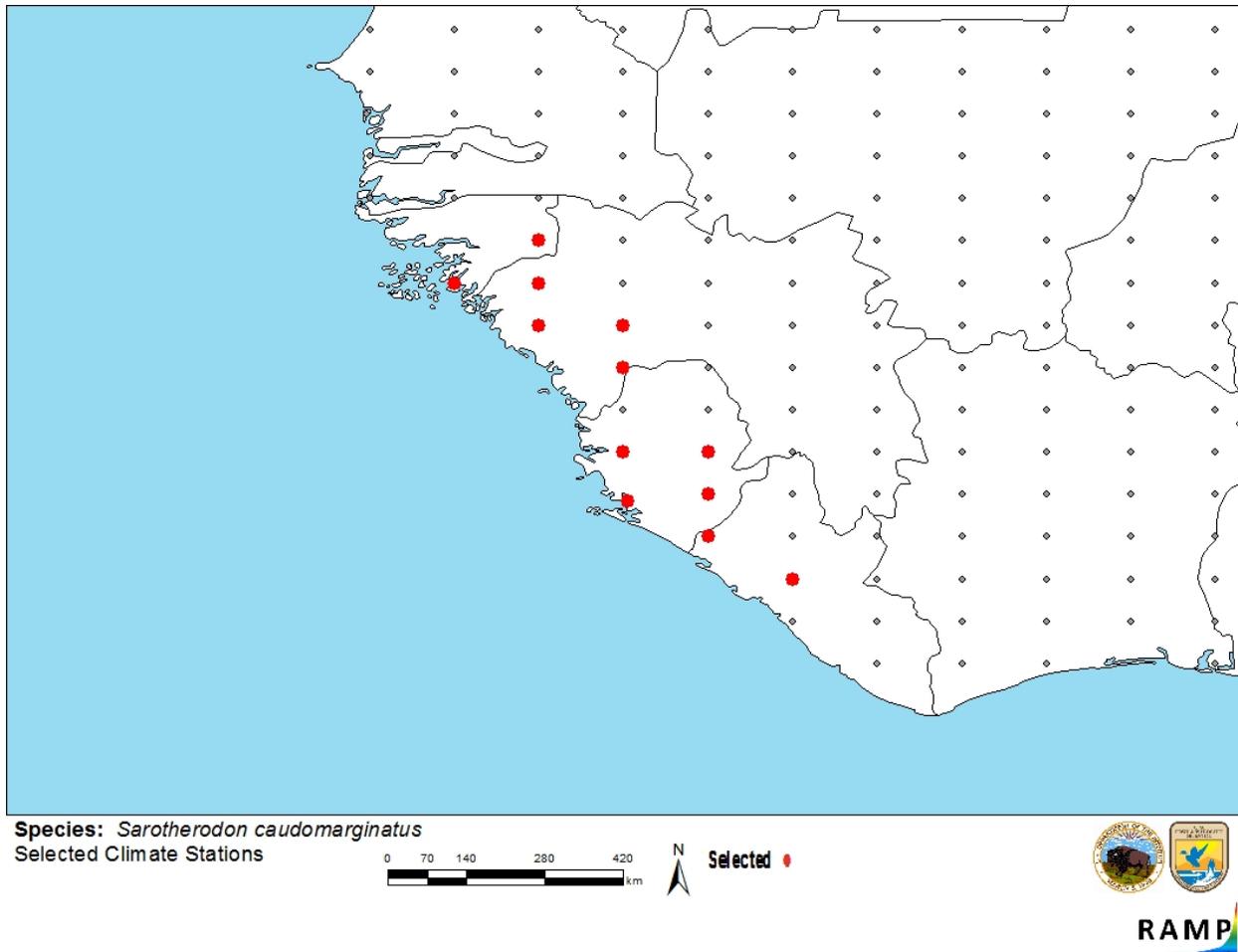
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No records of *Sarotherodon caudomarginatus* in the wild in the United States were found.

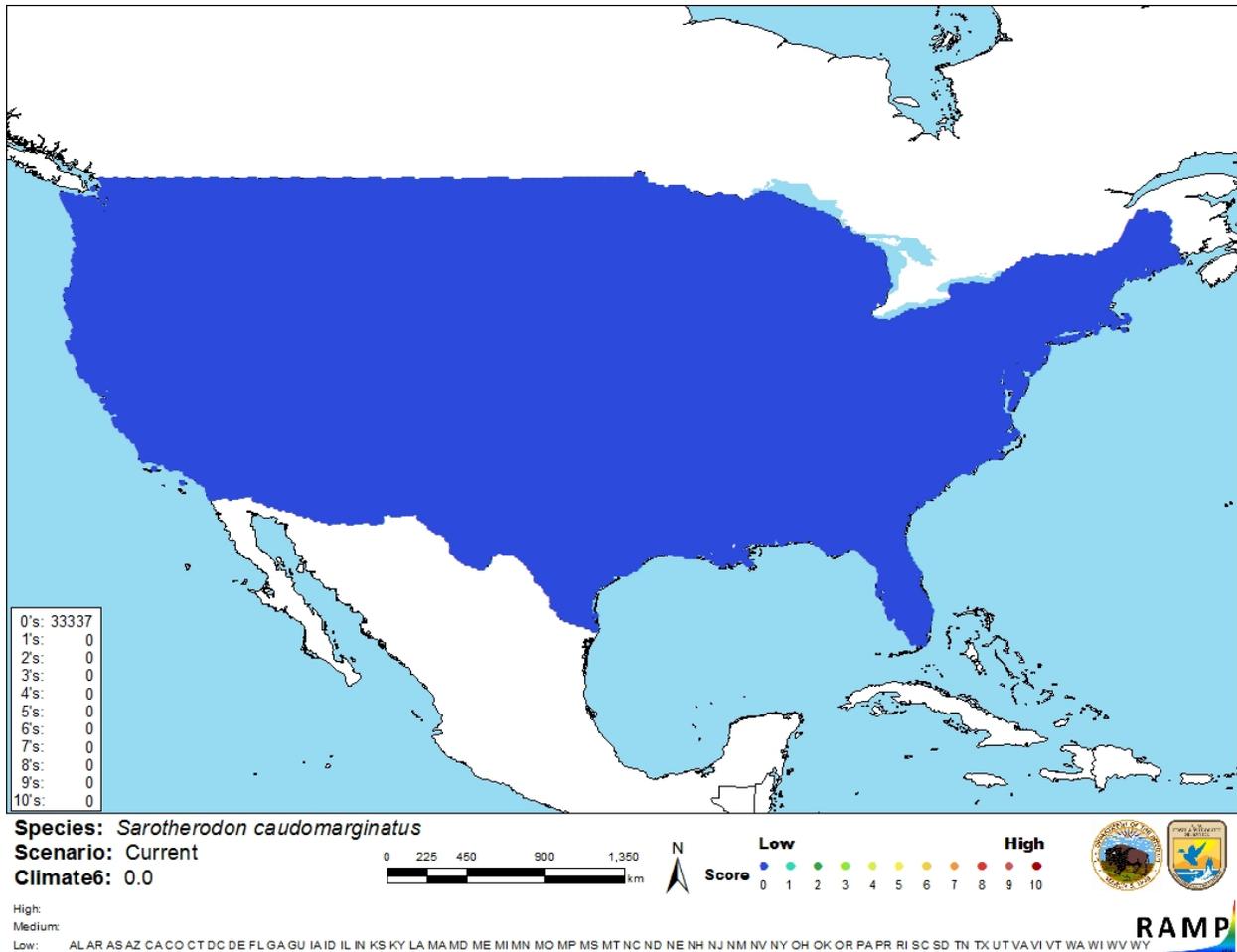
# 7 Climate Matching

## Summary of Climate Matching Analysis

The contiguous United States had a low climate match for *Sarotherodon caudomarginatus*. There were no areas of high or medium match. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for contiguous United States was 0.000, low (scores from 0.000 and 0.005, inclusive, are classified as low). All States also had a low individual climate score.



**Figure 2.** RAMP (Sanders et al. 2018) source map showing weather stations in western Africa selected as source locations (red; Guinea-Bissau, Guinea, Sierra Leone, Liberia) and non-source locations (gray) for *Sarotherodon caudomarginatus* climate matching. Source locations from GBIF Secretariat (2018). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.



**Figure 3.** Map of RAMP (Sanders et al. 2018) climate matches for *Sarotherodon caudomarginatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 8 Certainty of Assessment

The certainty of assessment is low. There is minimal biological information available for this species. There were no records of introductions or nonnative established population of *Sarotherodon caudomarginatus* found.

## 9 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Sarotherodon caudomarginatus* is a species of tilapia native to coastal rivers of western Africa. This species is harvested for human consumption. *S. caudomarginatus* is regulated or prohibited in multiple States. No records of introduction were found. The history of invasiveness is no known nonnative population. The overall climate match score was low. The entire contiguous United States had a low climate match. There were no areas of high or medium match. The certainty of the assessment is low. The overall risk assessment is uncertain.

### Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Overall Climate Match Category (Sec. 7): Low**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks/Important additional information:** *Sarotherodon caudomarginatus* is regulated in multiple States.
- **Overall Risk Assessment Category: Uncertain**

## 10 Literature Cited

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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 11.**

[FFWCC] Florida Fish and Wildlife Conservation Commission. 2020. Prohibited species list. Tallahassee, Florida: Florida Fish and Wildlife Conservation Commission. Available: <http://myfwc.com/wildlifehabitats/nonnatives/regulations/prohibited/> (October 2020).

Fricke R, Eschmeyer WN, van der Laan R, editors. 2018. Catalog of fishes: genera, species, references. California Academy of Science. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (September 2018).

Froese R, Pauly D, editors. 2018. *Sarotherodon caudomarginatus* Boulenger, 1916. FishBase. Available: <http://www.fishbase.se/summary/Sarotherodon-caudomarginatus.html> (September 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Sarotherodon caudomarginatus* Boulenger, 1916. Copenhagen: Global Biodiversity Information Facility. Available: <https://www.gbif.org/species/2372892> (October 2018).

[ITIS] Integrated Taxonomic Information System. 2018. *Sarotherodon caudomarginatus* Boulenger, 1916. Reston, Virginia: Integrated Taxonomic Information System. Available: [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=648896#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=648896#null) (October 2018).

- Lalèyè P. 2010. *Sarotherodon caudomarginatus*. The IUCN Red List of Threatened Species 2010: e.T182276A7848240. Available: <http://www.iucnredlist.org/details/182276/0> (October 2018).
- Louisiana State Legislature. 2019. Exotic fish; importation, sale, and possession of certain exotic species prohibited; permit required; penalty. Louisiana Revised Statutes, Title 56, Section 319.
- New Mexico Department of Game and Fish. 2010. Director's species importation list. Santa Fe, New Mexico: New Mexico Department of Game and Fish. Available: [http://www.wildlife.state.nm.us/download/enforcement/importation/information/Directors-Species-Importation-List-08\\_03\\_2010.pdf](http://www.wildlife.state.nm.us/download/enforcement/importation/information/Directors-Species-Importation-List-08_03_2010.pdf) (November 2020).
- [OIE] World Organisation for Animal Health. 2021. OIE-listed diseases, infections and infestations in force in 2021. Available: <http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2021/> (February 2021).
- Oklahoma Secretary of State. 2019. List of restricted exotic species. Oklahoma Administrative Code, Title 800, Chapter 20-1-2.
- Pariselle A, Bilong Bilong CF, Euzet L. 2003. Four new species of *Cichlidogyrus* Paperna, 1960 (Monogenea, Ancyrocephalidae), all gill parasites from African mouthbreeder tilapias of the genera *Sarotherodon* and *Oreochromis* (Pisces, Cichlidae), with a redescription of *C. thurstonae* Ergens, 1981. *Systematic Parasitology* 56:201-210.
- Sanders S, Castiglione C, Hoff M. 2018. Risk Assessment Mapping Program: RAMP. Version 3.1. U.S. Fish and Wildlife Service.
- State of Nevada. 2018. Restrictions on importation, transportation and possession of certain species. Nevada Administrative Code, Chapter 503, Section 110.
- Texas Parks and Wildlife. 2020. Invasive, prohibited and exotic species. Austin, Texas: Texas Parks and Wildlife. Available: [https://tpwd.texas.gov/huntwild/wild/species/exotic/prohibited\\_aquatic.phtml](https://tpwd.texas.gov/huntwild/wild/species/exotic/prohibited_aquatic.phtml) (November 2020).
- Utah Office of Administrative Rules. 2019. Classification and specific rules for fish. Utah Administrative Code, Rule R657-3-23.
- Virginia Department of Game and Inland Fisheries. 2020. Nongame fish, reptile, amphibian and aquatic invertebrate regulations. Henrico, Virginia: Virginia Department of Game and Inland Fisheries. Available: <https://www.dgif.virginia.gov/fishing/regulations/nongame/> (November 2020).

Washington State Senate. 2019. Invasive/nonnative species. Washington Administrative Code, Chapter 220-640.

## 11 Literature Cited in Quoted Material

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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.**

Boulenger GA. 1916. Catalogue of the fresh-water fishes of Africa in the British Museum (Natural History). London.

Lamboj A. 2004. The cichlid fishes of Western Africa. Bornheim, Germany: Birgit Schmettkamp Verlag.

Teugels GG, Thys van den Audenaerde DFE. 2003 Cichlidae. Pages 521–600 in Paugy D, Lévêque C, Teugels GG, editors. The fresh and brackish water fishes of West Africa, volume 2. Coll. faune et flore tropicales 40. Paris: Institut de recherche de développement and Muséum national d'histoire naturelle; Tervuren, Belgium: Musée royal del'Afrique Central.

Trewavas E. 1983. Tilapiine fishes of the genera *Sarotherodon*, *Oreochromis* and *Danakilia*. London: British Museum of Natural History.

Trewavas E, Teugels GG. 1991. *Sarotherodon*. Pages 425–437 in Daget J, Gosse J-P, Teugels GG, Thys van den Audenaerde DFE, editors. Check-list of the freshwater fishes of Africa. Brussels: ISNB; Tervuren: MRAC; Paris: ORSTOM.