

***Telmatochromis bifrenatus* (a cichlid, no common name)**

Ecological Risk Screening Summary

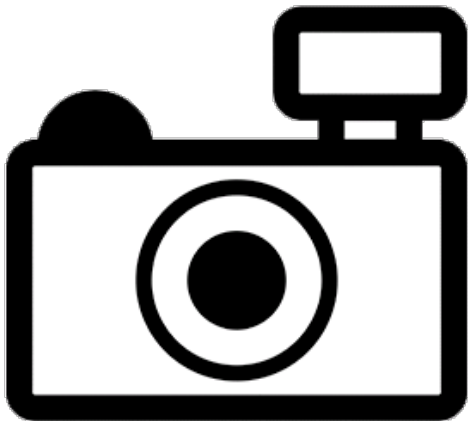
U.S. Fish & Wildlife Service, February 2011

Revised, June 2019

Web Version, 9/22/2021

Organism Type: Fish

Overall Risk Assessment Category: Uncertain



No Photo Available

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2019):

“Africa: Endemic to Lake Tanganyika [Burundi, Democratic Republic of the Congo, Tanzania, and Zambia].”

Status in the United States

From Froese and Pauly (2019):

“A single fish was taken from the River Styx in Alachua County, Florida, on 6 September 1987”

“Established in the wild: probably not established, no data”

Telmatochromis bifrenatus is in trade within the United States (e.g., Blue Hook Aquatics 2021).

T. bifrenatus is listed on Hawaii's Conditional Animal List (Hawaii Department of Agriculture 2019).

T. bifrenatus falls within Group I of New Mexico's Department of Game and Fish Director's Species Importation List (New Mexico Department of Game and Fish 2010). Group I species "are designated semi-domesticated animals and do not require an importation permit." Species within family Cichlidae have the additional restriction of "Not to be used as bait fish."

Means of Introductions in the United States

From Froese and Pauly (2019):

"Introduced by: unknown"

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Fricke et al. (2019):

"Current Status: Valid as *Telmatochromis bifrenatus* Myers 1936."

From ITIS (2019):

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 *Telmatochromis*
Species *Telmatochromis bifrenatus* Myers, 1936

Size, Weight, and Age Range

From Froese and Pauly (2019):

“Max length : 9.0 cm TL male/unsexed; [Maréchal and Poll 1991]”

Environment

From Froese and Pauly (2019):

“Freshwater; demersal; pH range: 8.5 - 9.5; dH range: 10 - 15; depth range 5 - 10 m. [...] 24°C - 26°C [Riehl and Baensch 1996] [assumed to be the recommended aquarium temperature]”

Climate

From Froese and Pauly (2019):

“Tropical; [...] 3°S - 9°S”

Distribution Outside the United States

Native

From Froese and Pauly (2019):

“Africa: Endemic to Lake Tanganyika [Burundi, Democratic Republic of the Congo, Tanzania, and Zambia].”

Introduced

Telmatochromis bifrenatus has not been recorded as introduced outside of its native range outside of the United States.

Means of Introduction Outside the United States

Telmatochromis bifrenatus has not been recorded as introduced outside of its native range.

Short Description

No short description of *Telmatochromis bifrenatus* was found.

Biology

From Froese and Pauly (2019):

“Sometimes found as deep as 20 m depth. Always solitary in very clear water. Often seen wandering close to rocks or over coarse sand between rock patches. Omnivorous [Hori et al. 1983], feeds on microorganisms [Brichard 1989]. Forms temporary pair bonds; the male defends the territory while the female takes care of her offspring [Konings 1988].”

“Lays up to 80 eggs. A cave-brooder.”

From Bigirimana (2006):

“Lives in the rocky substrate of the littoral zone.”

Human Uses

From Froese and Pauly (2019):

“Aquarium: commercial”

Telmatochromis bifrenatus is in trade within the United States (e.g., Blue Hook Aquatics 2021).

Diseases

No records of OIE-reportable diseases (OIE 2021) were found for *Telmatochromis bifrenatus*. No records of diseases for *Telmatochromis bifrenatus* were found.

Threat to Humans

From Froese and Pauly (2019):

“Harmless”

3 Impacts of Introductions

Although *Telmatochromis bifrenatus* has been recorded outside of its native range in Florida, there are no records of the impacts associated with the introduction.

4 History of Invasiveness

A single specimen of *Telmatochromis bifrenatus* was found in Florida in 1987 but it is not thought to have established a population in that location. Therefore, the history of invasiveness is classified as No Known Nonnative Population.

5 Global Distribution



Figure 1. Known global distribution of *Telmatochromis bifrenatus*. Map from GBIF Secretariat (2019). The point located in Florida was not included in the climate match because only a single fish that was taken from the River Styx in Alachua County in 1987 and there is no further evidence suggesting that there is an established population in that area.

6 Distribution Within the United States

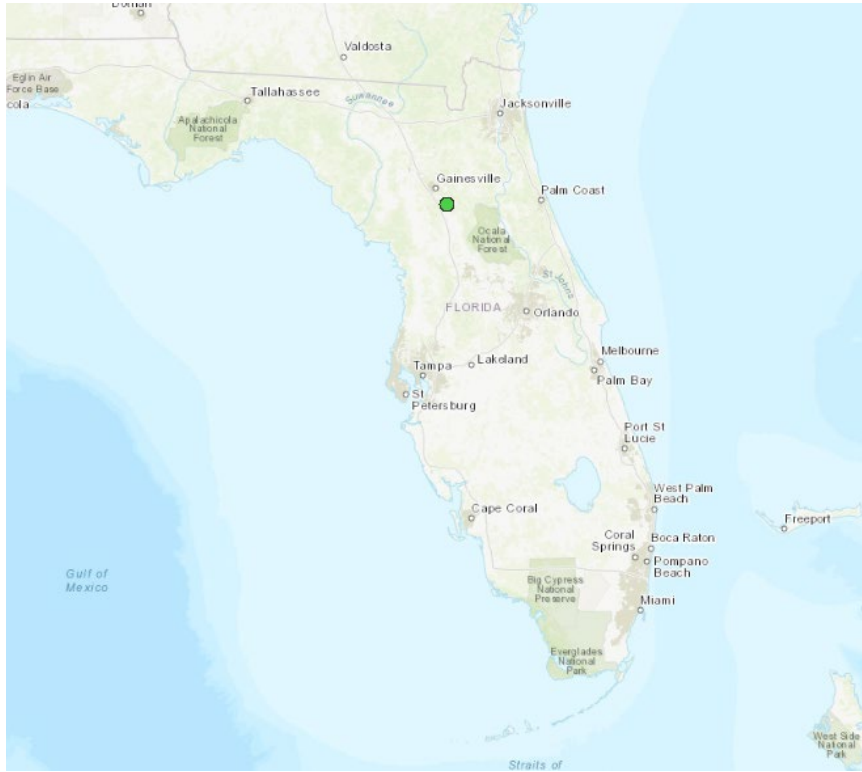


Figure 2. Location of the single known report of *Telmatochromis bifrenatus* in the United States. Map from BISON (2019). The point in Florida does not represent an established population since only a single specimen was reported in 1987 and none have been documented since. It was not used to select source points for the climate match.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Telmatochromis bifrenatus* was low for a majority of the contiguous United States. There were some small patches of medium match in southern Florida and Texas. The overall Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low (scores between 0.000 and 0.005, inclusive, are classified as low). All States had a low individual Climate 6 scores.

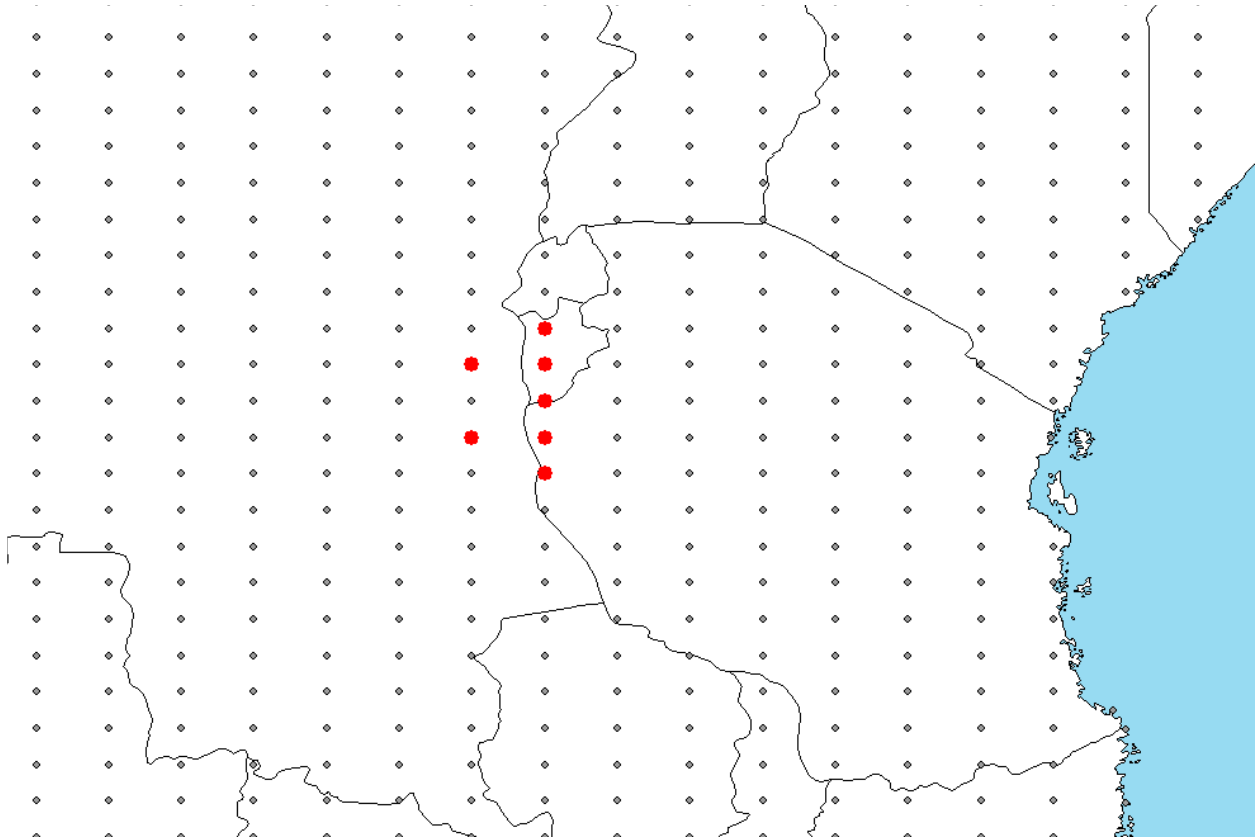


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations in Burundi, Democratic Republic of the Congo, and Tanzania selected as source locations (red) and non-source locations (gray) for *Telmatochromis bifrenatus* climate matching. Source locations from GBIF Secretariat (2019). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

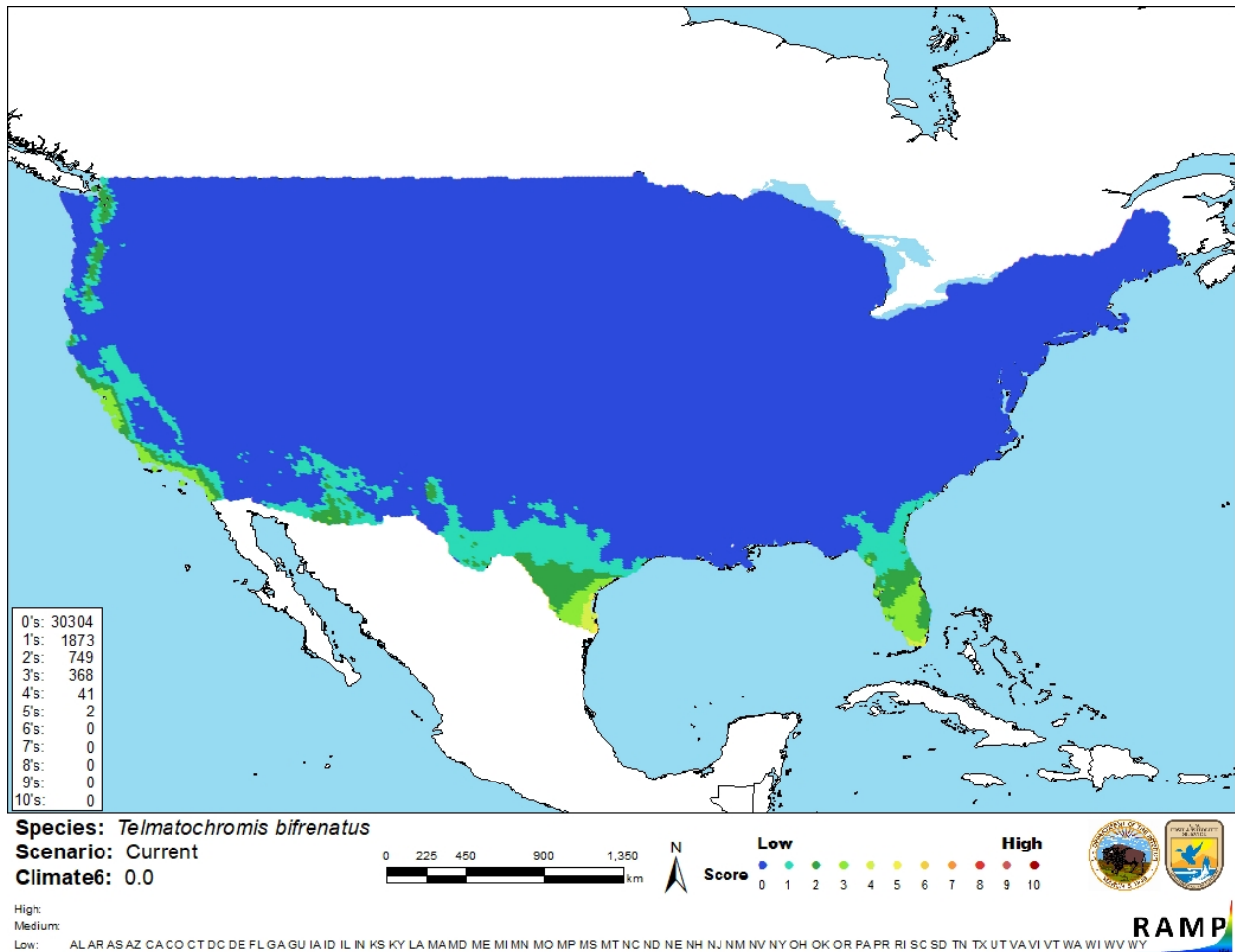


Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Telmatochromis bifrenatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

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
≥ 0.103	High

8 Certainty of Assessment

The certainty of assessment for *Telmatochromis bifrenatus* is low. There was some information available on the biology and environment for *Telmatochromis bifrenatus*, but there was a lack of information on its description. *Telmatochromis bifrenatus* has been introduced outside of its

native range into Florida but it was only one specimen and has not been recorded since it was removed in 1987.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Telmatochromis bifrenatus is a ray-finned fish (cichlid) endemic to Lake Tanganyika in southern central Africa. *T. bifrenatus* is a cave brooder and omnivorous. *T. bifrenatus* is present in the aquarium trade. The history of invasiveness is classified as No Known Nonnative Population. It has been reported in Florida, but it is not believed to have become established. There were no other records of introduction. The climate match for the contiguous United States was low. There were very small areas of medium match in extreme southern Texas and Florida. The certainty of assessment is low. The overall risk assessment category for *Telmatochromis bifrenatus* is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): No Known Nonnative Population**
- **Overall Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information: No additional remarks.**
- **Overall Risk Assessment Category: Uncertain**

10 Literature Cited

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 11.

Bigirimana C. 2006. *Telmatochromis bifrenatus*. The IUCN Red List of Threatened Species 2006: e.T60685A12385119. Available: <https://www.iucnredlist.org/species/60685/12385119> (June 2019).

BISON. 2019. Biodiversity Information Serving Our Nation (BISON). U.S. Geological Survey. Available: <https://bison.usgs.gov> (June 2019).

Blue Hook Aquatics. 2021. *Telmatochromis bifrenatus*. Cincinnati, Ohio: Blue Hook Aquatics. Available: <https://www.bluehookaquatics.com/product-page/telmatochromis-bifrenatus> (September 2021).

Fricke R, Eschmeyer WN, van der Laan R, editors. 2019. Eschmeyer's catalog of fishes: genera, species, references. California Academy of Science. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (June 2019).

Froese R, Pauly D, editors. 2019. *Telmatochromis bifrenatus* Myers, 1936. FishBase. Available: <https://www.fishbase.in/summary/Telmatochromis-bifrenatus.html> (June 2019).

GBIF Secretariat. 2019. GBIF backbone taxonomy: *Telmatochromis bifrenatus* Myers, 1936. Copenhagen: Global Biodiversity Information Facility. Available: <https://www.gbif.org/species/2372981> (June 2019).

Hawaii Department of Agriculture. 2019. Amendment and compilation of chapter 4-71, Hawaii Administrative Rules. Honolulu: Hawaii Department of Agriculture, Plant Industry Division. Available: <http://hdoa.hawaii.gov/pi/pq/import-program/pq-non-domestic-animal-and-microorganism-lists/> (February 2021).

[ITIS] Integrated Taxonomic Information System. 2019. *Telmatochromis bifrenatus* Myers, 1936. Reston, Virginia: Integrated Taxonomic Information System. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=170032#null (June 2019).

New Mexico Department of Game and Fish. 2010. Director's species importation list. Santa Fe: 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 (November 2020).

[OIE] World Organisation for Animal Health. 2021. Animal diseases. Available: <https://www.oie.int/en/what-we-do/animal-health-and-welfare/animal-diseases/> (May 2021).

Sanders S, Castiglione C, Hoff M. 2018. Risk Assessment Mapping Program: RAMP. Version 3.1. U.S. Fish and Wildlife Service.

11 Literature Cited in Quoted Material

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.

Brichard P. 1989. Pierre Brichard's book of cichlids and all the other fishes of Lake Tanganyika. T.F.H. Publications.

Hori M, Yamaoka K, Takamura K. 1983. Abundance and micro-distribution of cichlid fishes on a rocky shore of Lake Tanganyika. *African Study Monographs* 3:25–38.

Konings A. 1988. Tanganyika cichlids. Zevenhuizen, Holland: Verduijn Cichlids & Lake Fish Movies.

Maréchal C, Poll M. 1991. *Telmatochromis*. Pages 474–478 in Daget J, Gosse JP, Teugels GG, Thys van den Audenaerde DFE, editors. Checklist of the freshwater fishes of Africa. Brussels: ISNB; Tervuren, Belgium: MRAC; Paris: ORSTOM.

Riehl R, Baensch HA. 1996. Aquarien atlas. Band 1. 10th edition. Melle, Germany: Mergus Verlag GmbH.