

Scrapermouth Mbuna (*Labeotropheus trewavasae*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2011

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Web Version, 3/3/2020



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2019):

“Africa: Lake Malawi [Konings 1990; Maréchal 1991].”

From Koning and Kasembe (2018):

“Malawi; Mozambique; Tanzania, United Republic of”

Status in the United States

BISON (2019) contains a record of *Labeotropheus trewavasae* in the United States. That specimen is a part of a museum collection and was not collected in the wild in the United States. There are no wild populations of *Labeotropheus trewavasae* in the United States.

The museum specimen was collected from an aquarium in Lee County, Alabama (Auburn University 2020), indicating that there is some trade in this species within the United States.

Means of Introductions in the United States

BISON (2019) contains a record of *Labeotropheus trewavasae* in the United States. That specimen is a part of a museum collection and was not collected in the wild in the United States. There are no wild populations of *Labeotropheus trewavasae* in the United States.

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Fricke et al. (2019):

“**Current status:** Valid as *Labeotropheus trewavasae* Fryer 1956.”

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 *Labeotropheus*
Species *Labeotropheus trewavasae* Fryer, 1956

Size, Weight, and Age Range

From Froese and Pauly (2019):

“Max length : 11.7 cm TL male/unsexed; [Maréchal 1991]”

Environment

From Froese and Pauly (2019):

“Freshwater; benthopelagic; pH range: 8.0 - 8.0; dH range: 5 - 12; depth range ? - 15 m [Staeck 2012]. [...] 21°C - 24°C [Riehl and Baensch 1991; assumed to be the recommended aquarium temperature];”

Climate/Range

From Froese and Pauly (2019):

“Tropical; [...] 10°S - 15°S”

Distribution Outside the United States

Native

From Froese and Pauly (2019):

“Africa: Lake Malawi [Konings 1990; Maréchal 1991].”

From Koning and Kasembe (2018):

“Malawi; Mozambique; Tanzania, United Republic of”

Introduced

There are no records of introductions of *Labeotropheus trewavasae* outside of its native range.

Means of Introduction Outside the United States

There are no records of introductions of *Labeotropheus trewavasae* outside of its native range.

Short Description

From Pauers (2016):

“[...]; solid blue body and fins or blue body and fins covered in small, irregular black spots in *L. trewavasae*).”

From SeriouslyFish (2019):

“*L. trewavasae* exists in over 40 recorded colour forms in nature. The colouration of the dorsal fin is particularly variable. Female morphs also occur, including orange and orange blotch. Male fish exhibiting the much sought after blue blotch patterning are very rare and are commonly referred to as “marmalade cats”. ”

Biology

From Froese and Pauly (2019):

“Scrapes algae off rocks and also takes in small crustaceans and worms [Mills and Vevers 1989].”

“Female takes brood into her mouth and takes care of the young.”

From Koning and Kasembe (2018):

“*Labeotropheus trewavasae* is found from the surface waters to a depth of about 40 metres. It prefers the rocky habitat free of sediment but is also found in the sediment-rich part. It feeds on algae which are tightly bound to the substrate. It grazes from sediment-free aufwuchs and sometimes leaves scrape marks on the rocks. The slender body allows the fish to penetrate narrow caves and feed from places which are too difficult to access by most other herbivores. Both nose and chin are callused (dermal thickening), probably as a result of continuous contact with rough substrates during feeding. The effect of the fish closing its mouth on the firmly attached filamentous algae is to pull it closer to the substrate, and the nose then functions as a fulcrum, allowing its owner to shear off the algae by leverage rather than energy-consuming jerking of the body. This allows greater quantities of algae to be cropped using the three or more rows of tricuspid teeth in the outer jaws. Territorial males are a common sight and occur throughout the year. Spawning takes place inside a cave which is part of the territory and defended by the male against conspecific intruders. Mouth-brooding females hide between the rocks and are rarely seen.”

Human Uses

From Froese and Pauly (2019):

“Aquarium: commercial”

From Koning and Kasembe (2018):

“It is regularly collected by the ornamental fish trade where it is known by its scientific name.”

Diseases

No records of OIE-reportable diseases (OIE 2020) were found for *Labeotropheus trewavasae*.

According to Froese and Pauly (2019) *Labeotropheus trewavasae* can have white spot disease, cryptobia infestation, and bacterial infections.

Threat to Humans

From Froese and Pauly (2019):

“Harmless”

3 Impacts of Introductions

There are no records of introductions of *Labeotropheus trewavasae* outside of its native range.

4 Global Distribution

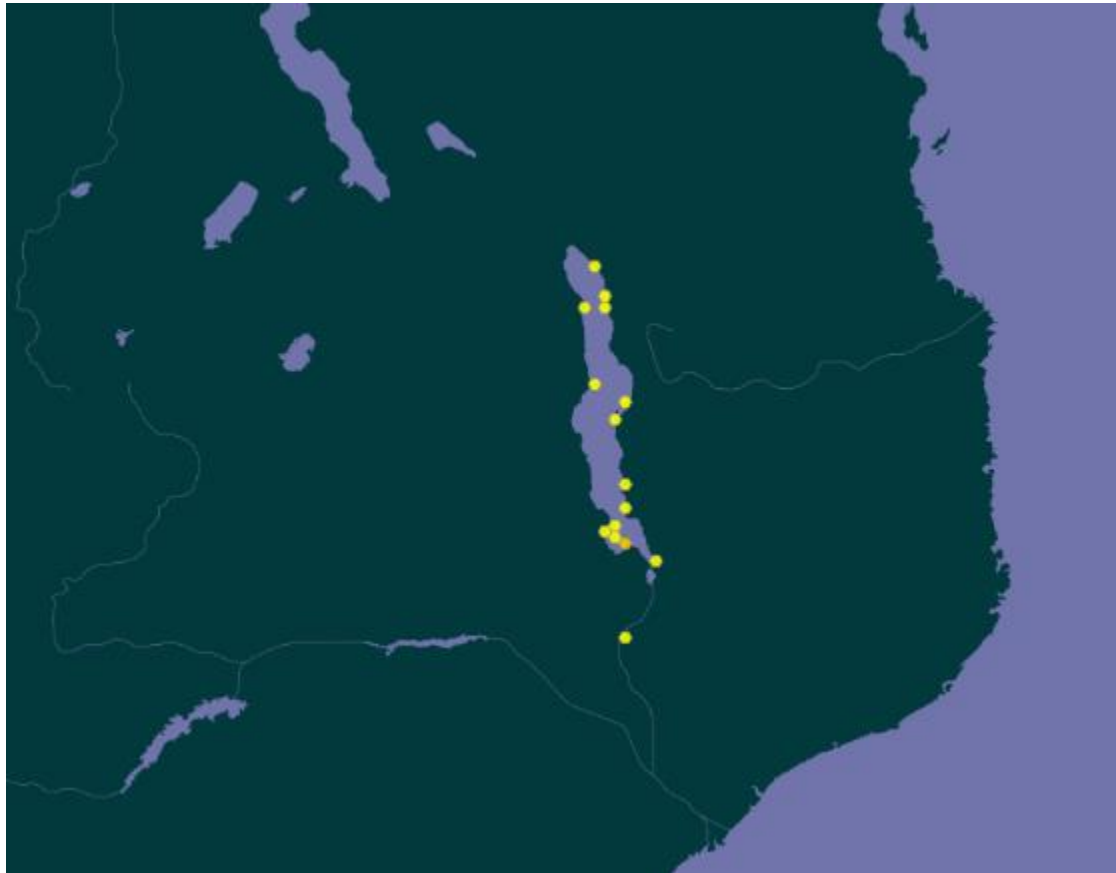


Figure 1. Known global distribution of *Labeotropheus trewavasae*. Locations in Malawi, Mozambique, and Tanzania. Map from GBIF Secretariat (2019).

5 Distribution Within the United States



Figure 2. Known distribution of *Labeotropheus trewavasae* in the United States. Map from BISON (2019). The point located in Alabama was not used to select source points for the climate match. This observation is part of a collection at the Auburn University Museum and the coordinates reported are that of the Museum (BISON 2019); this specimen was also sourced from an aquarium (Auburn University 2020). No established populations have been reported in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Labeotropheus trewavasae* was low for a majority of the contiguous United States. There were some patches of medium match along the southern border in Florida, Texas, Arizona, and California. The 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 an individually low climate score.

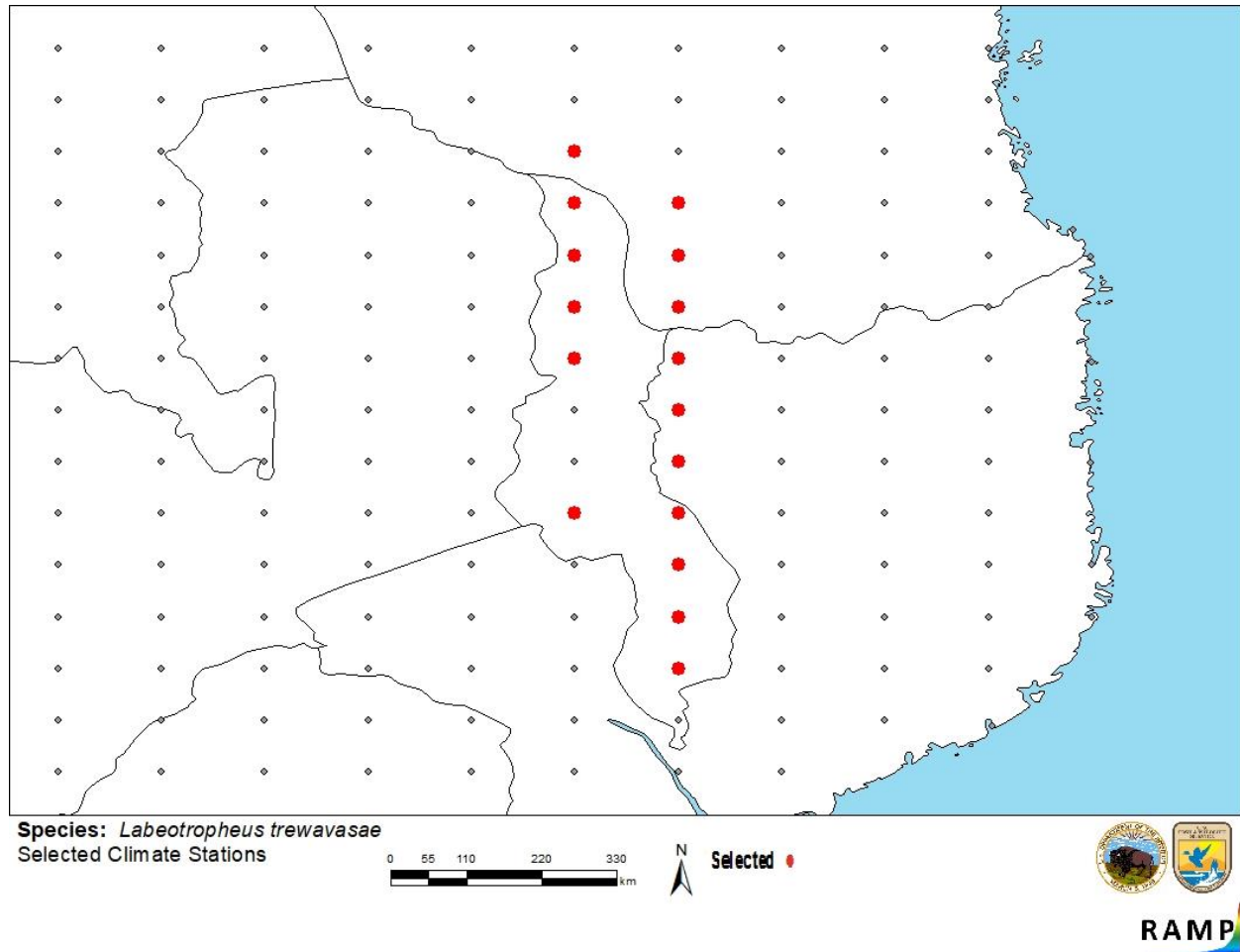


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations in Africa selected as source locations (red; Malawi, Mozambique, Tanzania) and non-source locations (gray) for *Labeotropheus trewavasae* climate matching. Source locations from GBIF Secretariat (2019). Selected source locations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

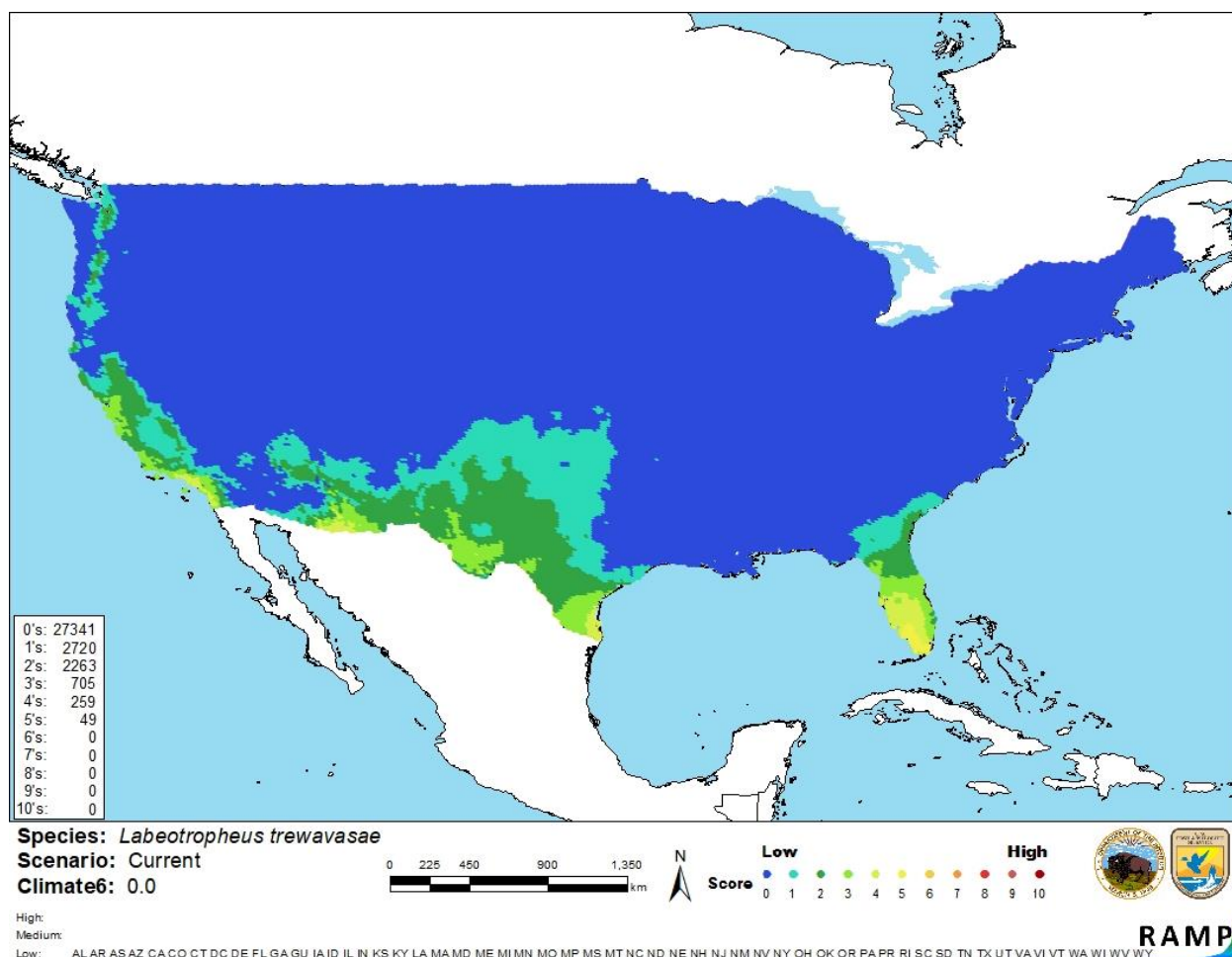


Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Labeotropheus trewavasae* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). Counts of climate match scores are tabulated on the left. 0 = Lowest match, 10 = Highest match.

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

7 Certainty of Assessment

The certainty of assessment for *Labeotropheus trewavasae* is low. There was some information available on its biology and environment for *Labeotropheus trewavasae*, but there was a lack of information on its description. *Labeotropheus trewavasae* has been recorded in the United States, but that specimen was from a museum collection and not from an established wild population.

8 Risk Assessment

Summary of Risk to the Contiguous United States

The Scrapemouth Mbuna (*Labeotropheus trewavasae*) is a cichlid (fish) native to Lake Malawi found in Malawi, Mozambique, and Tanzania, Africa. *L. trewavasae* normally prefers to be in a rocky habitat free of sediment but is also found in the sediment-rich areas too. *L. trewavasae* eats algae, using its mouth to scrape it off the rocks, sometimes leaving scrape marks on the rocks. The history of invasiveness is uncertain. A specimen was reported in the United States, but it was a part of a museum collection and not a part of a wild established population. There is also no trade information on the numbers of individuals in trade each year. The climate match for the contiguous United States was low with all States having low individual climate scores. The certainty of assessment is low. The overall risk assessment category for *Labeotropheus trewavasae* is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information: No additional remarks.**
- **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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BISON. 2019. Biodiversity Information Serving Our Nation (BISON). U.S. Geological Survey. Available: <https://bison.usgs.gov>. (March 2019).

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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.

- Konings, A. 1990. Ad Konings's book of cichlids and all the other fishes of Lake Malawi. T. F. H. Publications.
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- Mills, D., and G. Vevers. 1989. The Tetra encyclopedia of freshwater tropical aquarium fishes. Tetra Press, New Jersey.
- Riehl, R., and H. A. Baensch. 1991. Aquarien atlas, band. 1. Melle: Mergus, Verlag für Natur- und Heimtierkunde, Germany.
- Staeck, W. 2012. *Labeotropheus* - Klassiker unter den Mbunas - Schabemund-Maulbrüter. DATZ 65(5):34–39.