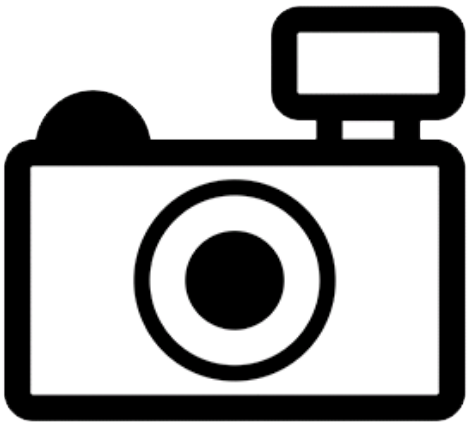
Oreochromis mweruensis (a tilapia, no common name)
Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2012
Revised, July 2018
Web Version, 6/4/2020

Organism Type: Fish
Overall Risk Assessment Category: Uncertain



1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

"Africa: Lake Mweru and the swamps and saline lakes in Mweru-wa-Ntipa [Trewavas 1983], the lower [Trewavas 1983; Van Steenberge et al. 2014] and middle [Van Steenberge et al. 2014] Luapula River system and the Lufira River (upper Congo River basin) in Democratic Republic of the Congo and Zambia [Trewavas 1983]."

From Moelants (2010):

"Part of the distribution area of *Oreochromis macrochir* caused by introduction could be [part of the native range of] *Oreochromis mweruensis* due to wrong identifications. Its distribution could thus be larger than currently known."

Status in the United States

No records of *Oreochromis mweruensis* occurrences in the United States were found. No information on trade of *O. mweruensis* in the United States was found.

The Florida Fish and Wildlife Conservation Commission has listed the tilapia, *Oreochromis mweruensis* 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."

Means of Introductions in the United States

No records of *Oreochromis mweruensis* occurrences in the United States were found.

Remarks

From De Vos et al. (2001):

"Currently the two traditional strains of *Oreochromis macrochir* are considered specifically distinct (Schwanck, 1994). The Kafue strain is now indicated as *O. macrochir* while the Luapula-Mweru strain is called *O. mweruensis* Trewavas, 1983, although both species fully hybridize when brought together, and behave more as good allopatric subspecies (Thys van den Audenaerde, 1964)."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2018), *Oreochromis mweruensis* Trewavas 1983 is the current valid name of this species.

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 *Oreochromis*
Species *Oreochromis mweruensis* Trewavas, 1983

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Maturity: L_m ?, range 18 - 22.5 cm
Max length : 23.8 cm SL male/unsexed; [Trewavas 1983]"

Environment

From Froese and Pauly (2018):

"Freshwater; brackish; benthopelagic; […]."

Climate

From Froese and Pauly (2018):

"Tropical; 7°S - 12°S"

Distribution Outside the United States

Native

From Froese and Pauly (2018):

"Africa: Lake Mweru and the swamps and saline lakes in Mweru-wa-Ntipa [Trewavas 1983], the lower [Trewavas 1983; Van Steenberge et al. 2014] and middle [Van Steenberge et al. 2014] Luapula River system and the Lufira River (upper Congo River basin) in Democratic Republic of the Congo and Zambia [Trewavas 1983]."

From Moelants (2010):

"Part of the distribution area of *Oreochromis macrochir* caused by introduction could be [part of the native range of] *Oreochromis mweruensis* due to wrong identifications. Its distribution could thus be larger than currently known."

Introduced

From De Vos et al. (2001):

"[…] from 1949 on, the Luapula-Mweru strain of this species [*Oreochromis mweruensis*] (characterised by the star-shaped nest) was introduced into Rwanda."

De Vos et al. (2001) list *O. mweruensis* as currently known from Rwandan waters.

Means of Introduction Outside the United States

From De Vos et al. (2001):

"[…] introduced in the late 1940s and the early 1950s respectively from Zambia and Congo for aquaculture and stocking; […]"

Short Description

From Froese and Pauly (2018):

"Dorsal spines (total): 15 - 17; Dorsal soft rays (total): 11-14; Anal spines: 3; Anal soft rays: 9 - 12; Vertebrae: 30 - 32. Diagnosis: scales on cheek in 2-3 rows; caudal scales variable, not on the inter-radial membranes except at the base; never stiffening the fin; genital papilla large and tuberculate or scalloped, tasseled in breeding males; generally lighter or darker olive-green; breeding male iridescent dark green to blue-black on head, body and vertical fins; red edge to dorsal and caudal fins [Trewavas 1983]."

Biology

From Froese and Pauly (2018):

"Young *Oreochromis mweruensis* feed on epiphytic filamentous algae in swampy areas [Trewavas 1983], but also accept small invertebrates and zooplankton, a tendency they lose with age [Lamboj 2004]. Adults feed on filamentous algae and detritus [Lamboj 2004] and bottom deposits, but those that migrated to the deeper northern end feed almost exclusively on plankton [Trewavas 1983]."

"Spawns along the banks of lakes/rivers at an average depth of 12 to 13 m. Mating territory largely occupied by a low mound with 6-12 grooves or crests radiating from the small central concave area (star-shaped nest). Males build the star-shaped nests on a sandy substrates [sic]."

Human Uses

From Froese and Pauly (2018):

"Fisheries: ; aquaculture: experimental"

From Moelants (2010):

"This species is harvested for human consumption."

"*Oreochromis mweruensis* is used for aquaculture in an experimental stage in central Africa."

From Simasiku (2014):

"Many different gears and methods employed based on gillnets targeted the endemic *Oreochromis mweruensis*, the second most important species of the fishery."

Diseases

No records of OIE listed diseases (OIE 2020) were found for *Oreochromis mweruensis*.

Poelen et al. (2014) lists *Gyrodactylus niloticus* and *Gryodactylus shariffi* as parasites of *Oreochromis mweruensis.*

Threat to Humans

From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions

Impacts of introductions of *Oreochromis mweruensis* have not been reported.

O. mweruensis is listed as a prohibited species in Florida (FFWCC 2020).

4 History of Invasiveness

There is a record of introduction to Rwanda for *Oreochromis mweruensis*. The most recent information found indicates that this species is established and still found in the wild. There was no information found regarding any impacts *O. mweruensis* may have had. Due to the lack of information on impacts from the introduction the history of invasiveness is Data Deficient.

5 Global Distribution

Figure 1. Known global distribution of *Oreochromis mweruensis*. Lakes and rivers are located in Democratic Republic of the Congo and Zambia. Map created with Google Earth Pro (2018). *O. mweruensis* range description given by Froese and Pauly (2018).

No georeferenced observations were available. Source points were chosen based on range description given by Froese and Pauly (2018). No specific location information was given for this species in Rwanda so that population was not able to be represented in the climate match.

6 Distribution Within the United States

No records of *Oreochromis mweruensis* occurrences in the United States were found.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Oreochromis mweruensis* was low for most of the contiguous United States with small patches of medium match in the southern tips Florida and Texas. 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 low individual climate scores. No georeferenced observations were available to use as source points for the climate match. The match is based on generalized text descriptions of the range.

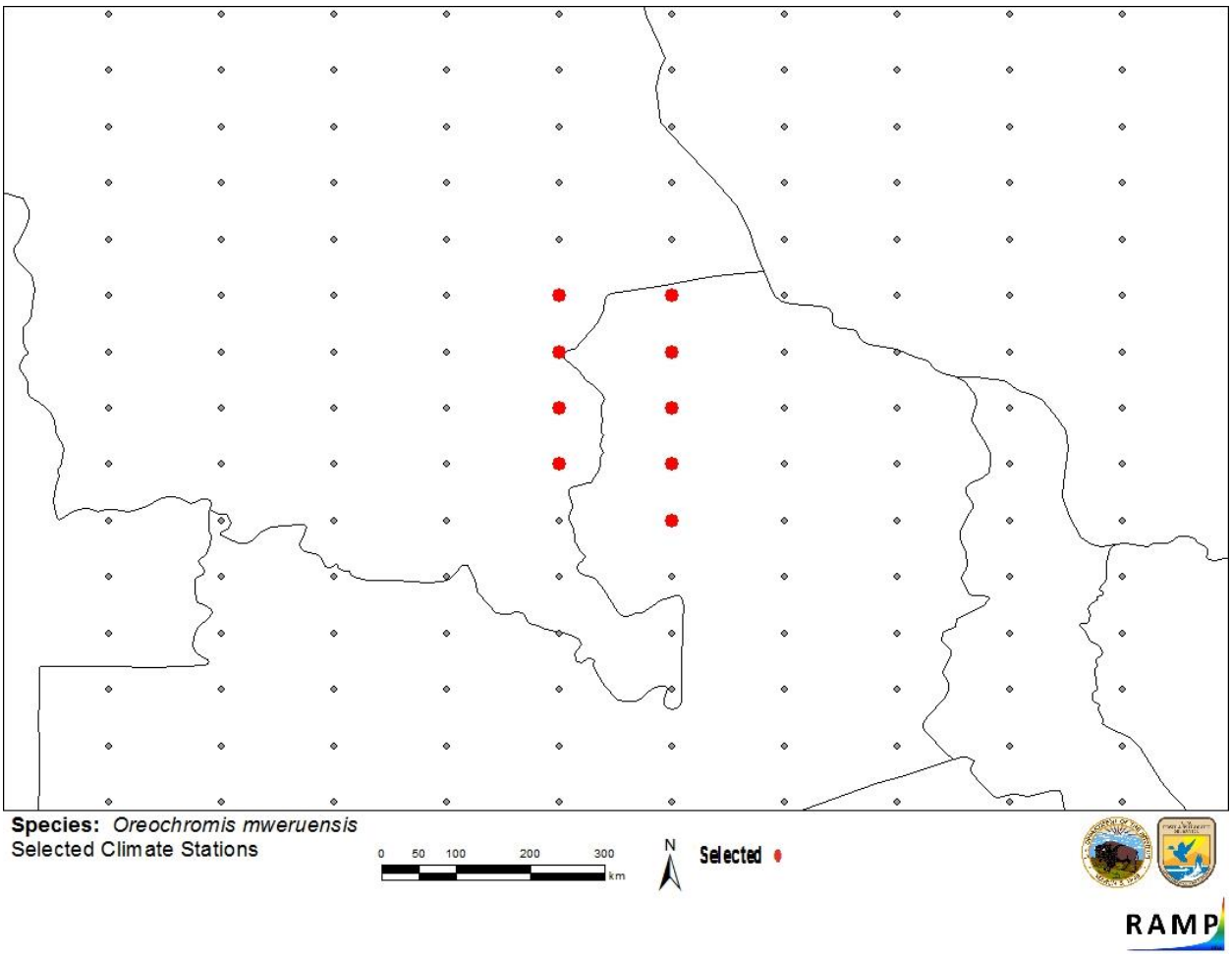


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in eastern Africa selected as source locations (red; Democratic Republic of the Congo and Zambia) and non-source locations (gray) for *Oreochromis mweruensis* climate matching. Source locations estimated based on verbal description in Froese and Pauly (2018).

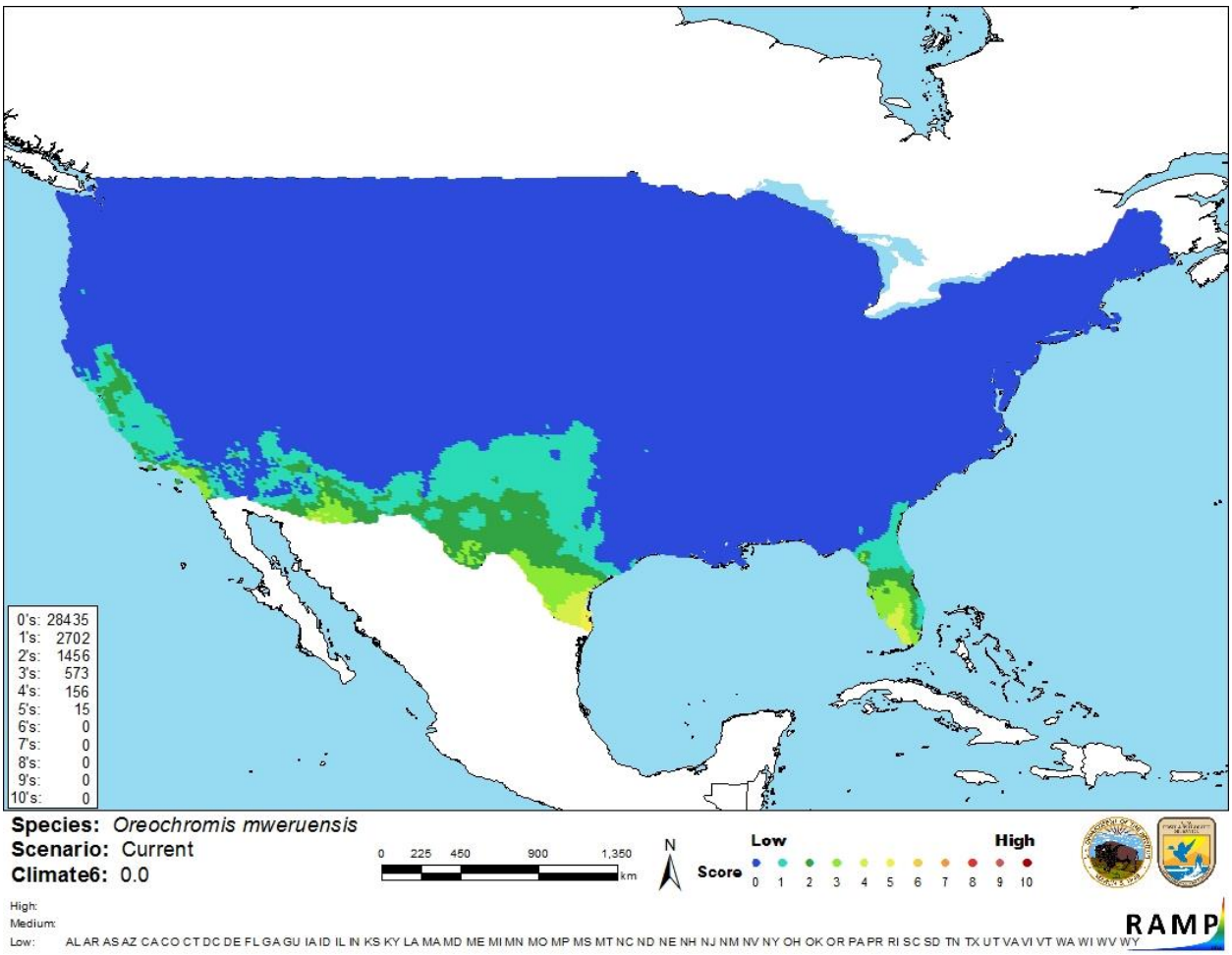


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Oreochromis mweruensis* in the contiguous United States based on source locations estimated based on verbal description in Froese and Pauly (2018). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = 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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

8 Certainty of Assessment

The certainty of this assessment is low. There is minimal information for *Oreochromis mweruensis* and no georeferenced collection locations were available for the climate match. Source locations had to be estimated from a verbal description of the range. A record of introduction in Rwanda was available and information exists indicating the species became

established; however, no additional information was found on impacts of this introduction, contributing to uncertainty.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Oreochromis mweruensis is a tilapia native to Democratic Republic of the Congo and Zambia, Africa. This tilapia is harvested for human consumption in its native range. There is little information available for this species. The history of invasiveness is Data Deficient. *O. mweruensis* was introduced to a lake in in Rwanda and there is information indicating the species became established; however, no information was found any impacts or lack thereof. *O. amweruensis* is listed as a prohibited species in Florida. The climate match analysis resulted in a low match for the contiguous United States. There were two areas of medium match, the southern tips of Florida and Texas. There were no georeferenced locations available, so source locations were estimated based on a verbal description of the range. The certainty of this assessment is low due to lack of information. The overall risk assessment category in uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): Data Deficient**
- **Overall Climate Match Category (Sec. 7): Low**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks/Important additional information:** No additional information
- **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.

De Vos L, Snoeks J, Thys van den Audenaerde DFE. 2001. An annotated checklist of the fishes of Rwanda (east central Africa), with historical data on introductions of commercially important species. Journal of East African Natural History 90:41–68.

Eschmeyer WN, Fricke R, 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 (July 2018).

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Froese R, Pauly D, editors. 2018. *Oreochromis mweruensis* Trewavas, 1983. FishBase. Available: http://www.fishbase.org/summary/Oreochromis-mweruensis.html (July 2018).

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[ITIS] Integrated Taxonomic Information System. 2018. *Oreochromis mweruensis* (Trewavas, 1983).Reston, Virginia: Integrated Taxonomic Information System. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=648849 (July 2018).

Moelants T. 2010. *Oreochromis mweruensis*. The IUCN Red List of Threatened Species 2010: e. T60624A12386181. Available: http://www.iucnredlist.org/details/60624/0 (July 2018).

[OIE] World Organisation for Animal Health. 2020. OIE-listed diseases, infections and infestations in force in 2020. Available: http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2020/ (June 2020).

Poelen JH, Simons JD, Mungall CJ. 2014. Global Biotic Interactions: an open infrastructure to share and analyze species-interaction datasets. Ecological Informatics 24:148–159.

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

Simasiku EK. 2014. Assessment of the Lake Liambezi fishery, Zambezi region, Nambia. Master's thesis. Eastern Cape, South Africa: Rhodes University.

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.

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

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

Van Steenberge M, Vreven E, Snoeks J. 2014. The fishes of the Upper Luapula area (Congo basin): a fauna of mixed origin. Ichthyological Exploration of Freshwaters 24:329–345.