

Korogwe Tilapia (*Oreochromis korogwe*)

Ecological Risk Screening Summary

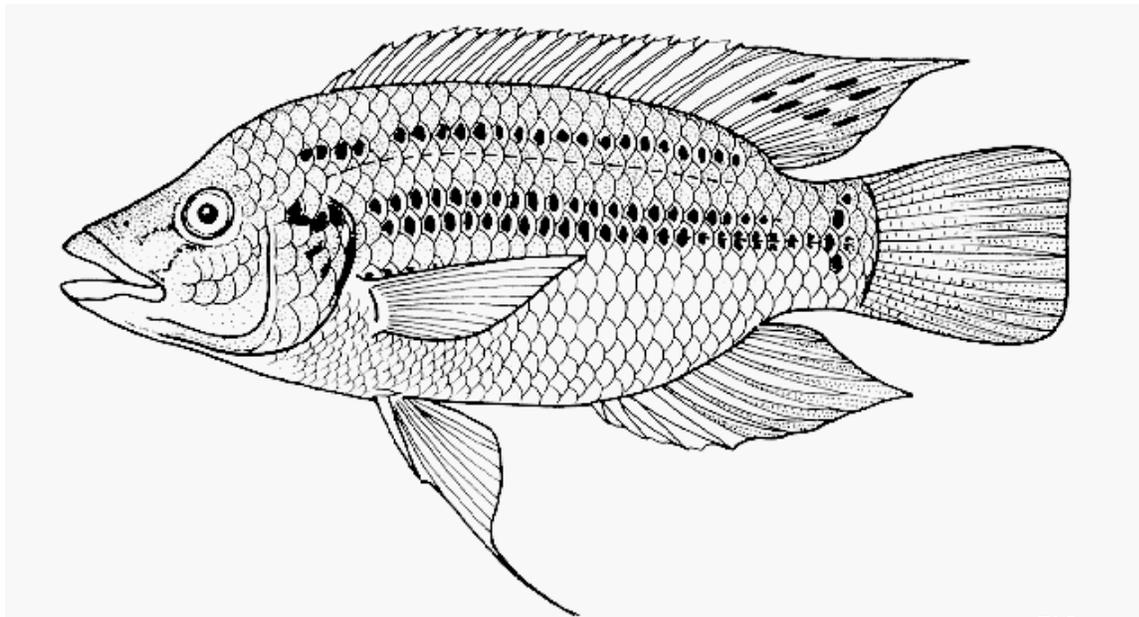
U.S. Fish & Wildlife Service, March 2012

Revised, June 2018

Web Version, 12/16/2020

Organism Type: Fish

Overall Risk Assessment Category: Uncertain



FAO

Image by: D. H. Eccles. Licensed under Creative Commons BY-NC 3.0 Unported. Available: <http://www.fishbase.org/photos/PicturesSummary.php?ID=1448&what=species>. “Image of *Oreochromis korogwe*.”

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“Africa: Lower part of the Pangani River system [Kenya and Tanzania] and the neighboring Zigi River in Tanzania.”

From Shechonge et al. (2018):

“Our study has, however, confirmed that *O. korogwe* has a distribution broader than reported by Trewavas (1983). We found it to be present in three lakes near Rutamba in southern Tanzania. The population in Lake Rutamba had previously been sampled in 1982, but the few small specimens collected were assigned to *Oreochromis placidus* (Trewavas 1941) by Trewavas (1983). With the benefit of a large collection of freshly collected specimens, the characteristic checkered patterned of the females and immature males can be seen, along with the diagnostic pale flank bars of sexually mature male *O. korogwe*.”

Status in the United States

No records of *Oreochromis korogwe* in the wild or in trade in the United States were found.

The Florida Fish and Wildlife Conservation Commission has listed the tilapia *O. korogwe* as a prohibited species. Prohibited nonnative species (FFWCC 2018), "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.

Possession of any species of tilapia is prohibited without permit in the State of Louisiana (Louisiana State Legislature 2019).

O. korogwe 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.”

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 *Oreochromis* are listed as prohibited in Texas (Texas Parks and Wildlife 2020).

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 *Oreochromis* 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 *Oreochromis korogwe* in the United States were found.

Remarks

From Bradbeer et al. (2018):

“The evidence of hybridization between the sympatric native species *O. korogwe* and *O. jipe* was notable in the Pangani Falls Dam, constructed in 1994.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2018), *Oreochromis korogwe* (Lowe 1955) is the valid name for this species. It was originally described as *Tilapia mossambica korogwe* Lowe 1955.

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 korogwe* (Lowe, 1955)

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 20.8 cm SL male/unsexed; [Trewavas 1983]”

Environment

From Froese and Pauly (2018):

“Freshwater; brackish; benthopelagic.”

Climate

From Froese and Pauly (2018):

“Tropical”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“Africa: Lower part of the Pangani River system [Kenya and Tanzania] and the neighboring Zigi River in Tanzania.”

From Shechonge et al. (2018):

“Our study has, however, confirmed that *O. korogwe* has a distribution broader than reported by Trewavas (1983). We found it to be present in three lakes near Rutamba in southern Tanzania. The population in Lake Rutamba had previously been sampled in 1982, but the few small specimens collected were assigned to *Oreochromis placidus* (Trewavas 1941) by Trewavas (1983). With the benefit of a large collection of freshly collected specimens, the characteristic checkered patterned of the females and immature males can be seen, along with the diagnostic pale flank bars of sexually mature male *O. korogwe*.”

Introduced

From Froese and Pauly (2018):

“Possibly introduced in Lake Chala [Kenya] [Seegers et al. 2003].”

From Shechonge et al. (2018):

“There are additional reports of *O. korogwe* (Dieleman et al., 2015) and *O. pangani* (now *O. jipe*) (Dadzie et al., 2000) from Lake Chala. From our observations of samples collected at Lake Chala, we could not confirm these records [...]”

Means of Introduction Outside the United States

From Froese and Pauly (2018):

“Widely distributed to farm ponds [Eccles 1992].”

Short Description

From Froese and Pauly (2018):

“Dorsal spines (total): 16 - 18; Dorsal soft rays (total): 9-11; Anal spines: 3-4; Anal soft rays: 8 - 11; Vertebrae: 29 - 30. Diagnosis: about 50% of individuals with 4 anal fin spines; modal numbers of vertebrae (29), dorsal rays (27) and gill-rakers (15) low; jaws of breeding males enlarged; females and non-breeding males with horizontal and vertical elements of melanin pattern conspicuous, especially at their junctions, where blotches are often drawn out vertically [Trewavas 1983]. Breeding males with throat and chest black [Trewavas 1983], and conspicuous broad dark vertical bars on the lower half of the body [Trewavas 1966, 1983; Eccles 1992].”

“Maxillary extending nearly to below eye in some males; [...]; 2 occasionally 3 rows of scales on cheek; 4-6 scales between bases of pectoral and pelvic fins; scales small on chest [Trewavas 1983]. Long dorsal and anal fins; pectoral fins short, not reaching anus [Lowe 1955]. Pelvic fins drawn out into a long filament in mature males; genital papilla in both sexes small and flanged [Trewavas 1983].”

“Breeding males: no marked breeding dress; corner of caudal fin white [Trewavas 1983]. Lower lip pale, but lower parts of head and branchiostegal membrane very dark or black; no yellow colour on flanks, belly or caudal fin, and no sky-blue areas on dorsal and anal fins [Trewavas 1966]. Sexually inactive males: a general dark iridescent blackish green colour, more green and iridescent on the snout; narrow red margin along the length of the dorsal fin [Trewavas 1983].”

Froese and Pauly (2018) also list 29–32 scales on lateral line, 3.5–4 scale rows above lateral line, and 16–18 scales around caudal peduncle.

Biology

From Hanssens (2006):

“Lives in rivers and lakes where it feeds on insects and algae (Lowe 1955).”

Human Uses

From Froese and Pauly (2018):

“Aquaculture: likely future use”

Diseases

No records of OIE-reportable diseases (OIE 2020) were found for *Oreochromis korogwe*.

Poelen et al. (2014) list *Gyrodactylus niloticus* and *G. shariffi* as parasites of *O. korogwe*.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

A questionable record of introduction to Lake Chala, Kenya has been reported (Froese and Pauly 2018; Shechonge et al. 2018). No information on any impacts from this introduction was found.

Oreochromis korogwe is regulated in multiple States. See Section 1 for details.

4 History of Invasiveness

Reported introductions of *Oreochromis korogwe* outside its native range have not been confirmed. The only information available on trade of this species is a speculation on future use. Without a confirmed population outside its native range and without evidence of a high volume of trade, the history of invasiveness for *O. korogwe* is classified as “No Known Nonnative Population.”

5 Global Distribution



Figure 1. Known global distribution of *Oreochromis korogwe*. Locations are in Tanzania, Kenya, Mozambique, and South Africa. Map from GBIF Secretariat (2018). The locations in South Africa and Mozambique (three southern points) were not used as source points for the climate match. The record information indicates that the specimens were identified as either *Oreochromis mossambicus* or *Tilapia mossambicus* (GBIF Secretariat 2018) which is a separate species from *O. korogwe*.



Figure 2. Additional known global distribution of *Oreochromis korogwe*. Locations are in Tanzania. Map from VertNet (2018).

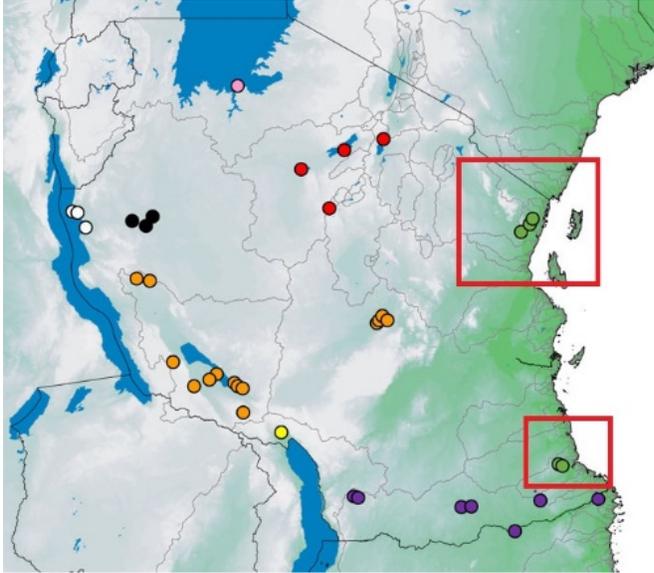


Figure 3. Additional known global distribution of *Oreochromis korogwe* (green circles highlighted by red boxes). Locations are in Tanzania. Map adapted from Shechonge et al. (2018), licensed under Creative Commons BY 4.0.

6 Distribution Within the United States

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

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Oreochromis korogwe* was medium in peninsular Florida, southern Texas, and in small areas in southern Arizona and California. The climate match was low everywhere else. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.001, low (scores between 0.000 and 0.005, inclusive, are classified as low). Florida and Texas had medium individual Climate 6 scores. All other States had low individual scores.

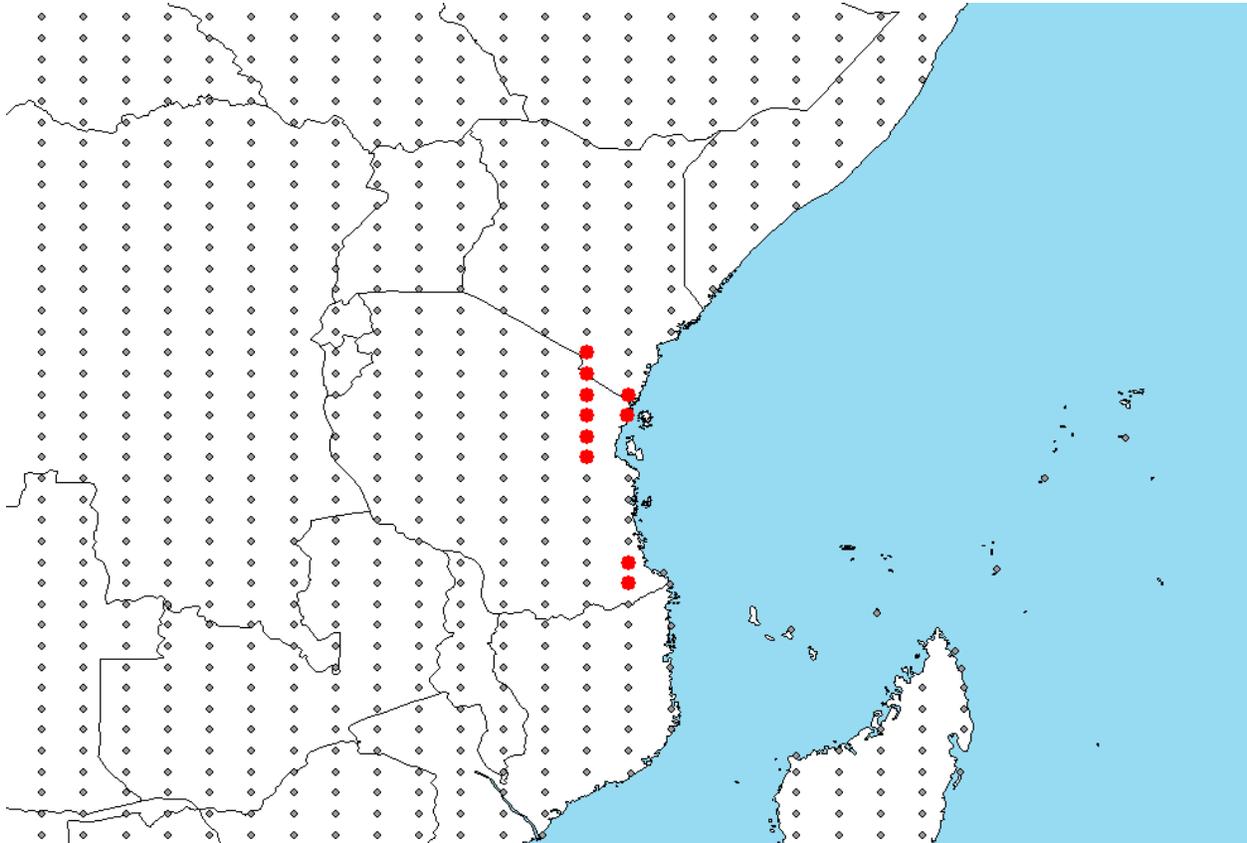


Figure 4. RAMP (Sanders et al. 2018) source map showing weather stations in Africa selected as source locations (red; Kenya and Tanzania) and non-source locations (gray) for *Oreochromis korogwe* climate matching. Source locations from GBIF Secretariat (2018), Shechonge et al. (2018), and VertNet (2018). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

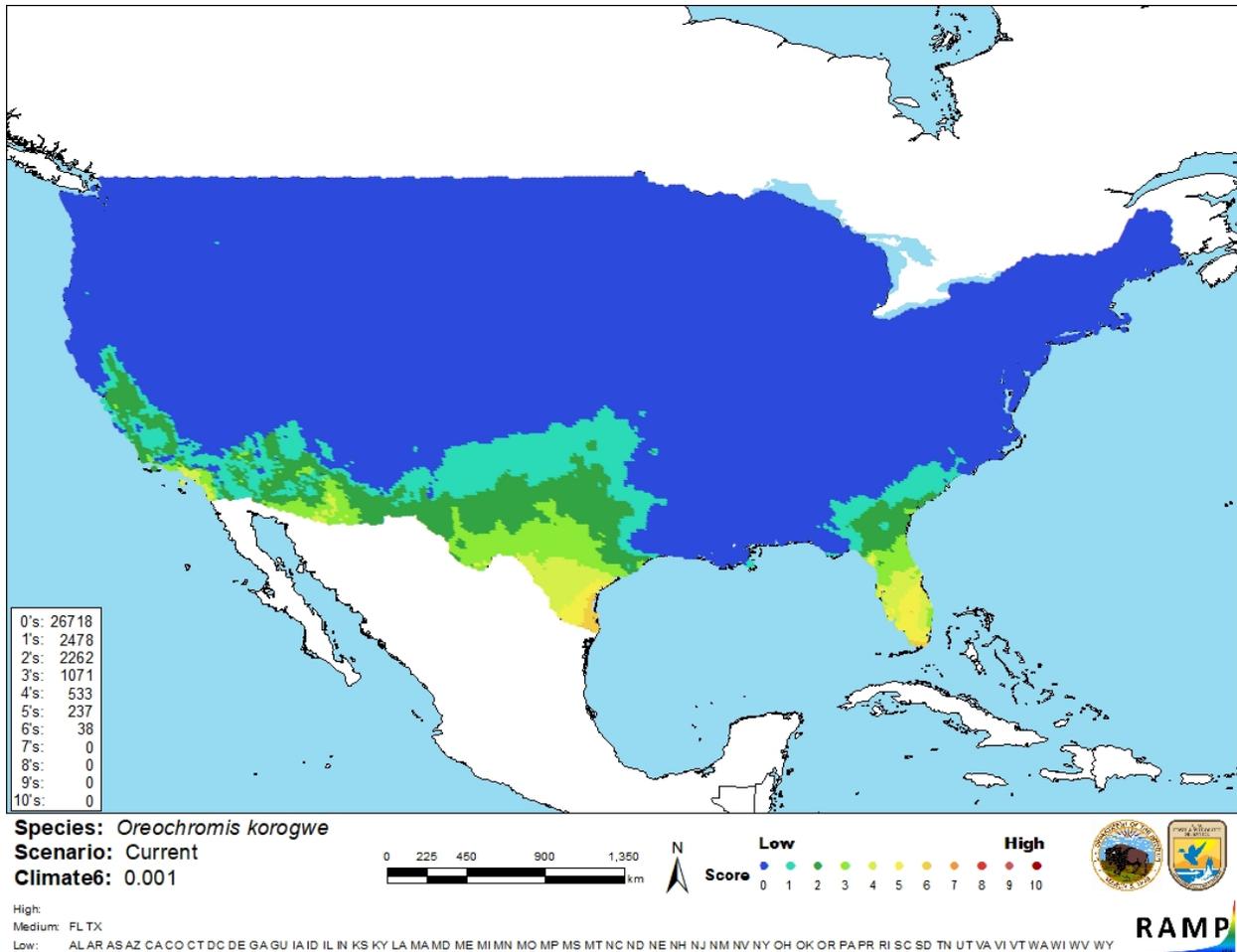


Figure 5. Map of RAMP (Sanders et al. 2018) climate matches for *Oreochromis korogwe* in the contiguous United States based on source locations reported by GBIF Secretariat (2018), Shechonge et al. (2018), and VertNet (2018). Counts of climate match are tabulated on the left. 0/Blue = Lowest match, 10/Red = 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 *Oreochromis korogwe* is low. Some biological information is available for the species. A single record of introduction was found but it is questionable if the species was identified correctly. No information on impacts from that potential introduction was available.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Oreochromis korogwe is a tilapia from the coastal areas of Tanzania and Kenya. The history of invasiveness is classified as “No Known Nonnative Population.” A single record of introduction was found but other authors question the identification of the species and were not able to confirm the identification on examining the sample materials. No information on any impacts from the potential introduction was available. *O. korogwe* is a regulated species in multiple States. The climate match was low but with some areas of medium match in the south. The certainty of assessment is low; the overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Climate Match (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.

Bradbeer S, Harrington JJ, Watson H, Warraich A, Shechonge A, Smith A, Tamatamah R, Ngatunga BP, Turner GF, Genner MJ. 2018. Limited hybridization between introduced and Critically Endangered indigenous tilapia fishes in northern Tanzania. *Hydrobiologia* 832:257–268(2019).

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- VertNet. 2018. VertNet. Available: <http://portal.vertnet.org/search?q=%22Oreochromis+korogwe%22> (June 2018).

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).

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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.

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Dieleman JB, Van Bocxlaer C, Manntschke DW, Nyingi D, Adriaens, Verschuren D. 2015. Tracing functional adaptation in African cichlid fishes through morphometric analysis of fossil teeth: exploring the methods. *Hydrobiologia* 755:73–88.

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Lowe RH. 1955. New species of *Tilapia* (Pisces, Cichlidae) from Lake Jipe and the Pangani River, East Africa. *Bulletin of the British Museum (Natural History) Zoology* 2:347–368.

Seegers L, De Vos L, Okeyo DO. 2003. Annotated checklist of the freshwater fishes of Kenya (excluding the lacustrine haplochromines from Lake Victoria). *Journal of East African Natural History* 92:11–47.

Trewavas E. 1966. A preliminary review of fishes of the genus *Tilapia* in the eastward-flowing rivers of Africa, with proposals of two new specific names. *Revue de Zoologie et de Botanique Africaines* 74(3-4):394–424.

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