

***Oreochromis amphimelas* (a tilapia, no common name)**

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2012

Revised, July 2018

Web Version, 11/30/2020

Organism Type: Fish

Overall Risk Assessment Category: Uncertain



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“Africa: Lakes Manyara, Eyasi, Kitangiri and Singida in Tanzania.”

From Bayona (2006):

“The species is endemic to the alkaline Rift Valley Lakes (Trewavas 1983). It is distributed in Lake Manyara (extent of occurrence (EOO) = 413 km²), Lake Eyas, the Yaeda basin (EOO = 1,160 km²), Lake Kitangiri (115 km²) and Lake Singida (EOO = 105 km²). The estimated EOO is 1,800 km².”

Status in the United States

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

The Florida Fish and Wildlife Conservation Commission has listed the tilapia *O. amphimelas* as a prohibited species. Prohibited nonnative species (FFWCC 2016), “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. amphimelas 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 amphimelas* occurrences in the United States were found.

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2018), *Oreochromis amphimelas* (Hilgendorf 1905) is the current valid name of this species. *Oreochromis amphimelas* was originally described as *Tilapia amphimelas* Hilgendorf 1905.

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 amphimelas* (Hilgendorf, 1905)

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Maturity: L_m ?, range 8 - ? cm

Max length : 28.0 cm SL male/unsexed; [Eccles 1992]; 33.3 cm (female)”

From Bayona (2006):

“The species is distributed throughout the waters of the occupied lakes. It grows to about 13 cm maximum size and size at first maturity varies with sites. Bwathondi et al. (2000) reported 9.5 cm and 10.5 cm for size at maturity in Oltukai and Parkside of Lake Manyara, respectively.”

Environment

From Froese and Pauly (2018):

“Freshwater; brackish; benthopelagic.”

Climate

From Froese and Pauly (2018):

“Tropical; 3°N - 5°S”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“Africa: Lakes Manyara, Eyasi, Kitangiri and Singida in Tanzania.”

From Bayona (2006):

“The species is endemic to the alkaline Rift Valley Lakes (Trewavas 1983). It is distributed in Lake Manyara (extent of occurrence (EOO) = 413 km²), Lake Eyas, the Yaeda basin (EOO = 1,160 km²), Lake Kitangiri (115 km²) and Lake Singida (EOO = 105 km²). The estimated EOO is 1,800 km².”

Introduced

From Shechonge et al. (2018):

“Finally, we also collected *Oreochromis amphimelas* (Hilgendorf, 1905) from Lake Sulungali (often labelled as Lake Sulunga on maps) near Dodoma therefore extending its range. This is a large shallow endorheic lake prone to fluctuations in salinity associated with water level changes, presenting similar conditions to the known localities for this species in Lakes Manyara, Eyasi, Singida and Kitangiri (Eccles, 1992). At present it is unclear if this *O. amphimelas* has been introduced to Lake Sulungali or is native to the catchment.”

Means of Introduction Outside the United States

No information on means of introduction outside of the United States for *Oreochromis amphimelas*.

Short Description

From Froese and Pauly (2018):

“Dorsal spines (total): 12 - 14; Dorsal soft rays (total): 10-12; Anal spines: 3; Anal soft rays: 8 - 11; Vertebrae: 30 - 32. Diagnosis: preorbital bone narrow [Trewavas 1983] and scaly, with 4 pores [Trewavas 1983; Eccles 1992]. Upper profile of head nearly horizontal, concave in specimens 130mm and over; caudal peduncle long, dorsal and anal fins do not reach its posterior end when adpressed [Trewavas 1983].”

Biology

From Froese and Pauly (2018):

“Inhabits lakes; grows to only about 13 cm in the more saline lakes Eyasi and Manyara, but attains a bigger size under less saline conditions [Bailey 1968; Eccles 1992]. Microphagous [Trewavas and Fryer 1965]. Mouthbrooder [Trewavas 1983].”

“Breeding cycle of about 7 weeks; there is evidence of biparental mouthbrooding [Eccles 1992].”

Human Uses

From Bayona (2006):

“Over-fishing: fishing with small meshed nets captures all fish including the juveniles, leading to problems of growth over-fishing.”

Diseases

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

Froese and Pauly (2018) lists Lymphocystis as a disease that can impact *O. amphimelas*.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No records of impacts from introductions of *Oreochromis amphimelas* were found.

4 History of Invasiveness

There are no known and confirmed introductions of *Oreochromis amphimelas* outside of its native range, therefore the History of Invasiveness is classified as “No Known Nonnative Population.”

5 Global Distribution



Figure 1. Known global distribution of *Oreochromis amphimelas*. Map from GBIF Secretariat (2020).

6 Distribution Within the United States

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

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Oreochromis amphimelas* was low for most of the contiguous United States with small patches of medium match in southern California, southern Arizona, and southern 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 a low individual climate score.

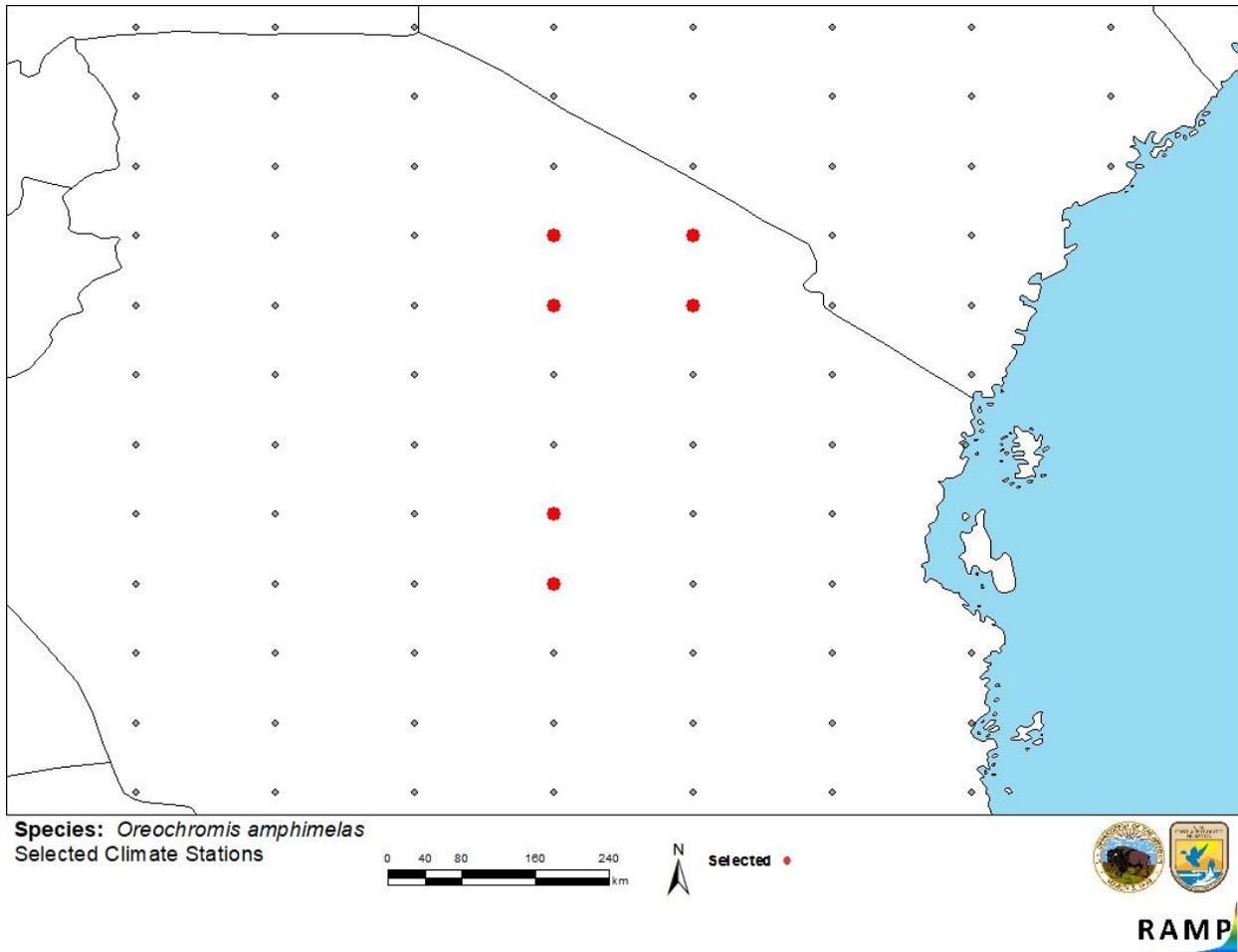


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in Tanzania selected as source locations (red) and non-source locations (gray) for *Oreochromis amphimelas* climate matching. Source locations from GBIF Secretariat (2020). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

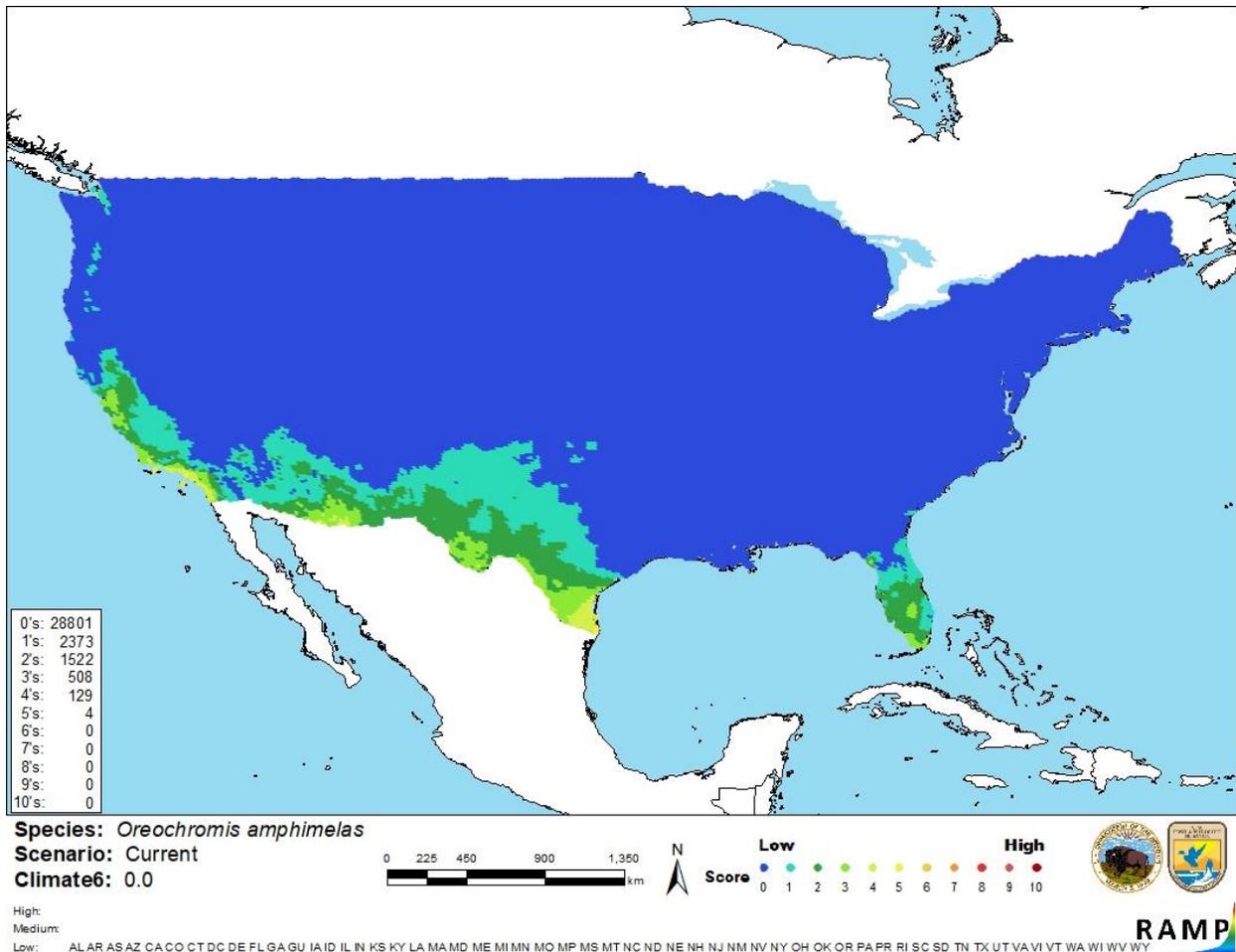


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Oreochromis amphilmas* in the contiguous United States based on source locations reported by GBIF Secretariat (2020). Counts of climate match are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

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 this assessment is low. There is minimal information for *Oreochromis amphilmas* and a lack of peer-reviewed literature. Shechonge et al. (2018) suggests introduction of non-native *Oreochromis* species in Tanzanian lakes; however, no specific evidence regarding expansion of *O. amphilmas* beyond its native range was found.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Oreochromis amphimelas is a native fish to Africa. There is little information available for this species. The history of invasiveness is classified as “No Known Nonnative Population.” Shechonge et al. (2018) reports *O. amphimelas* as expanding from its native range, without explicitly stating that it is due to non-native introductions, but with no reports of impacts. The climate match analysis resulted in a low match for the contiguous United States. The certainty of this assessment is low. The overall risk assessment category 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:** 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.

Bayona JDR. 2006. *Oreochromis amphimelas*. The IUCN Red List of Threatened Species 2010: e.T60629A12388607. Available: <http://www.iucnredlist.org/details/full/60629/0> (July 2018).

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).

Froese R, Pauly D, editors. 2018. *Oreochromis amphimelas* (Hilgendorf, 1905). FishBase. Available: <https://www.fishbase.de/summary/2035> (July 2018).

GBIF Secretariat. 2020. GBIF backbone taxonomy: *Oreochromis amphimelas* (Hilgendorf, 1905). Copenhagen: Global Biodiversity Information Facility. Available: <https://www.gbif.org/species/2372276> (December 2020).

[ITIS] Integrated Taxonomic Information System. 2018. *Oreochromis amphimelas* (Hilgendorf, 1905). Reston, Virginia: Integrated Taxonomic Information System. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=648836 (June 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/> (November 2020).

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

Shechonge A, Ngatunga BP, Bradbeer SJ, Day JJ, Freer JJ, Ford AGP, Kihedu J, Richmond T, Mzighani S, Smith AM, Sweke EA, Tamatamah R, Tyers AM, Turner GF, Genner MJ. 2019. Widespread colonization of Tanzanian catchments by introduced *Oreochromis* tilapia fishes: the legacy from decades of deliberate introduction. *Hydrobiologia* 832:235–253.

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

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.

Bailey RG. 1968. Fishes of the genus *Tilapia* (Cichlidae) in Tanzania, with a key for their identification. *East African Agricultural and Forestry Journal* 34:194–202.

Bwathondi POJ, Ngatunga BP, Mwambungu JA. 2000. Biodiversity of the aquatic fauna of Tarangire River and Lake Manyara catchment basin, Tanzania. Unpublished consultancy report to WWF.

Eccle DH. 1992. FAO species identification sheets for fishery purposes. Field guide to the freshwater fishes of Tanzania. Rome: FAO. Prepared and published with the support of the United Nations Development Programme, Project URT/87/016.

Hilgendorf FM. 1905. Fische von Deutsch und Englisch Ost-Afrika. Gesammelt von Oscar Neumann 1893–1895. *Zoologische Jahrbücher, Abteilung für Systematik, Geographie und Biologie der Tiere (Jena)* 22:405–420.

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

Trewavas E, Fryer G. 1965. Species of *Tilapia* (Pisces, Cichlidae) in Lake Kitangiri, Tanzania, East Africa. *Journal of Zoology* 147:108–118.