

Black Tilapia (*Oreochromis placidus*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, June 2013
Revised, February 2018 and August 2019
Web Version, 8/6/2019



Photo: The South African Institute for Aquatic Biodiversity. Licensed under Creative Commons BY-SA 4.0. Available: <https://www.gbif.org/occurrence/1230410743>. (February 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

“Africa: Lower Zambezi and southwards in the lower parts of the Sabi, Lundi, Pungwe and Buzi Rivers [Zimbabwe, Malawi, Mozambique, South Africa]; Ruvuma River on the Tanzanian-Mozambique border; Lake Rutumba, Lupululu system, and the Lupuledi west of Lindi [Tanzania].”

From Eschmeyer et al. (2018):

“Southeastern Africa”

Status in the United States

Oreochromis placidus has not been reported as introduced or established in the United States.

There is no indication that *O. placidus* is currently in trade in the United States, based on a search of the literature and online aquarium retailers.

The Florida Fish and Wildlife Conservation Commission has listed *Oreochromis placidus* as a prohibited species (FFWCC 2019).

From Minnesota DNR (2019):

“Minnesota has several state laws intended to minimize the introduction and spread of invasive species of wild animal and aquatic plants in the state. Using a four-tiered system, invasive species are classified as **prohibited, regulated, unregulated nonnative species**, or are unclassified and remain as **unlisted nonnative species**.”

“It is legal to possess, sell, buy, and transport regulated invasive species [in Minnesota], but they may not be introduced into a free-living state, such as being released or planted in public waters. The regulated invasive species are: [...] tilapia (*Oreochromis*, *Sarotherodon*, and *Tilapia* spp.)”

From Montana Fish, Wildlife & Parks (2019):

“Prohibited species are live, exotic wildlife species, subspecies, or hybrid of that species, including viable embryos or gametes, that may not be possessed, sold, purchased, exchanged, or transported in Montana, except as provided in MCA 87-5-709 or ARM 12.6.2220 [...] Tilapia (*Oreochromis* spp.)”

From Texas Parks and Wildlife Department (2019):

“The organisms listed here are legally classified as exotic, harmful, or potentially harmful. No person may possess or place them into water of this state except as authorized by the [Texas Parks and Wildlife] department. Permits are required for any individual to possess, sell, import, export, transport or propagate listed species for zoological or research purposes; for aquaculture (allowed only for Blue, Nile, or Mozambique tilapia, Triploid Grass Carp, or Pacific White Shrimp); or for aquatic weed control (for example, Triploid Grass Carp in private ponds). [...] Tilapia, Family Cichlidae
All species of genera *Tilapia*, *Oreochromis* and *Sarotherodon*”

Oreochromis spp. are listed as restricted in the State of Vermont (Vermont Fish and Wildlife Regulations 2009).

From Virginia DGIF (2019):

“A special permit is required, and may be issued by the Department, if consistent with the Department’s fish and wildlife management program, to import, possess, or sell the following non-native (exotic) amphibians, fish, mollusks, aquatic invertebrates, and reptiles: [...] tilapia [...]”

Means of Introduction into the United States

Oreochromis placidus has not been reported as introduced or established in the United States.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Family Labroidei
Genus *Oreochromis* Gunther, 1989
Species *Oreochromis placidus* (Trewavas, 1941)”

From Eschmeyer et al. (2018):

“Current status: Valid as *Oreochromis placidus* (Trewavas 1941).”

From Froese and Pauly (2017):

“Previously, two subspecies were recognized: *Oreochromis placidus placidus* and *Oreochromis placidus ruvumae*.”

Size, Weight, and Age Range

From Froese and Pauly (2017):

“Max length: 35.5 cm TL male/unsexed; [Trewavas 1983]”

Environment

From Froese and Pauly (2017):

“Freshwater; brackish; benthopelagic.”

Climate/Range

From Froese and Pauly (2017):

“Tropical; 13°S - 28°S”

Distribution Outside the United States

Native

From Froese and Pauly (2017):

“Africa: Lower Zambezi and southwards in the lower parts of the Sabi, Lundi, Pungwe and Buzi Rivers [Zimbabwe, Malawi, Mozambique, South Africa]; Ruvuma River on the Tanzanian-Mozambique border; Lake Rutumba, Lupululu system, and the Lupuledi west of Lindi [Tanzania].”

From Eschmeyer et al. (2018):

“Southeastern Africa”

Introduced

This species has not been reported as introduced or established outside its native range.

Means of Introduction Outside the United States

This species has not been reported as introduced or established outside its native range.

Short Description

From Froese and Pauly (2017):

“Dorsal spines (total): 16 - 18; Dorsal soft rays (total): 10-13; Anal spines: 4; Anal soft rays: 8 - 11; Vertebrae: 29 - 31. Silvery to steel-grey, whitish below. Breeding males are very dark grey on head and body with throat and all fins black; with a red or orange margin on the dorsal and grey or black marblings on the gill-cover.”

Biology

From Froese and Pauly (2017):

“Prefers quiet pools with marginal vegetation. Has been reported only from fresh water and low altitudes and latitudes, so that its salinity and temperature tolerances are probably narrower than those of *O. mossambicus* [Trewavas 1983].”

According to Nhiwatiwa et al. (2009), the diet of *O. placidus* includes algae, invertebrates and insects.

Human Uses

From Froese and Pauly (2017):

“Fisheries: commercial”

Diseases

No OIE-reportable diseases (OIE 2019) have been documented for this species.

According to Barson et al. (2008) and Dalu et al. (2012), *Oreochromis placidus* is known to carry the crustacean ectoparasite *Lernaea cyprinacea*.

Threat to Humans

From Froese and Pauly (2017):

“Harmless”

3 Impacts of Introductions

This species has not been reported as introduced outside its native range, so any impacts of introduction remain unknown.

The Florida Fish and Wildlife Conservation Commission has listed *Oreochromis placidus* as a prohibited species (FFWCC 2019).

From Minnesota DNR (2019):

“Minnesota has several state laws intended to minimize the introduction and spread of invasive species of wild animal and aquatic plants in the state. Using a four-tiered system, invasive species are classified as **prohibited, regulated, unregulated nonnative species**, or are unclassified and remain as **unlisted nonnative species**.”

“It is legal to possess, sell, buy, and transport regulated invasive species [in Minnesota], but they may not be introduced into a free-living state, such as being released or planted in public waters. The regulated invasive species are: [...] tilapia (*Oreochromis*, *Sarotherodon*, and *Tilapia* spp.)”

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From Virginia DGIF (2019):

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4 Global Distribution



Figure 1. Global distribution of *Oreochromis placidus*, reported from southeastern Africa. Map from GBIF Secretariat (2019).

5 Distribution within the United States

No known distribution within the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) was low for the northern contiguous United States and medium for the south Atlantic Coast and parts of the Southwest and Southern Great Plains. There was a high match in southern Florida, far southern Texas, and southeastern Arizona and southwestern New Mexico. The Climate 6 score for *O. placidus* was 0.017, indicating an overall medium climate match for the contiguous United States. (Scores between 0.005 and 0.103 are classified as medium.) Individual State climate scores were high for Florida, medium for Arizona and Texas, and low for all other States.

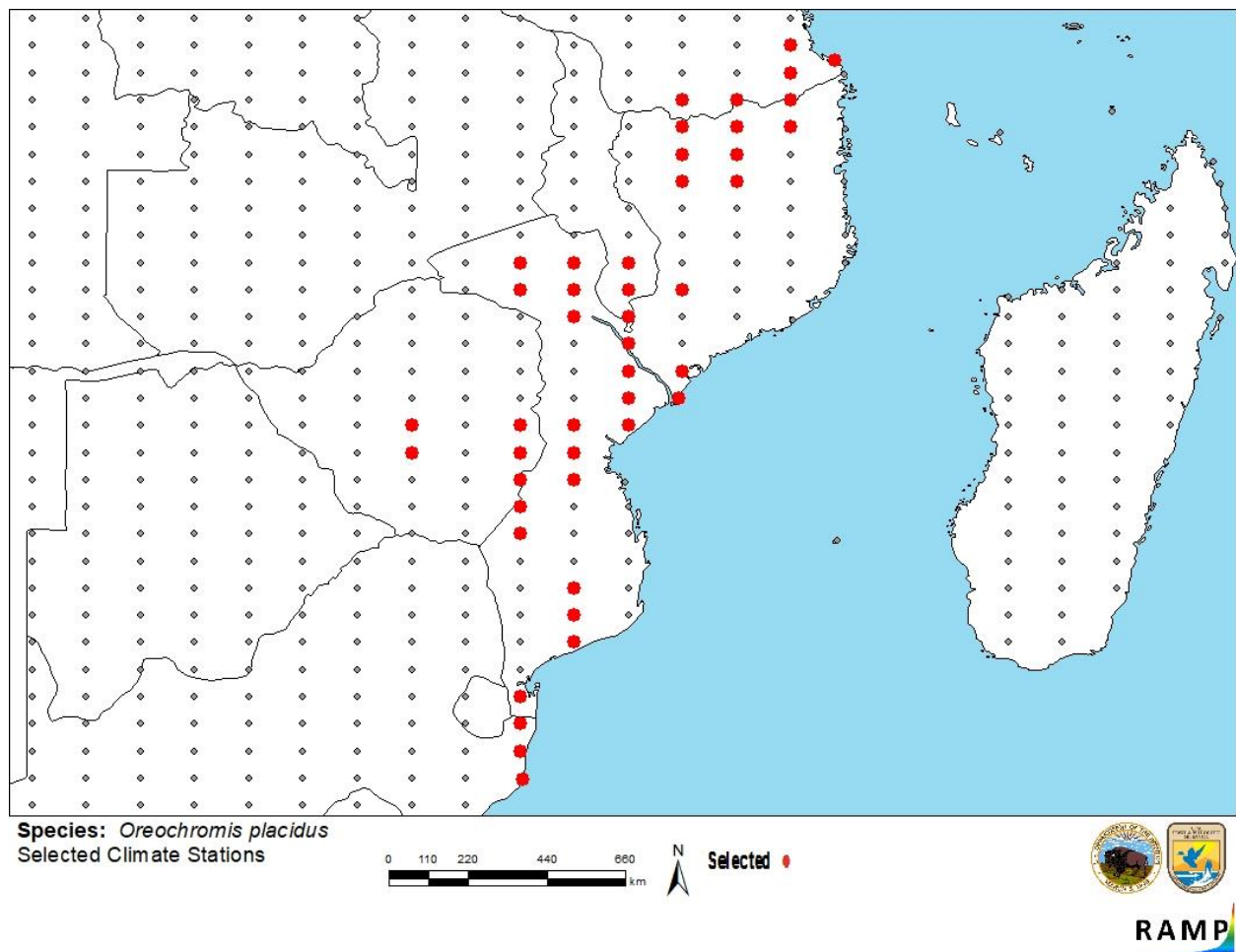


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Tanzania, Malawi, Mozambique, Zimbabwe, South Africa) and non-source locations (gray) for *Oreochromis placidus* climate matching. Source locations from GBIF Secretariat (2019).

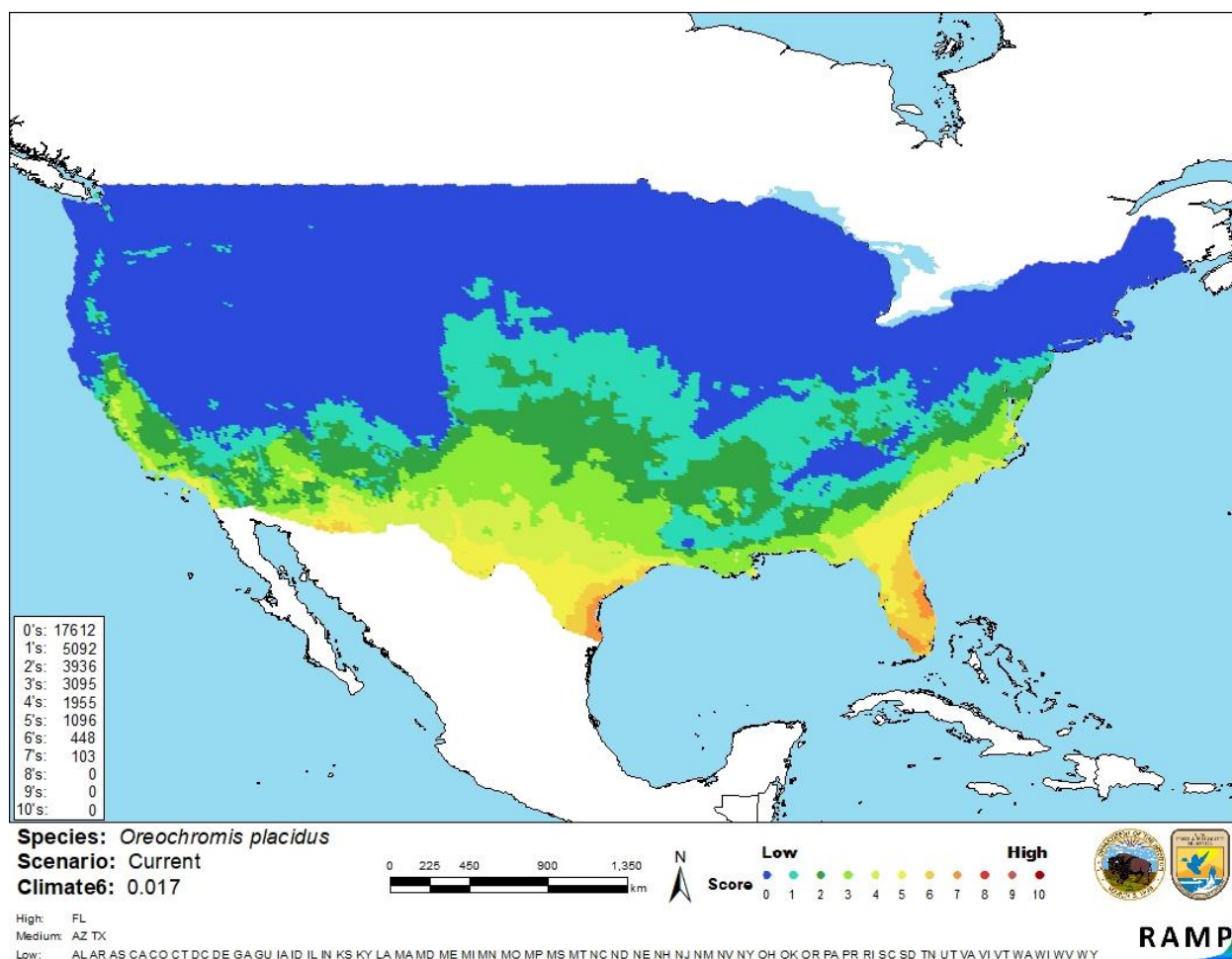


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Oreochromis placidus* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). 0=Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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

Because there have been no documented introductions of *Oreochromis placidus* outside its native range, there is no information available on any impacts of introduction of this species. Distribution data for *Oreochromis placidus* is available. Additional information and research on this species will be needed to increase the certainty of this assessment. Based on available data the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Oreochromis placidus, Black Tilapia, is a fish native to southeastern Africa. Numerous U.S. States prohibit or restrict the trade, possession, or use of this species. It has not been reported as introduced outside its native range, so history of invasiveness of *O. placidus* is classified as uncertain. There is a commercial fishery for this species within its native range. The climate match of *Oreochromis placidus* to the contiguous United States is medium overall with high climate match occurring in southern Florida, far southern Texas, southeastern Arizona and southwestern New Mexico. Certainty of assessment is low due to lack of information. Overall risk posed by this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **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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- Dalu, T., T. Nhiwatiwa, B. Clegg, M. Barson. 2012. Impact of *Lernaea cyprinacea* Linnaeus 1758 (Crustacea: Copepoda) almost a decade after an initial parasitic outbreak in fish of Malilangwe Reservoir, Zimbabwe. *Knowledge and Management of Aquatic Ecosystems* 406, 03.
- Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2018. *Catalog of Fishes: genera, species, references*. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (February 2018).
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- OIE (World Organisation for Animal Health). 2019. OIE-listed diseases, infections and infestations in force in 2019. World Organisation for Animal Health, Paris. Available: www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/. (August 2019).
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- Texas Parks and Wildlife Department. 2019. Invasive, prohibited and exotic species. Texas Parks and Wildlife Department, Austin, Texas. Available: https://tpwd.texas.gov/huntwild/wild/species/exotic/prohibited_aquatic.phtml. (August 2019).
- Vermont Fish and Wildlife Regulations. 2009. Rule establishing a list for prohibited, restricted and unrestricted fish species. Vermont Statutes Annotated, title 10 appendix, section 121.
- Virginia DGIF (Virginia Department of Game and Inland Fisheries). 2019. Nongame fish, reptile, amphibian and aquatic invertebrate regulations. Virginia Department of Game and Inland Fisheries, Henrico, Virginia.

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.

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