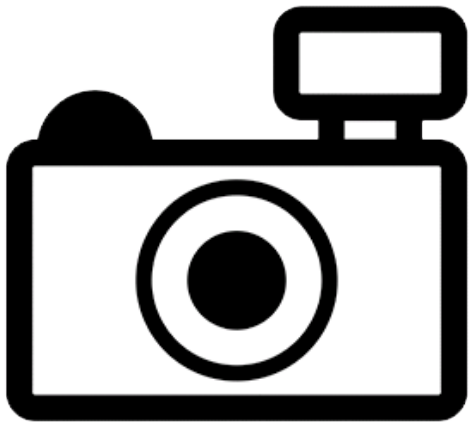
Oreochromis saka (a tilapia, no common name)
Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2012
Revised, June 2018
Web Version, 5/1/2020

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: Endemic to Lake Malawi [Malawi, Mozambique, Tanzania]."

Status in the United States

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

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

Means of Introductions in the United States
No records of *Oreochromis saka* 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 saka* (Lowe 1953) 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 saka* (Lowe, 1953)

Size, Weight, and Age Range
From Froese and Pauly (2018):

"Maturity: Lm 29.0, range 25 - ? cm
Max length : 36.0 cm SL male/unsexed; [Eccles 1992]

Environment
From Froese and Pauly (2018):

"Freshwater; benthopelagic."

"Occurs at a [water] temperature range of 21.5-29.0 °C [Trewavas 1983]."

Climate
From Froese and Pauly (2018):

"Tropical; 9°S - 15°S"

Distribution Outside the United States
Native
From Froese and Pauly (2018):

"Africa: Endemic to Lake Malawi [Malawi, Mozambique, Tanzania]."

Introduced
No records of *Oreochromis saka* introductions were found.

Means of Introduction Outside the United States
No records of *Oreochromis saka* introductions were found.

Short Description
From Froese and Pauly (2018):

"Dorsal spines (total): 15 - 17; Dorsal soft rays (total): 10-11; Anal spines: 3; Anal soft rays: 8 - 10; Vertebrae: 30 - 32. Breeding males black, in some with white or yellowish dorsal lappets. Testes broad, white and sinuous when fully ripe. Lower pharyngeal toothed area with concave sides; median length of bone 1.2-1.3 times its width and 35.5-39.2 % length of head; blade 1.3-2.1 times median length of toothed area. Caudal fin scaly."

Biology
From Froese and Pauly (2018):

"Inhabits very shallow and vegetated regions. Feeds on diatoms and debris collected from the bottom and from between vegetation [Konings 1990]."

"Forms breeding colonies in water of 2 to 4 m depth off reedy shores."

From McKaye and Stauffer (1988):

"Earlier studies reported that the southern-dwelling species *O. squamipinnis, O. saka, and O. lidole* reproduce at different times of the year: […]; *O. saka,* August-November; […] (Lowe, 1952). Also, differences in depth of breeding were reported: […]; *O. saka, c.* 4 m (Trewavas 1983)."

Human Uses

From Froese and Pauly (2018):

"Fisheries: commercial; aquarium: commercial"

Diseases

No information on parasites or pathogens of *Oreochromis saka* was found. **No records of OIE-reportable diseases (OIE 2020) were found for *O. saka*.**

Threat to Humans

From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions

No records of *Oreochromis saka* introductions were found.

O. saka is a prohibited species in Florida (FFWCC 2018).

4 History of Invasiveness

No records of *Oreochromis saka* introductions were found, therefore the history of invasiveness is "no known nonnative population".

5 Global Distribution

Figure 1. Known global distribution of *Oreochromis saka*. Locations are in Malawi and Tanzania. Map from GBIF Secretariat (2018). The point located in Tanzania (northernmost point, outside of Lake Malawi) was removed as a source location due to lack of peer-reviewed literature to support this point as an established population (GBIF Secretariat 2018).

6 Distribution Within the United States

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

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Oreochromis saka* was low for all of the contiguous United States. There were no areas of medium or high match. 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.

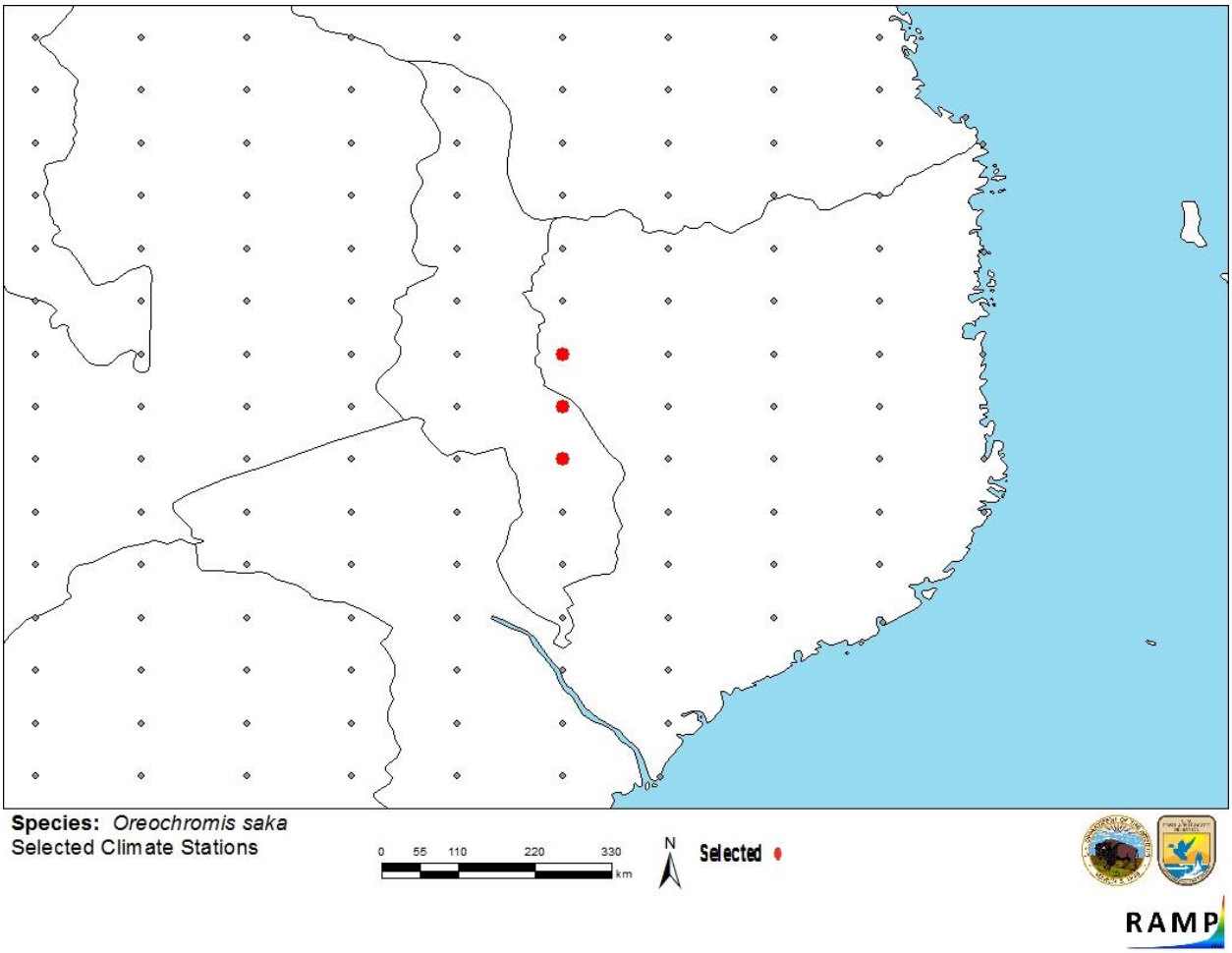


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in southern Africa selected as source locations (red; Malawi, Mozambique) and non-source locations (gray) for *Oreochromis saka* climate matching. Source locations from GBIF Secretariat (2018). Selected source locations are within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

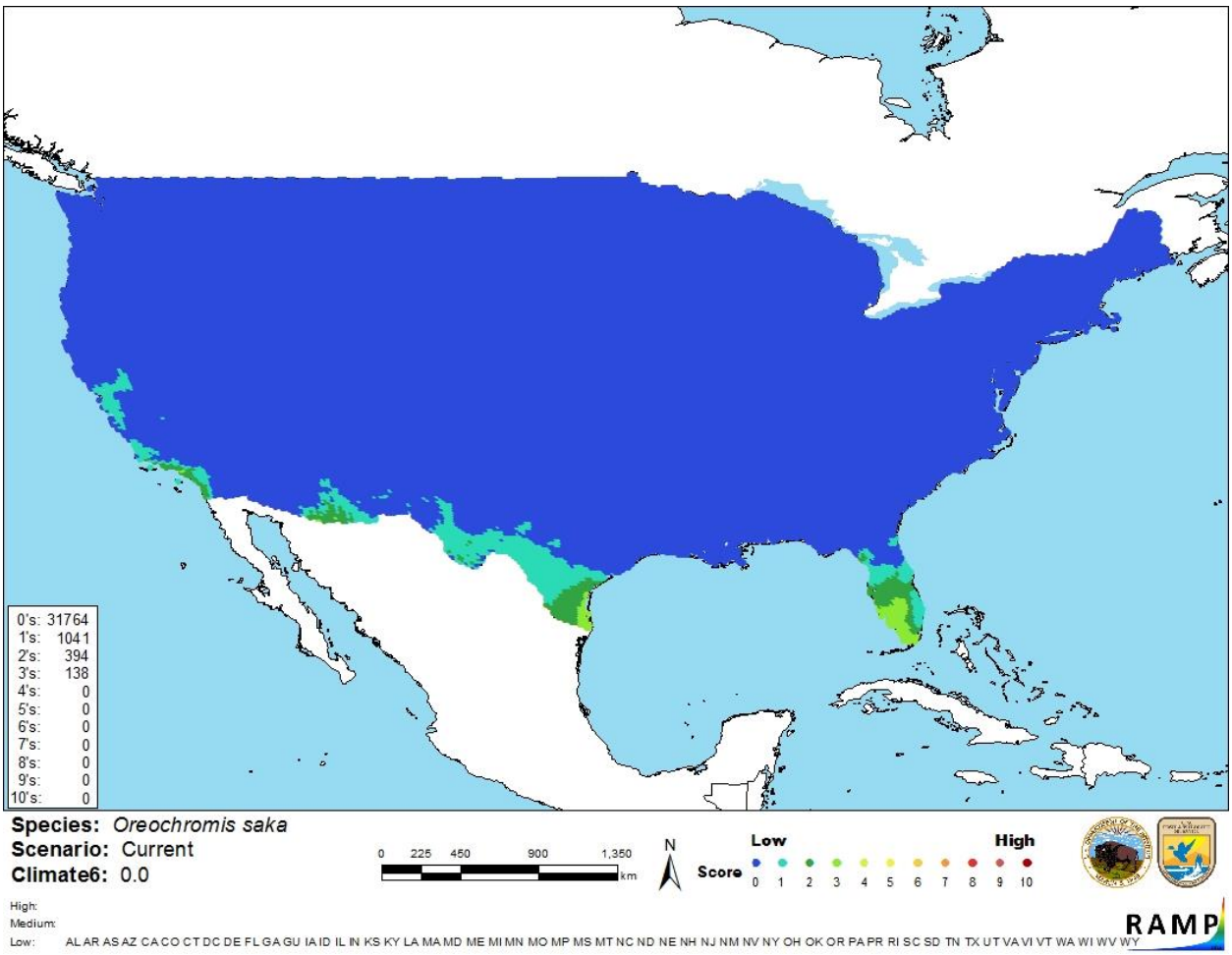


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Oreochromis saka* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

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 saka*. No records of introductions were found, therefore, there is no information on impacts of introduction.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Oreochromis saka is a tilapia endemic to Lake Malawi in Malawi, Mozambique, and Tanzania, Africa. There is some evidence of this species being used in a fishery and in the aquarium industry. There were no records of this species in trade in the United States found and it is listed as a prohibited species in Florida. The history of invasiveness is No Known Nonnative Population. *O. saka* has not been reported as introduced or established outside of its native range. The climate match analysis resulted in a low match for the contiguous United States. The certainty of this assessment is low due to a lack of information. The overall risk assessment category in 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.

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 (June 2018).

[FFWCC] Florida Fish and Wildlife Conservation Commission. 2018. Prohibited species list. Tallahassee, Florida: Florida Fish and Wildlife Conservation Commission. Available: http://myfwc.com/wildlifehabitats/nonnatives/regulations/prohibited/ (June 2018).

Froese R, Pauly D, editors. 2018. *Oreochromis saka* Lowe, 1953. FishBase. Available: http://www.fishbase.org/summary/Oreochromis-saka.html (June 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Oreochromis saka* (Lowe, 1953). Copenhagen: Global Biodiversity Information Facility. Available: https://www.gbif.org/species/2372360 (June 2018).

[ITIS] Integrated Taxonomic Information System. 2018. *Oreochromis saka* (Lowe, 1953). Reston, Virginia: Integrated Taxonomic Information System. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=648854#null (June 2018).

McKaye KR, Stauffer, Jr JR. 1988. Seasonality, depth and habitat distribution of breeding males of *Oreochromis* spp., 'chambo', in Lake Malawi National Park. The Fisheries Society of the British Isles 33:825–834.

[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/ (April 2020).

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

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.

Eccles DH. 1992. FAO [Food and Agriculture Organization] species identification sheets for fishery purposes. Field guide to the freshwater fishes of Tanzania. United Nations Development Programme. Rome: FAO.

Konings A. 1990. Ad Konings's book of cichlids and all the other fishes of Lake Malawi. T.F.H. Publications.

Lowe RH. 1952. Report on the *Tiliapia* and other fish and fisheries of Lake Nyasa 1945–47. Part 2. London: Fishery Publication Colonial Office.

Lowe RH. 1953. Notes on the ecology and evolution of Nyasa fishes of the genus *Tilapia*, with a description of *T. saka* Lowe. Proceedings of the Zoological Society of London 122:1035–1041.

Trewavas E. 1983. Tilapiine fishes of the genera *Sarotherodon, Oreochromis* and *Danakilia*. Bulletin of the British Museum (Natural History) 898:1–583.