

# ***Oreochromis squamipinnis* (a tilapia, no common name)**

## **Ecological Risk Screening Summary**

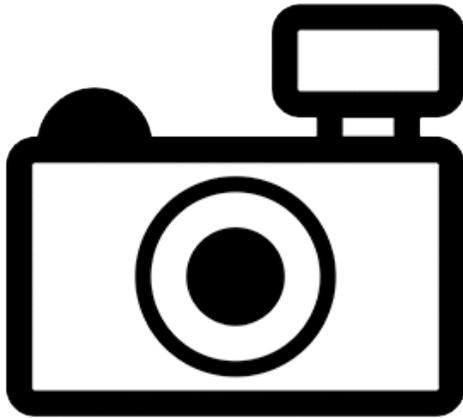
U.S. Fish & Wildlife Service, March 2012

Revised, July 2018

Web Version, 5/6/2020

Organism Type: Fish

Overall Risk Assessment Category: Uncertain



No Photo Available

## **1 Native Range and Status in the United States**

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### **Native Range**

From Froese and Pauly (2018):

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

From Kazembe and Makocho (2004):

“This species is endemic to Lake Malawi [Malawi, Mozambique, Tanzania]. Also found in Lake Malombe and the Shire River as far down as the Lower Shire [Malawi].”

### **Status in the United States**

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

The Florida Fish and Wildlife Conservation Commission has listed the tilapia, *Oreochromis squamipinnis* 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 squamipinnis* occurrences in the United States were found.

## Remarks

No additional remarks.

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2018), *Oreochromis squamipinnis* (Günther 1864) 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 squamipinnis* (Günther, 1864)

### Size, Weight, and Age Range

From Froese and Pauly (2018):

“Maturity:  $L_m$  26.9, range 20 - 37 cm  
Max length : 36.0 cm SL male/unsexed; [Eccles 1992]”

### Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic.”

“Occurs at a temperature range of 21.5-29°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].”

From Kazembe and Makocho (2004):

“This species is endemic to Lake Malawi [Malawi, Mozambique, Tanzania]. Also found in Lake Malombe and the Shire River as far down as the Lower Shire [Malawi].”

Introduced

No records of *Oreochromis squamipinnis* introductions were found.

## **Means of Introduction Outside the United States**

No records of *Oreochromis squamipinnis* introductions were found.

## **Short Description**

From Froese and Pauly (2018):

“Dorsal spines (total): 16 - 17; Dorsal soft rays (total): 10-11; Anal spines: 3; Anal soft rays: 8 - 10; Vertebrae: 30 - 32. Lower pharyngeal toothed area with concave sides; median length of bone 1.26-1.36 times its width and 37.6-40.6 length of head; blade 1.6-2.4 times the median length of the toothed area. Caudal fin scaly.”

From Kazembe and Makocho (2004):

“Mature males of *O. squamipinnis* are easily distinguished from the other chambo, because they have pale heads. Usually the head is blue, but sometimes it can be green or white. The genital tassels may be exceptionally long in *O. squamipinnis*. One 17 cm (6.7 inch) SL male, which held a territory but did not spawn, was reported to have a pair of tassels as long as 9 cm or 3½ inches (Trewavas 1983: 477).”

## Biology

From Froese and Pauly (2018):

“Occurs [...] in all kinds of habitats but is seen mainly in shallow water. Is abundant in shallow vegetated bays. Forms schools. Feeds on phytoplankton, mainly diatoms, and sometimes from the sediment on the sand [Konings 1990].”

“Mating behavior includes the T-stand, both partners alternately forming the horizontal part of the T. Eggs are laid in batches and immediately picked up by the female. Fertilization takes place both on the ground and in the mouth. Females brood eggs/young, guarding their fry until about 15 mm [Lowe 1952].”

## Human Uses

From Froese and Pauly (2018):

“Fisheries: commercial; aquarium: commercial”

From Kazembe and Makocho (2004):

“During the 1950s over 3,000 tonnes of Chambo per year (chiefly *O. squamipinnis*) were being taken from Lake Malawi's southeast arm alone. However, the total catch for chambo in this part of the lake has shown a steady decline since early 1990s. CPUE [catch per unit of effort] in the main harvesting fisheries has also declined dramatically due to over-fishing. In Lake Malombe chambo catches were around 4,000 tons in the late 1970s, increasing to over 6000 tons in the early 1980s. In the late 1980s a drastic decline was observed with catches falling to less than 600 tons per year by the early 1990's and to less than 200 tons in the late 1990's. This decline in total catch in Lake Malombe is directly matched by severe declines in CPUE in the two main fisheries harvesting the stock, namely gill nets and chambo seines. The Chambo stocks in Lake Malombe are considered to have been in a state of collapse or near collapse since the early 1990s.”

“The chambo are the most valuable food fishes in Malawi, but populations collapsed in the 1990s as a result of over-fishing.”

## Diseases

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

## Threat to Humans

From Froese and Pauly (2018):

“Harmless”

### 3 Impacts of Introductions

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No records of *Oreochromis squamipinnis* introductions were found; therefore, there is no information on impacts of introductions.

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

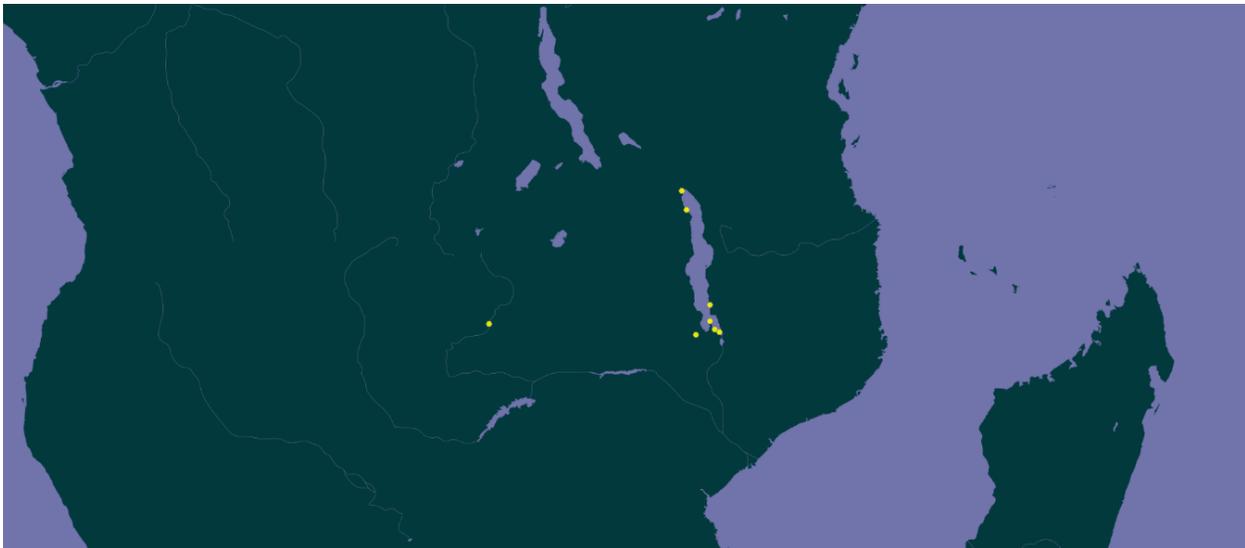
### 4 History of Invasiveness

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No records of *Oreochromis squamipinnis* introductions were found, therefore the history of invasiveness is “no known nonnative population”.

### 5 Global Distribution

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**Figure 1.** Known global distribution of *Oreochromis squamipinnis*. Locations are in Zambia, Malawi, Tanzania, and Mozambique. Map from GBIF Secretariat (2018). The observation in Zambia (observation furthest west) was not used to select source points for the climate match as there is no indication of a population in that area.

### 6 Distribution Within the United States

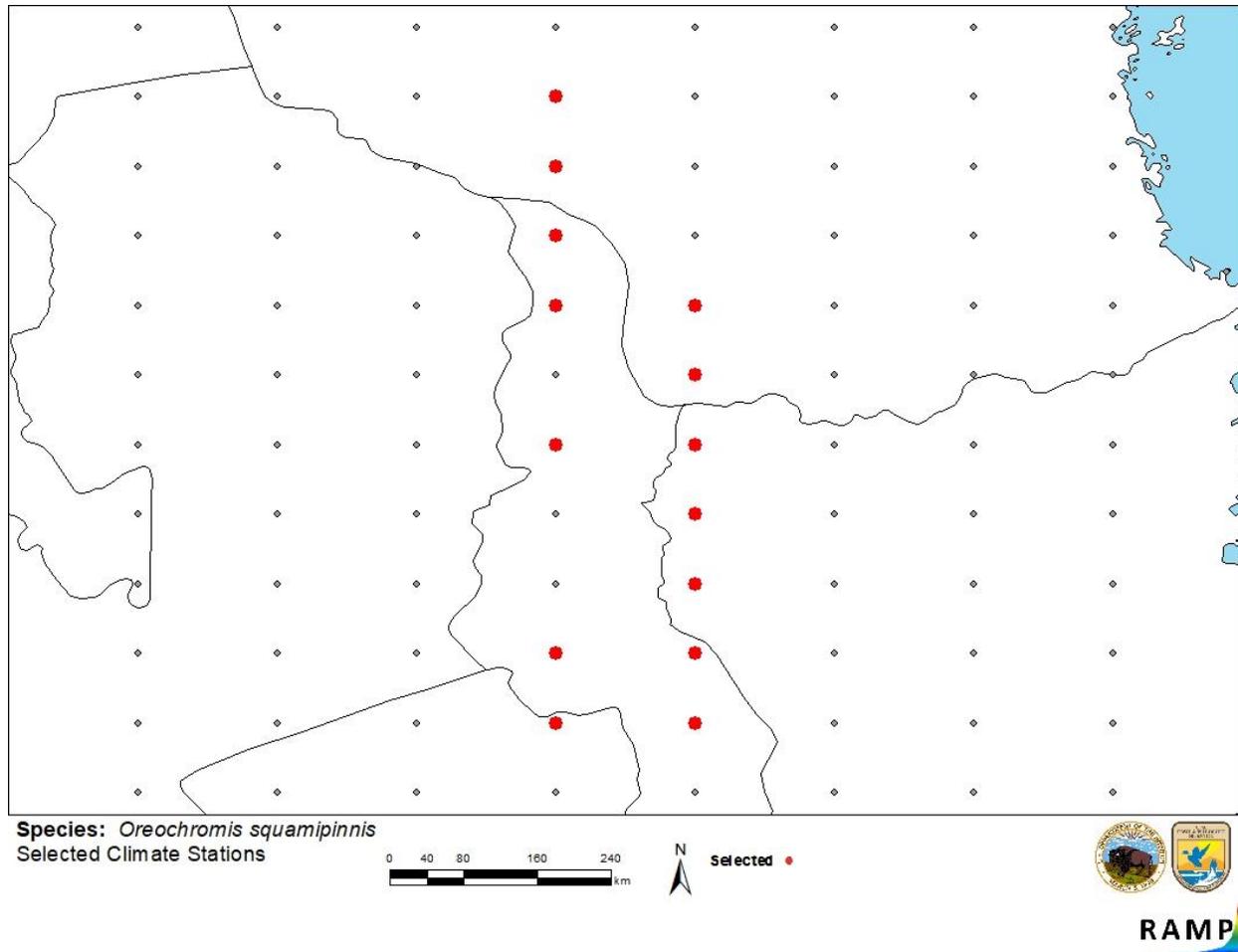
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No records of *Oreochromis squamipinnis* occurrences in the United States were found.

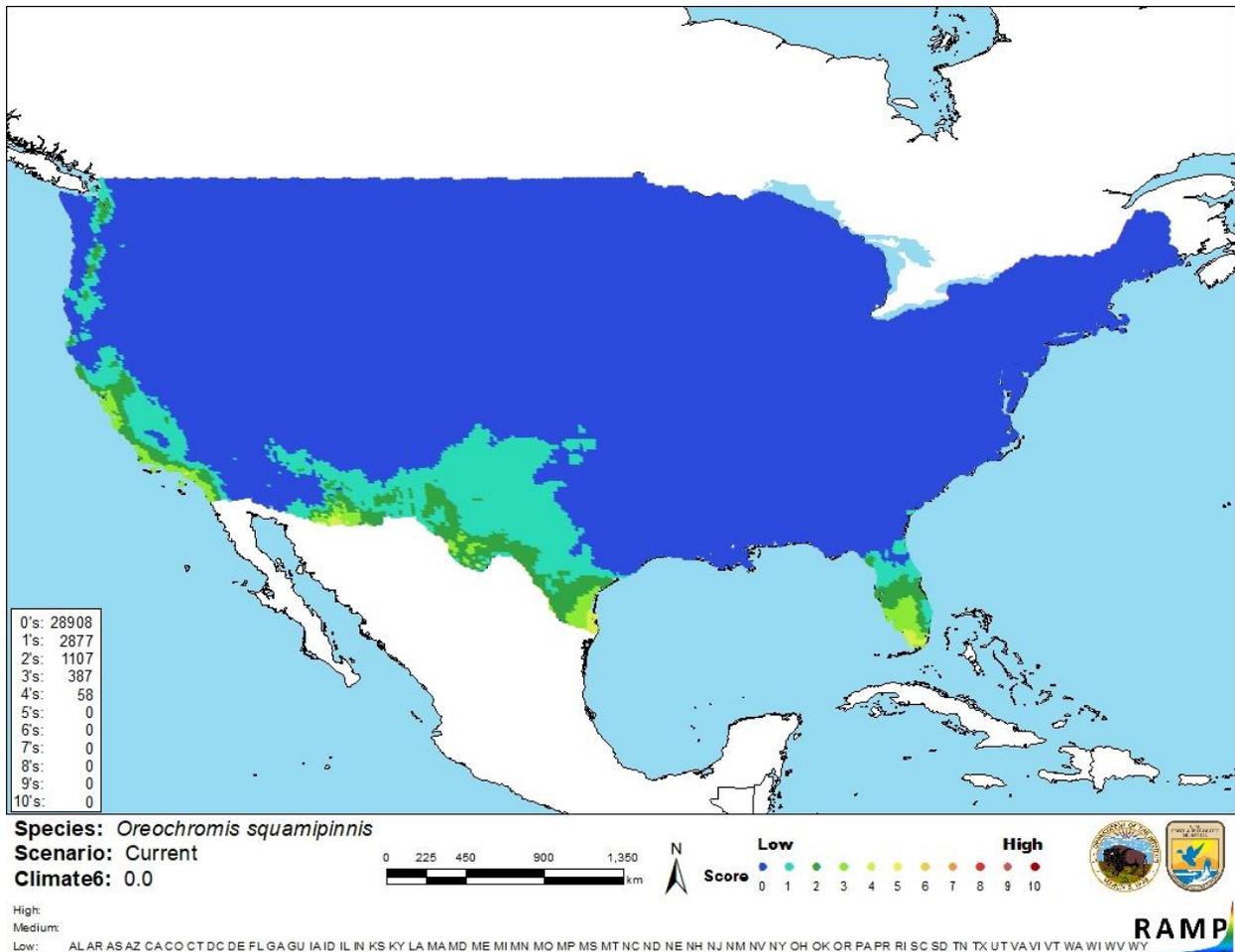
## 7 Climate Matching

### Summary of Climate Matching Analysis

The climate match for *Oreochromis squamipinnis* was low for most of the contiguous United States with a small patch of medium match in extreme southern Florida, Texas, and Arizona. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low (all 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 southeast Africa selected as source locations (red; Tanzania, Malawi, and Mozambique) and non-source locations (gray) for *Oreochromis squamipinnis* 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 squamipinnis* 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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 8 Certainty of Assessment

The certainty of this assessment is low. There is some biological and ecological information available for this species. The range of the species is well described. There are no records of introductions and therefore no information on impacts of introductions.

## 9 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Oreochromis squamipinnis* is a tilapia native to the Lake Malawi system in Malawi, Mozambique, and Tanzania. *O. squamipinnis* was historically a large part of a commercial fishery but harvest levels have decreased significantly due to overfishing. This species is listed as prohibited in Florida. The history of invasiveness is no known nonnative population. It 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. Very small patches of medium match were found in southern Florida, Texas, and Arizona. The certainty of this assessment is low due to lack of information. 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

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**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> (July 2018).

[FFWCC] Florida Fish and Wildlife Conservation Commission. 2020. Prohibited species list. Tallahassee, Florida: Florida Fish and Wildlife Conservation Commission. Available: <https://myfwc.com/wildlifehabitats/nonnatives/prohibited-species-list/> (May 2020).

Froese R, Pauly D, editors. 2018. *Oreochromis squamipinnis* Günther, 1864. FishBase. Available: <http://www.fishbase.se/summary/Oreochromis-squamipinnis.html> (July 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Oreochromis squamipinnis* (Günther, 1864). Copenhagen: Global Biodiversity Information Facility. Available: <https://www.gbif.org/species/2372320> (July 2018).

[ITIS] Integrated Taxonomic Information System. 2018. *Oreochromis squamipinnis* (Günther, 1864). Reston, Virginia: Integrated Taxonomic Information System. Available: [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=648859](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=648859) (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/> (May 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

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**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 species identification sheets for fishery purposes. Field guide to the freshwater fishes of Tanzania. Prepared and published with the support of the United Nations Development Programme. Rome: FAO.

Günther A. 1864. Report on a collection of reptiles and fishes made by Dr. Kirk in the Zambesi and Nyassa regions. Proceedings of the Zoological Society of London 1864(2):26–27.

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 *Tilapia* and other fish and fisheries of Lake Nyasa 1945-47. Colonial Office Fishery Publications 1:1–126.

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