Oreochromis upembae (a tilapia, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, March 2012
Revised, April 2018
Web Version, 8/6/2019

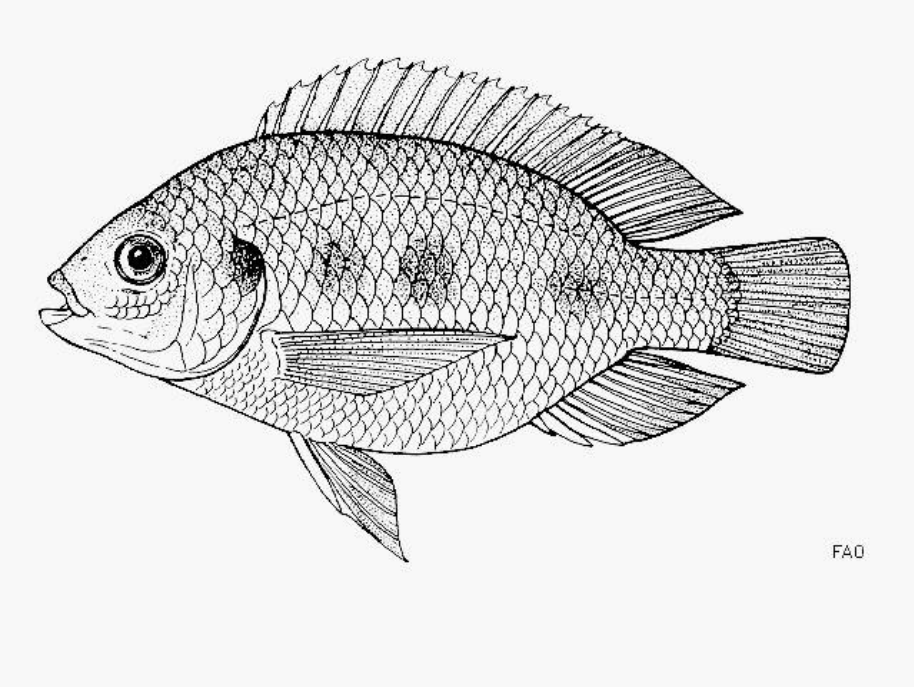

Image: FAO. Licensed under CC BY-NC 3.0. Available: http://eol.org/data_objects/23874826. (April 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2019):

"Africa: upper parts of the Congo River [Thys van den Audenaerde 1964; De Vos et al. 2001], mainly the Upemba region and the Lualaba River to Yangambi and Isangi in the Democratic Republic of Congo [Trewavas and Teugels 1991; Lamboj 2004]."

Status in the United States

This species has not been reported in the United States. There is no indication that this species is in trade in the United States based on a search of the literature and online aquarium retailers.

The following regulations may apply to *O. upembae*. Some refer to "tilapia" and are not always clear whether referring to the genus *Tilapia* or tilapiine cichlids, in general (of which there are more than 10 genera).

From FFWCC (2018):

"Prohibited nonnative species 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. Very limited exceptions may be made by permit from the Executive Director […]
[The list of prohibited nonnative species includes] *Oreochromis upembae*"

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 Oklahoma Secretary of State (2018):
"(1) The sale and use of all Tilapia species as bait is prohibited.
(2) The stocking of all Tilapia species in any heated-water reservoir including Sooner, Konawa and Boomer Reservoirs is prohibited.
(3) This shall not interfere with the sale of dead and/or processed Tilapia for human food or the sale or transport of Tilapia species for the purpose of aquatic vegetation control in privately owned ponds."

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 Introductions in the United States

This species has not been reported in the United States.

Remarks

From Kullander and Roberts (2011):

"A former connection between the Malagarasi and Congo, but not necessarily the Lukuga, is supposed to explain very similar or identical species occurring in both the Malagarasi and the Lualaba (upper Congo) Rivers. The most prominent example, *Oreochromis malagarasi* [from the Malagarasi] and *O. upembae* [from the Lualaba], were at first thought to be a single species, but are now regarded as two barely distinguishable species (Trewavas, 1983)."

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
Suborder Labroidei
Family Cichlidae
Genus *Oreochromis*

Species *Oreochromis upembae* (Thys van den Audenaerde, 1964)"

From Fricke et al. (2019):

"**Current status:** Valid as *Oreochromis upembae* (Thys van den Audenaerde 1964). Cichlidae: Pseudocrenilabrinae."

Size, Weight, and Age Range

From Froese and Pauly (2019):

"Max length : 21.0 cm SL male/unsexed; [Trewavas 1983]"

Environment

From Froese and Pauly (2019):

"Freshwater; benthopelagic."

Climate/Range

From Froese and Pauly (2019):

"Tropical"

Distribution Outside the United States

Native

From Froese and Pauly (2019):

"Africa: upper parts of the Congo River [Thys van den Audenaerde 1964; De Vos et al. 2001], mainly the Upemba region and the Lualaba River to Yangambi and Isangi in the Democratic Republic of Congo [Trewavas and Teugels 1991; Lamboj 2004]."

Introduced

This species has no reported introductions.

Means of Introduction Outside the United States

This species has not been reported in the United States.

Short Description

From Froese and Pauly (2019):

"Dorsal spines (total): 14 - 16; Dorsal soft rays (total): 11-13; Anal spines: 3; Anal soft rays: 9 - 12; Vertebrae: 29 - 30. Diagnosis: *Oreochromis upembae* is a deep-bodied species with a short head, which looks very similar to *O. malagarasi* [Lamboj 2004]. It is distinguished by following characters: mature males with a bifid and tuberculate genital papilla, prolonged into a cream-

coloured tassel in breeding males, in which the edges of the dorsal and caudal fins are orange-coloured or red; two to four dark blotches mid-laterally from operculum to caudal peduncle and a blotch on top of caudal peduncle, distinctive in that the blotches are rather large and vaguely outlined and persist in adults; caudal fin with dark, narrow, vertical stripes or series of spots, only a little less regular than in *O. niloticus*; caudal rays rather densely scaled to near edge; caudal peduncle deep; vertebrae 29-30; scales in lateral line series 28-31; dorsal spines XIV-XVI, soft rays 11-13; outer teeth bicuspid, in some fishes becoming unicuspid by wear; lower pharyngeal teeth fine, the tooth area with rounded lateral lobes, the blade 1.15-1.5 times the medial length of the toothed area; lower gill-rakers 20-25; and interorbital width 38.8-43.3% length of head [Trewavas 1983]. Among the tasselled tilapias this most resembles *O. malagarasi*, which differs in having a less scaly caudal fin, the scales usually confined to the basal parts of the rays, and in lacking the regular dark stripes or series of spots on the caudal; and in *O. malagarasi* the range of dorsal spines is higher, XVI-XVII [Trewavas 1983]."

Biology

From Froese and Pauly (2019):

"The female broods the young and eggs in the mouth in the shelter of sandbanks in the Congo River at Yangambi [Trewavas 1983]."

Human Uses

From Froese and Pauly (2019):

"Fisheries"

According to Léo Neto et al. (2011), *O. upembae* has been used in Campina Grande, Brazil, to perform a bori ceremony.

Diseases

No information available. No OIE-reportable diseases (OIE 2019) have been documented in this species.

Threat to Humans

From Froese and Pauly (2019):

"Harmless"

3 Impacts of Introductions

This species has no reported introductions.

The following regulations may apply to *O. upembae*. Some refer to "tilapia" and are not always clear whether referring to the genus *Tilapia* or tilapiine cichlids, in general (of which there are more than 10 genera).

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[The list of prohibited nonnative species includes] *Oreochromis upembae*"

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"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**."

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

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4 Global Distribution

Figure 1. Reported global distribution of *Oreochromis upembae*, recorded in Central Africa. Map from GBIF Secretariat (2019). Only locations within the Democratic Republic of the Congo were used in the climate matching analysis; locations in other countries likely represent *O. malagarasi* (see Remarks).

5 Distribution Within the United States

This species has not been reported in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.001, indicating a low climate match overall. (Scores between 0.000 and 0.005, inclusive, are classified as low.) The climate match was medium to medium-

high in southern Florida, southern Louisiana, and southern Texas. The only locally high climate match occurred near Miami, Florida. The individual climate score for the State of Florida was medium; all other States had low climate scores.

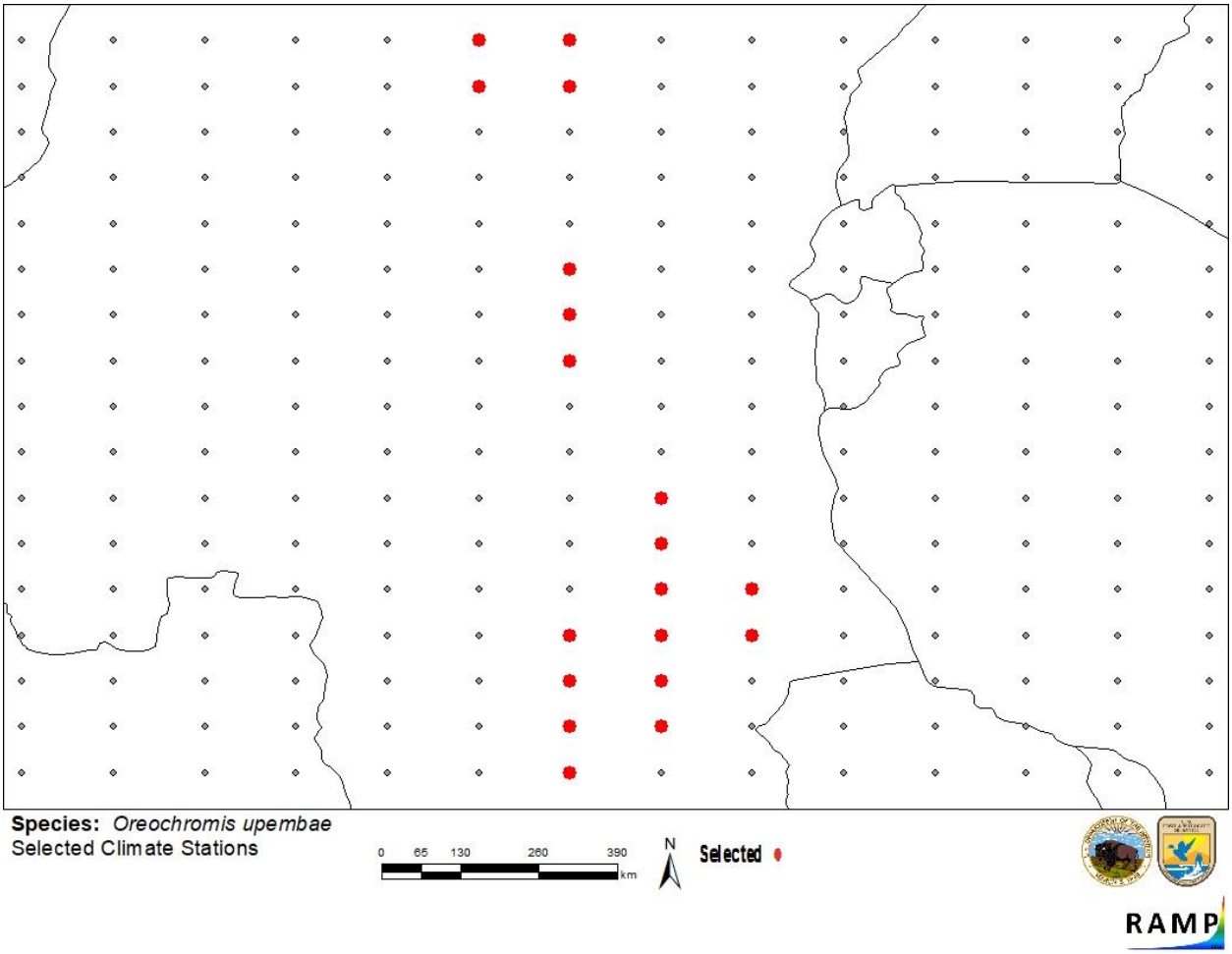

Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in the Democratic Republic of the Congo selected as source locations (red) and non-source locations (gray) for *Oreochromis upembae* climate matching. Source locations from GBIF Secretariat (2019).

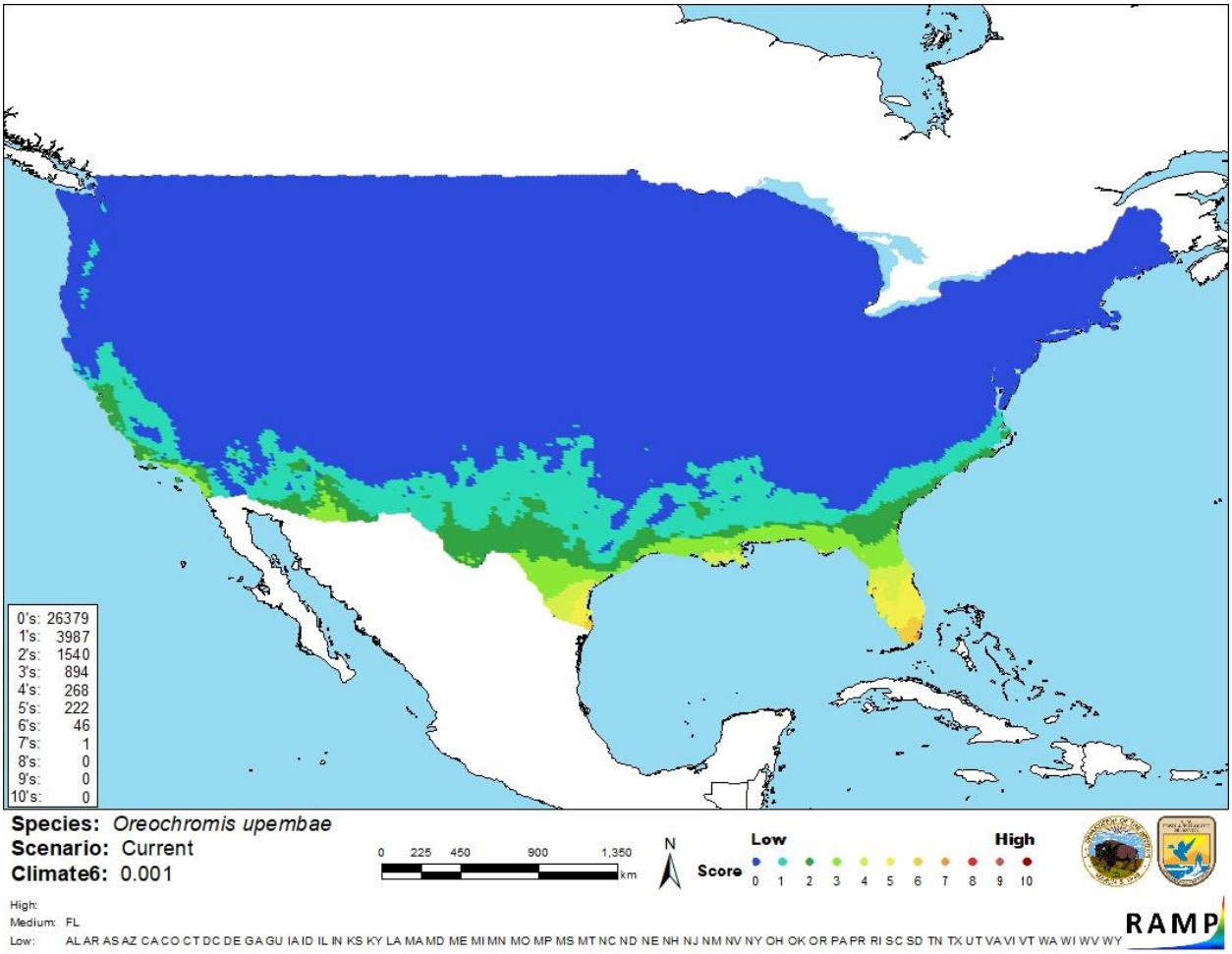

Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for O*reochromis upembae* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). 0=Lowest match, 10=Highest match.

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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

There is very little information on the species *Oreochromis upembae* and no known evidence of introduction. More information is needed to increase the certainty. Therefore, the certainty of assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Oreochromis upembae is a freshwater fish native to the Congo River basin in the Democratic Republic of the Congo. It is harvested for human consumption. This species has no history of introductions outside of its native range. History of invasiveness is uncertain. Numerous U.S. States prohibit or restrict the trade, possession, or use of this species. *O. upembae* has a low climate match with the contiguous United States. Due to lack of knowledge about potential introductions, certainty of assessment is low. The overall risk posed by this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **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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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.

De Vos, L., L. Seegers, L. Taverne, and D. F. E. Thys van den Audenaerde. 2001. L'ichtyofaune du bassin de la Malagarasi (système du lac Tanganyika): une synthèse de la connaissance actuelle. Annales du Musée Royal de l'Afrique Centrale: Sciences Zoologiques 285:117-135.

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