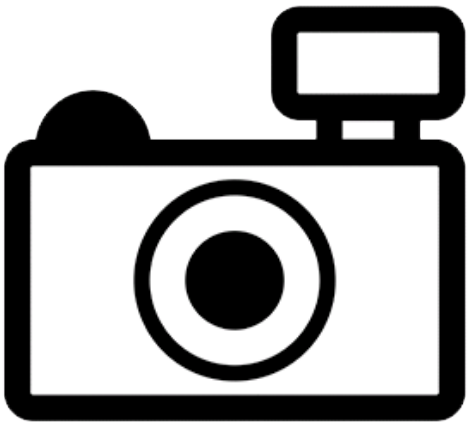
U.S. Fish & Wildlife Service

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

U.S. Fish & Wildlife Service, March 2012
Revised, July 2018
Web Version, 5/19/2020

Organism Type: Fish
Overall Risk Assessment Category: Uncertain



No Photo Available

1 Native Range and Status in the United States

Native Range

From Genner et al. (2018):

"This is a large offshore plankton-feeding species endemic to Lake Nyasa [Lake Malawi]. It was reported to be confined to the southern part of the lake, all of which lies within Malawian territory: it has never been positively recorded north of Nkhotakota [Malawi]."

Status in the United States

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

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

Remarks

From Genner et al. (2018):

"Reports of this species [*Oreochromis lidole*] from the Tanzanian crater lakes Kyungululu and Kingiri (Trewavas 1983, repeated in Fishbase) are now believed to have been the result of misidentification of emaciated spent individuals of *Oreochromis chungruruensis* and juvenile *Oreochromis squamipinnis* respectively. There is no evidence that this species was ever native to Tanzania and it is suspected that *O. lidole* is now globally extinct, as it has not been positively recorded since 2007."

From Konings (2018):

"Although the data have not been recorded at the level of species, we assume the decline in CPUE for *O. lidole* over the period 2006-2016 is approximately 94%. This species is, therefore, assessed as Critically Endangered and this species considered Possibly Extinct with the last confirmed record in the wild from 1992 (G. Turner pers. comm.)."

Although the previous two sources disagree on the date of last observation for *Oreochromis lidole* they do agree that the species is possibly extinct.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2018), *Oreochromis lidole* (Trewavas 1941) 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 lidole* (Trewavas, 1941)

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Maturity: L_m 29.9, range 24 - 37 cm
Max length : 38.0 cm SL male/unsexed; [Eccles 1992]"

Environment

From Froese and Pauly (2018):

"Freshwater; benthopelagic; depth range 30 - 100 m [Eccles 1992]."

Climate

From Froese and Pauly (2018):

"Tropical; 8°S - 15°S"

Distribution Outside the United States

Native

From Genner et al. (2018):

"This is a large offshore plankton-feeding species endemic to Lake Nyasa [Lake Malawi]. It was reported to be confined to the southern part of the lake, all of which lies within Malawian territory: it has never been positively recorded north of Nkhotakota [Malawi]."

Introduced

No records of *Oreochromis lidole* introductions were found.

Means of Introduction Outside the United States

No records of *Oreochromis lidole* introductions were found.

Short Description

From Froese and Pauly (2018):

"Dorsal spines (total): 14 - 17; Dorsal soft rays (total): 10-11; Anal spines: 3; Anal soft rays: 8 - 10; Vertebrae: 30 - 32. Diagnosis: breeding male black; length of head 34.4-42.4% SL; length of lower jaw 31.3-40.0% head length [Trewavas 1983]. Teeth of jaw in 3-4, rarely 5 rows [Trewavas 1983; Turner and Mwanyama 1992]. Lower pharyngeal bone with restricted toothed area; median length of bone 33.0-40.7 % length of head and 1.3-1.5 times its own width; blade 1.9-3.9 times median length of toothed area [Trewavas 1983]."

From Konings (2018):

"Breeding males of *O. lidole* are jet black, with a white dorsal fin margin. *Oreochromis lidole* has the typical dark grey colour of its species, with long jaws and big, square operculum. […], there is little geographical variation in morphology in *O. lidole*."

Biology

From Konings (2018):

"This is one of the three 'Chambo' species endemic to Lake Malawi. […] *Oreochromis lidole* is believed to be the Chambo species most adapted to deep water and feeding in the water column. It feeds on algae, detritus and zooplankton. The breeding season runs from September to March, peaking from October to February. Like other *Oreochromis*, it is a maternal mouth-brooder. Males dig large spawning pits at depths of 17 m (50 feet) or more, which can be up to 3 m in diameter and with central platforms as much as 75 cm wide. Breeding starts at about 28 cm TL at three years old. The spawning areas are located in deeper water than for the other two species, off clean sandy or rocky shores."

From Froese and Pauly (2018):

"Females congregate in schools that may number hundreds of individuals [Lowe 1952; Trewavas 1983; Konings 1990]. The male genital tassel, which develops together with the breeding dress and imitates a clutch of eggs, is dragged through the nest after the females has deposited some eggs, which are picked up immediately; the female probably mistakes the tassel for eggs that have been forgotten and tries to collect them as well, which results in the eggs being fertilized [Konings 1990]. Females carrying eggs in the mouth move into open, more eutrophic waters, and stay there until the young have almost lost the yolk sac; they feed little during this time [Lowe 1952]. Females brood eggs/young, guarding their fry until about 52(-58)mm [Lowe 1952; Trewavas 1983]. Females move inshore with their young for at least part of the day; the young are spat out to feed, and food (small phytoplankton) is found in the foregut before the involuted yolk-sac is fully absorbed [Lowe 1952]."

Human Uses

From Mumba and Jose (2005):

"All the species except the *O. lidole* are sold on the Malawi market fresh, smoked, para-boiled and then sun dried (in the case *E. sardella* only) or just sun dried. The chambo (*O. lidole*) is sold either fresh or smoked and not sun dried. These were purchased as such. Almost always, one person consumes the whole fish including the head in a single meal."

From Konings (2018):

"This species is not targeted by the ornamental fish trade but is a valuable food fish. However, the population collapsed in the 1990s as a result of overfishing."

Diseases

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

Poelen et al. (2014) lists *Posthodiplostomum nanum, Acanthogyrus tilapiae, Ophiovalipora minuta, Anacanthorus colombianus, Cichlidogyrus sclerosus, Cichlidogyrus tilapiae, Gyrodactylus cichlidarum, Euclinostomum heterostomum*, and *Neobenedenia melleni* as parasites of *O. lidole.*

Threat to Humans

From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions

Oreochromis lidole has not been reported as introduced or established outside of its native range.

O. lidole is listed as a prohibited species in Florida.

4 History of Invasiveness

Oreochromis lidole has not been reported as introduced or established outside of its native range, and is therefore classified as "No Known Nonnative Population".

5 Global Distribution

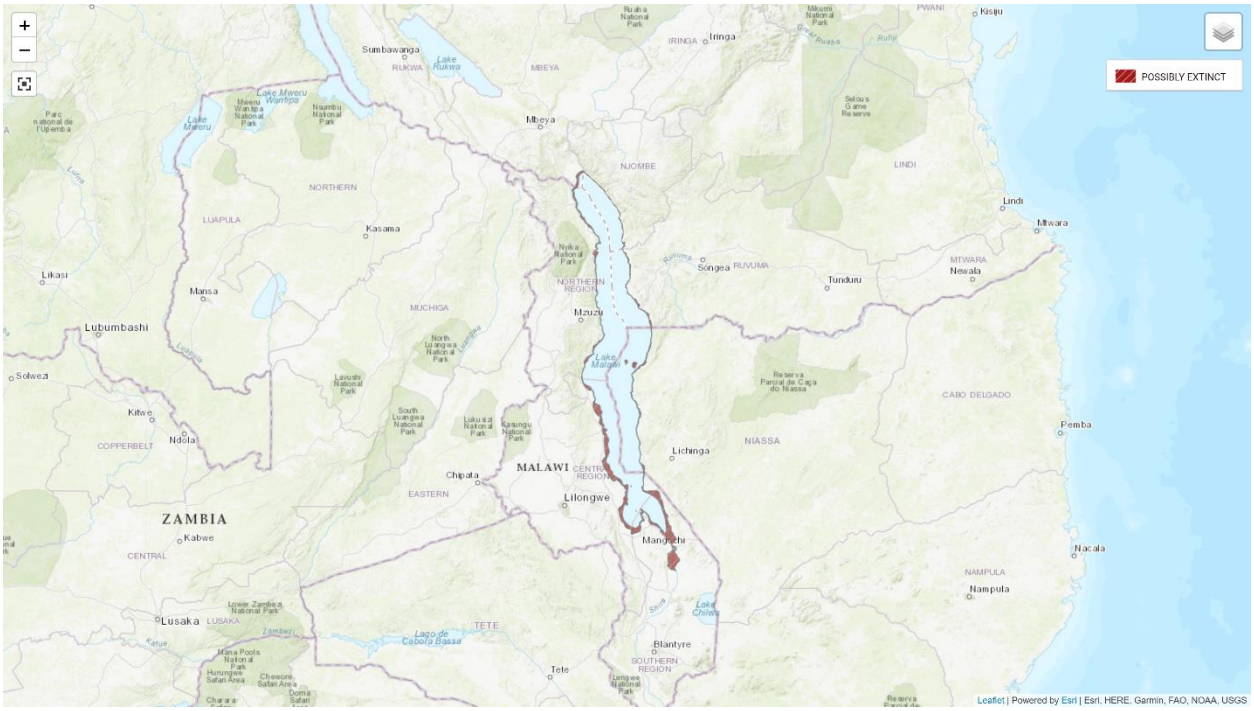


Figure 1. Map showing the described range of *Oreochromis lidole* around the southern end of Lake Malawi (Genner et al. 2018). Map from Konings (2018).

6 Distribution Within the United States

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

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Oreochromis lidole* was low for most of the contiguous United States with small patches of medium match in 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 (scores between 0.000 and 0.005, inclusive, are classified as low). All States had a low individual climate score.

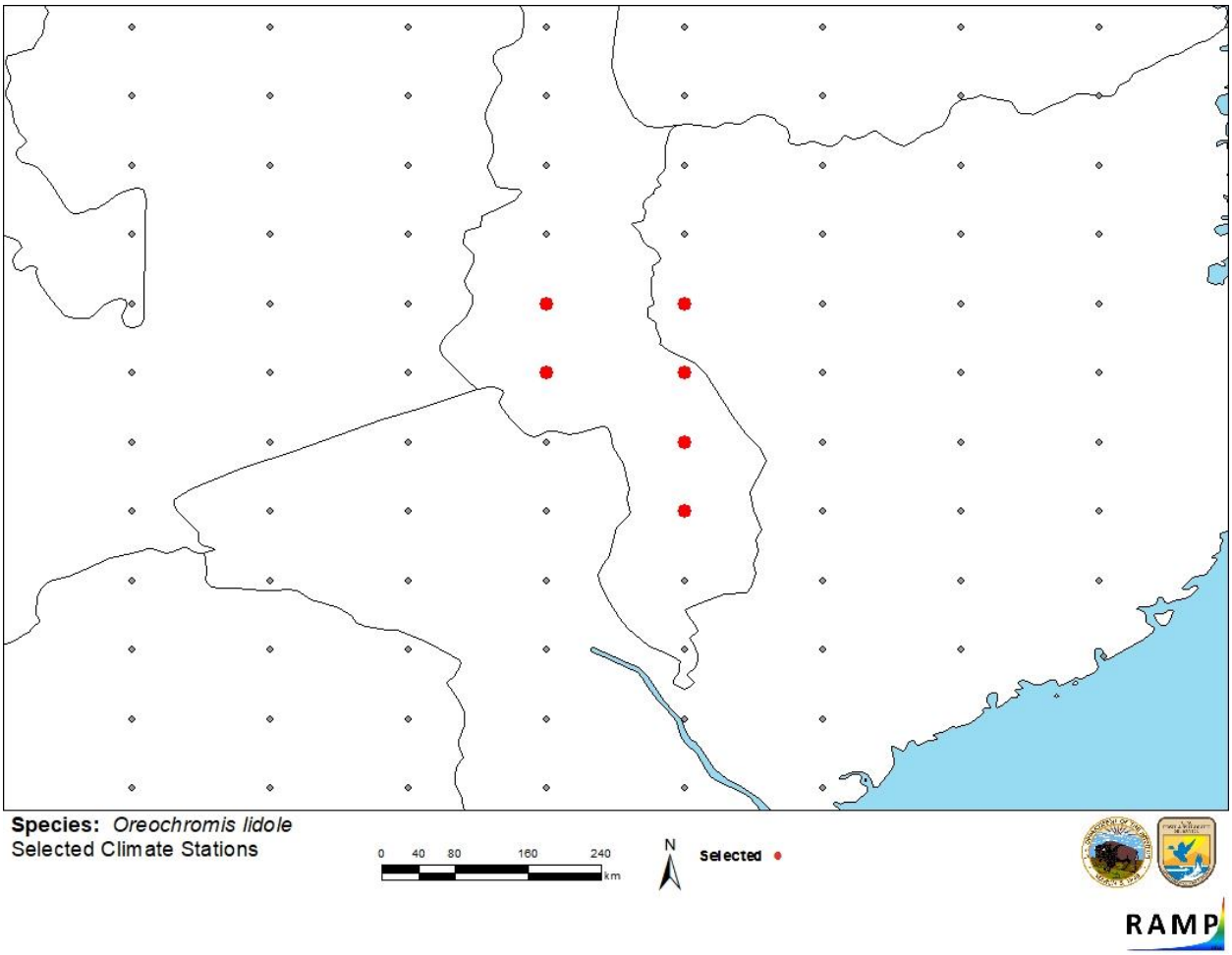


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in eastern Africa selected as source locations (red; Tanzania, Malawi) and non-source locations (gray) for *Oreochromis lidole* climate matching. Source location description from Genner et al. (2018) and Konings (2018). Selected source locations are within 100 km of the described species range, and do not necessarily represent locations of observations of the species themselves.

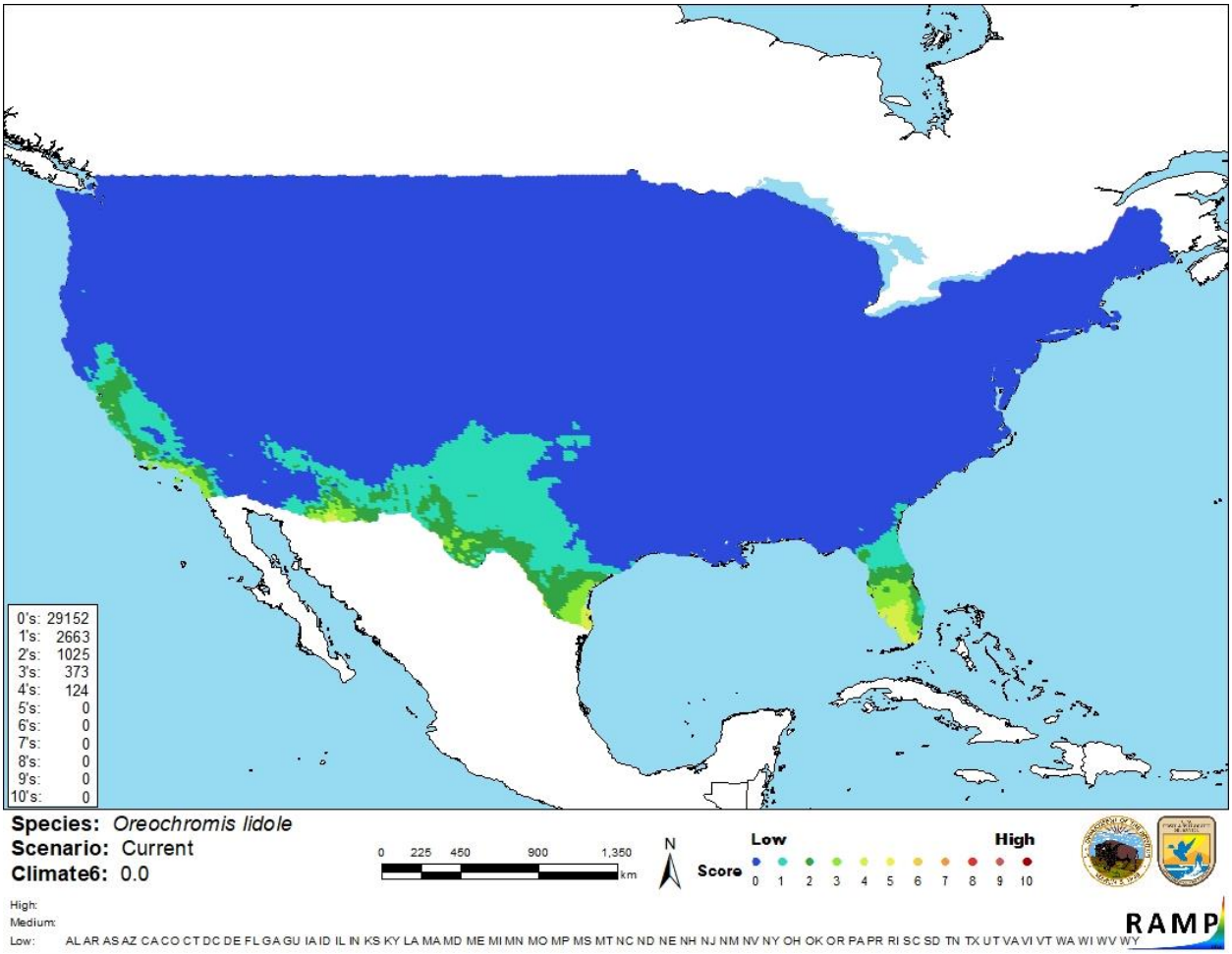


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Oroechromis lidole* in the contiguous United States based on source location description reported by Genner et al. (2018) and Konings (2018). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest 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

There is information on the biology and ecology of the species. There were no georeferenced observations to use in selecting source points for the climate match but the described range of the species is small enough that this did not result in a decrease in certainty. However, there were no records of introduction and therefore no information on impacts of introduction. There was also

no information on trade of the species outside of the native range. This results in a low certainty of assessment.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Oreochromis lidole is a tilapia native to the southern portion of Lake Malawi in Malawi. This is a mouth brooding species that has been historically included in the commercial 'chambo' fishery in Lake Malawi. The species has not been recorded since at least 2007 and is considered to be possibly extinct. *O. lidole* is listed as a prohibited species 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. The only areas 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 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:** Considered to be possibly extinct.
- **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).

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Konings, A. 2018. *Oreochromis lidole*. The IUCN Red List of Threatened Species 2018: e.T61276A47243265. http://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T61276A47243265.en (May 2020).

Mumba PP, Jose M. 2005. Nutrient composition of selected fresh and processed fish species from Lake Malawi: a nutritional possibility for people living with HIV/AIDS. International Journal of Consumer Studies 29:72–77.

[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).

Poelen JH, Simons JD, Mungall CJ. 2014. Global Biotic Interactions: an open infrastructure to share and analyze species-interaction datasets. Ecological Informatics 24:148–159.

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 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. Project URT/87/016.

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. Col. Off. Fish. Publs. 1:1–126.

Trewavas E. 1941. Nyasa fishes of the genus *Tilapia* and a new species from Portuguese East Africa. Annals and Magazine of Natural History 7:294–306.

Trewavas E. 1983. Tilapiine fishes of the genera *Sarotherodon*, *Oreochromis* and *Danakilia*. Bulletin of British Museum (Natural History) London, UK. [No volume or page number given by source material.]

Turner GF, Mwanyama NC. 1992. Distribution and biology of chambo (*Oreochromis* spp.) in Lake Malawi and Malombe. Malawi: GOM/UNDP/FAO Chambo Fisheries Research Project.