

Jipe Tilapia (*Oreochromis jipe*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2014
Revised, February 2018 and August 2019
Web Version, 8/2/2019



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2019):

“Africa: Pangani River in Kenya and Tanzania [Trewavas 1983; Seegers et al. 2003; Shechonge et al. 2019], from Lake Jipe down to the Pangani Falls dam [Genner et al. 2018].”

Status in the United States

This species has not been reported as introduced or established in the United States. This species does not appear to be in trade in the United States, based on a review of the literature and online aquarium retailers.

The Florida Fish and Wildlife Conservation Commission has listed the Jipe tilapia (*Oreochromis jipe*) 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 Introductions in the United States

This species has not been reported as introduced or established in the United States.

Remarks

From Seegers et al. (2003):

“[...] previously also reported as *Tilapia jipe*, *T. (Sarotherodon) jipe*, *T. (Oreochromis) jipe* and *S. jipe* (antiquated names); the nominal species *Tilapia girigan* Lowe-McConnell, 1955 and *T. pangani* Lowe-McConnell, 1955 (as well as the subspecies *Oreochromis pangani pangani* and *O. pangani girigan*) are likely to be junior synonyms of *O. jipe* [...].”

From Shechonge et al. (2019):

“In the north of Tanzania, *O. jipe* has only been formally recorded from Lake Jipe and Nyumba ya Mungu, and this narrow distribution has contributed to an IUCN Red List assessment of Critically Endangered. Lowe (1955) originally described four new species from the Pangani system: *O. korogwe*, *O. jipe*, *Oreochromis girigan* (Lowe 1955) and *Oreochromis pangani* (Lowe 1955). However, it has been suggested that the last three are conspecific (Seegers et al., 2003; Seegers, 2008), and with page priority, the correct name would be *O. jipe*, as listed by Eschmeyer (2017). We could find no obvious basis for distinguishing more than a single species from this group, and so we consider that our sampling indicates that *O. jipe* is widespread throughout the Pangani system, including water bodies peripheral to the main channel, such as Lake Kalimau.”

The valid scientific name, *O. jipe*, and synonyms *T. jipe*, *O. girigan* or *T. girigan*, and *O. pangani* or *T. pangani* were all used to search for information for this report.

From Froese and Pauly (2019):

“IUCN conservation status is critically endangered due to its restricted range and evidence of declining stocks between the 1970s and 2000 [Genner et al. 2018].”

From Bradbeer et al. (2019):

“Within the Pangani system, we found evidence for the presence of hybrid individuals of the Critically Endangered *O. jipe* with introduced species at two locations. At Kerenge one individual *O. leucostictus* × *O. jipe* was discovered, while at Nyumba-ya-Mungu two *O. niloticus* × *O. jipe* were found. Notably, at all these sites hybrid individuals between introduced and native species were uncommon relative to purebred individuals.”

“The evidence of hybridization between the sympatric native species *O. korogwe* and *O. jipe* was notable in the Pangani Falls Dam, constructed in 1994. Surveys have reported these species that are otherwise allopatric in their distributions [...].”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostoma
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Labroidei
Family Cichlidae
Genus *Oreochromis*
Species *Oreochromis jipe* (Lowe, 1955)”

From Eschmeyer et al. (2018):

“*jipe*, *Tilapia* [...] Current status: Valid as *Oreochromis jipe* (Lowe 1955). Cichlidae: Pseudocrenilabrinae.”

“*girigan*, *Tilapia* [...] Current status: Synonym of *Oreochromis jipe* (Lowe 1955). Cichlidae: Pseudocrenilabrinae.”

“*pangani*, *Tilapia* [...] Current status: Synonym of *Oreochromis jipe* (Lowe 1955). Cichlidae: Pseudocrenilabrinae.”

Size, Weight, and Age Range

From Froese and Pauly (2019):

“Max length : 50.0 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: Pangani River in Kenya and Tanzania [Trewavas 1983; Seegers et al. 2003; Shechonge et al. 2019], from Lake Jipe down to the Pangani Falls dam [Genner et al. 2018].”

Introduced

From Trewavas (1983):

“DISPERSAL BY MAN. *Oreochromis jipe* and *Oreochromis girigan* [now synonymized with *O. jipe*] were taken from Lake Jipe to ponds at Tavetta [Kenya], near the lake.”

“From 1950 both these and *Oreochromis pangani* [now synonymized with *O. jipe*] were cultivated in ponds at Korogwe [Tanzania], fed from the Pangani. Thence they were distributed to several ponds and dams in Tanzania. Bailey (1966) reported *O. jipe* from dams near Tanga and Korogwe, and in the Usambara Mountains, and *Oreochromis p. girigan* doubtfully from the same. *Oreochromis p. pangani* has been stocked in the same waters and also at Arusha (Kilimanjaro Province), and in the following dams in the Eastern Rift Province: Mbula, Iramba, Singida, Manyoni, Kondoa, Dodoma, Mpwapwa, as well as Lake Singida. *Oreochromis jipe* is now well established in the Pangani system.”

Means of Introduction Outside the United States

According to Trewavas (1983), introductions occurred through intentional stocking.

Short Description

From Froese and Pauly (2019):

“Dorsal spines (total): 17 - 19; Dorsal soft rays (total): 11-13; Anal spines: 3-4; Anal soft rays: 10 - 12; Vertebrae: 32 - 33. Diagnosis: A large bodied tilapia, with a slender body and small head and mouth; body depth 2.5-2.8 times in standard length [Eccles 1992; Genner et al. 2018]. It can be distinguished by following characters: teeth of jaws with slender shafts in young, uniformly slender in adults; pharyngeal teeth very fine and crowded; dentigerous area with rounded lobes and short apex, its median length nearly always less than that of the blade; pectoral fin 34.3-41.2% of standard length, reaching base of anal fin; anal spines III-V [Lowe 1955; Trewavas 1983]. Males and females are characterised by rows of blotched scales across the flanks; males have a pale blue head with dark spots, dark fins with pale spots, and orange margins to the dorsal and caudal; females and non-territorial males plainer and typically paler, and in some

populations there is a more olive/yellow gular and ventral region [Genner et al. 2018]. Caudal fin long with very definite vertical black or dark brown stripes [Lowe 1955].”

Biology

From Froese and Pauly (2019):

“Found in lakes and rivers [Eccles 1992]. Chiefly a browser of periphyton in the lake, but additionally feeding also on bottom deposits and associated phytobenthos [Bailey et al. 1978]. A maternal mouthbrooder [Lowe 1955; McAndrew and Majumdar 1984; Genner et al. 2018]. Occasionally territorial [Trewavas 1983].”

From Trewavas (1983):

“Breeding individuals were found in Nyumba ya Mungu in every month in which samples were taken and no peak season was detected.”

“Ovarian eggs, counted by Lowe in fishes of 15-21 cm TL, numbered 200 to 250. Up to 167 eggs were found in the mouths of brooding females. In the ovaries of three bigger, ripe females of 23.5-24.5 cm from Nyumba ya Mungu Bailey *et al.* counted 437-570.”

Human Uses

From Froese and Pauly (2019):

“Fisheries: commercial; aquaculture: experimental”

“It supports artisanal fisheries in lakes and dams across the Pangani catchment, with the largest fisheries in Lake Jipe and Nyumba ya Mungu [Genner et al. 2018].”

Diseases

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

Threat to Humans

From Froese and Pauly (2019):

“Harmless”

3 Impacts of Introductions

Numerous U.S. States prohibit or restrict the trade, possession, or use of this species. No information is available about impacts.

4 Global Distribution

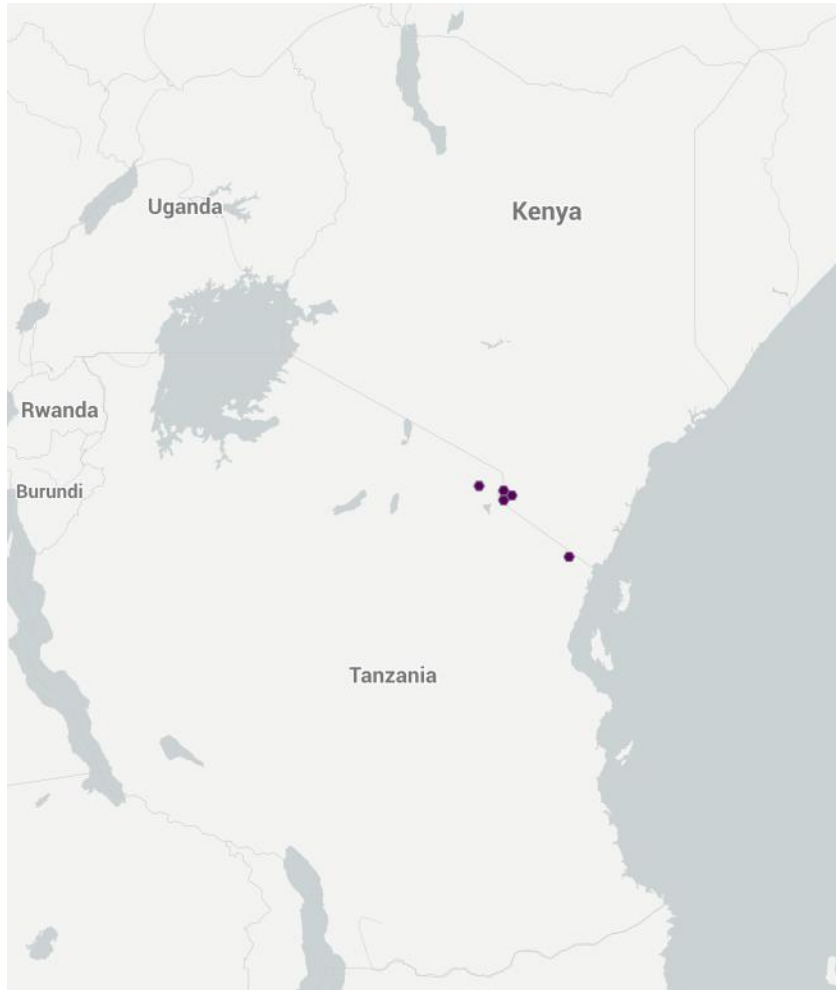


Figure 1. Known global distribution of *Oreochromis jipe*, reported from Kenya and Tanzania. Map from GBIF Secretariat (2019).

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 match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) was low for much of the contiguous United States. Areas of medium climate match occurred in southern Florida, southern Texas, southeastern Arizona, and southern coastal California. The Climate 6 score was 0.001, indicating a low overall climate match for the contiguous United States. (Scores between 0.000 and 0.005, inclusive, are classified as low.) Texas was the only State with a medium Climate 6 score; all other States had low scores.

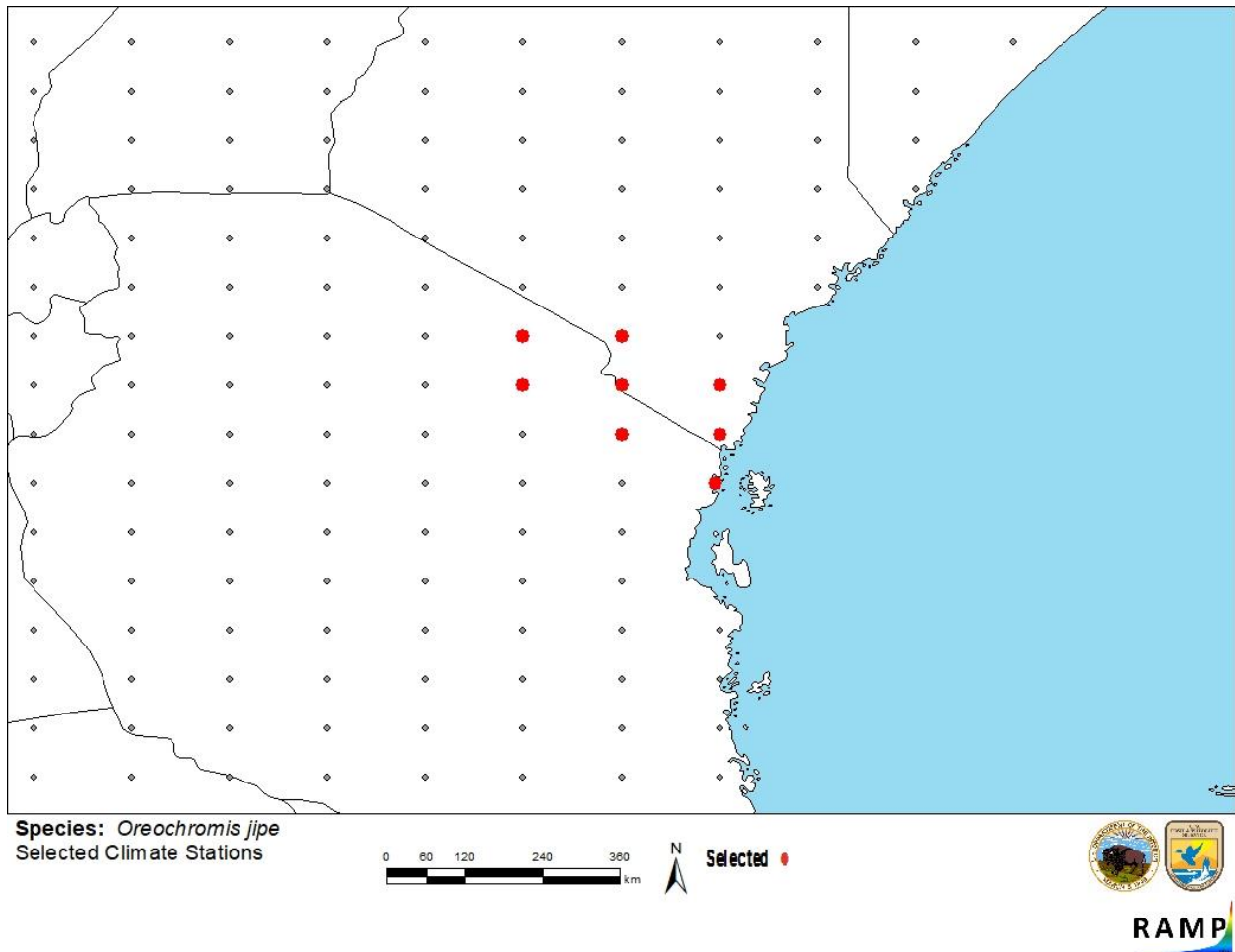


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Kenya and Tanzania) and non-source locations (gray) for *Oreochromis jipe* climate matching. Source locations from GBIF Secretariat (2019).

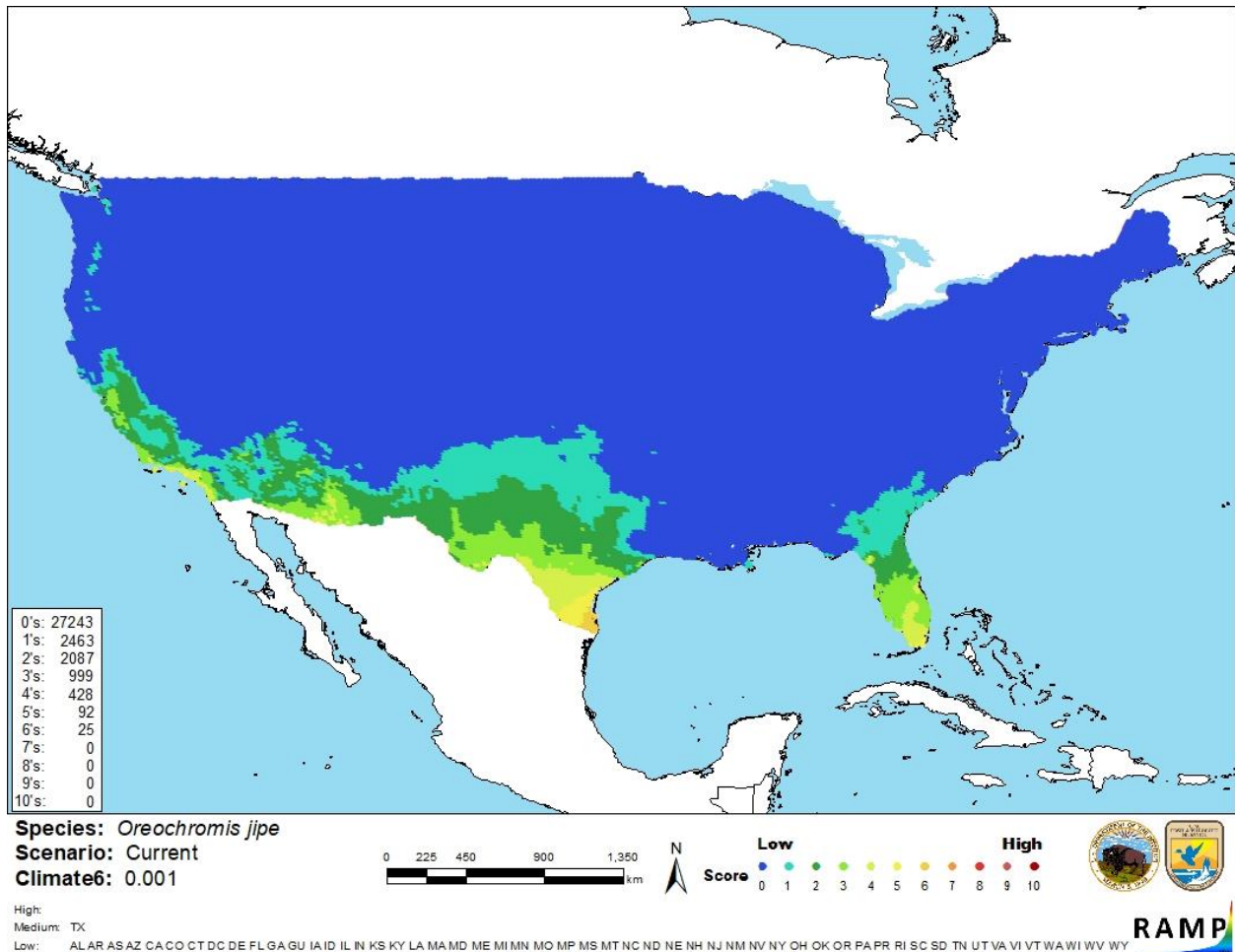


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Oreochromis jipe* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). 0=Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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

Information on the biology and ecology of *Oreochromis jipe* is available. The native distribution is adequately described, but there is very little information on species introductions, especially regarding impacts of introduction. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Oreochromis jipe, the Jipe Tilapia, is a fish native to the Pangani River system in Tanzania and Kenya. The species is critically endangered within its limited native range. Introductions to other locations in Tanzania have occurred, but no information is available on the existence of any impacts of introduction. Numerous U.S. States prohibit or restrict the trade, possession, or use of this species. History of invasiveness is “none documented.” *Oreochromis jipe* is a target of artisanal and commercial fisheries and is used experimentally in aquaculture. The climate match was low for the contiguous United States, with Texas as the only State with a medium climate score. Certainty of assessment was low due to a lack of information. Based on the available data, the overall risk assessment is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information: *Oreochromis pangani* and *Oreochromis girigan* have been synonymized with *Oreochromis jipe*.**
- **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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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.

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