

Otopharynx lithobates (a cichlid, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, May 2011

Revised, August 2018

Web Version, 1/3/2020



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“Africa: endemic to Lake Malawi, restricted to southern part of the lake [country of Malawi; Cleaver et al. 2009].”

Status in the United States

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

O. lithobates is widely available from U.S.-based online aquarium retailers. For example:

From Tampa Bay Cichlids (2018):

“\$ 9.99

OTOPHARYNX LITHOBATES, ARISTO YELLOW BLAZE Z ROCK (GERMAN STRAIN), HAPLOCHROMIDE, AFRICAN CICHLID [...]

F1 from wild parents collected from the Lake Malawi in 2017. Raised here in Florida.”

From Bluegrass Aquatics (2018):

“Otopharynx Lithobates - medium
\$11.00”

LiveFishDirect (2018) lists multiple sizes of *O. lithobates* for sale, including juvenile (1.25”+; \$5.95), premium unsexed (1.75”; \$12.95), and adult female (3”; \$12.95).

Means of Introduction into the United States

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

Remarks

From Kasembe (2006):

“Known as "Haplochromis Lombardo and Aristochromis Lombardo" in the aquarium trade, it is no longer exported [from Malawi].”

“Synonym(s): *Otopharynx walteri* Konings, 1990”

The above synonym was used, in addition to the accepted scientific name, to search for information on this species.

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 *Otopharynx*
Species *Otopharynx lithobates* Oliver in Eccles and Trewavas, 1989”

“Current Standing: valid”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 16.0 cm TL male/unsexed; [Konings 1990]; 10.0 cm TL (female)”

Environment

From Froese and Pauly (2018):

“Freshwater; demersal; depth range ? - 10 m.”

“[...] 24°C - 27°C [Baensch and Riehl 1995; assumed to represent recommended aquarium water temperatures]”

Climate/Range

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, restricted to southern part of the lake [country of Malawi; Cleaver et al. 2009].”

Introduced

From NIES (2018):

“Range in Japan: Haebaru Dam, Okinawajima Is.”

“Recorded since 1996 [in Japan]”

Means of Introduction Outside the United States

From NIES (2018):

“Deliberate: Release of pet animal”

Short Description

From Cleaver et al. (2009):

“Members of *Otopharynx* are characterized by the possession of a supra-pectoral, a supra-anal, and a pre-caudal spot, the first two not extending to the base of the dorsal fin, which distinguish them from species of *Hemilapia* and *Trematocranus*, and from *Tramitichromis intermedius*, where they do extend to the dorsal-fin base. Often there is a spot or blotch at the nape and a series of small spots along the back at the base of the dorsal fin that distinguish *Otopharynx* from the spotted species of *Copadichromis* in which these characters are missing. *Otopharynx* differs further from *Copadichromis* by a shorter premaxillary pedicel (22-36 % HL vs. 30-43) and from *Stigmatichromis* by a snout that is shorter than the postorbital head length (which is longer or of equal length in *Stigmatichromis*). The outer teeth of the lower jaw in *Otopharynx* are moderately to strongly developed (unicuspid or bicuspid) and continue posteriorly as a single series (Eccles & Trewavas, 1989).”

“Although found within a small geographic area, *O. lithobates* displays broad variation in male breeding coloration [...]”

Biology

From Froese and Pauly (2018):

“Inhabits caves; found in rocky habitats; feeds on the droppings of mainly herbivorous species; picks up edible morsels from the substrate; also seems to be attracted to large catfishes, from which it may eat wastes as well [Konings 1990]. Feeds on droppings of cave-dwelling catfish *Bagrus meridionalis* [Cleaver et al. 2009].”

From Kasembe (2006):

“Breeding males are seen throughout the year. Females are observed near caves foraging on the outside of the rocky habitat. Spawning occurs inside the caves.”

Human Uses

From Froese and Pauly (2018):

“Fisheries: ; [sic] aquarium: commercial”

O. lithobates is widely available from U.S.-based online aquarium retailers. For example:

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Diseases

No information available.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

From NIES (2018):

“Unknown impact.”

4 Global Distribution

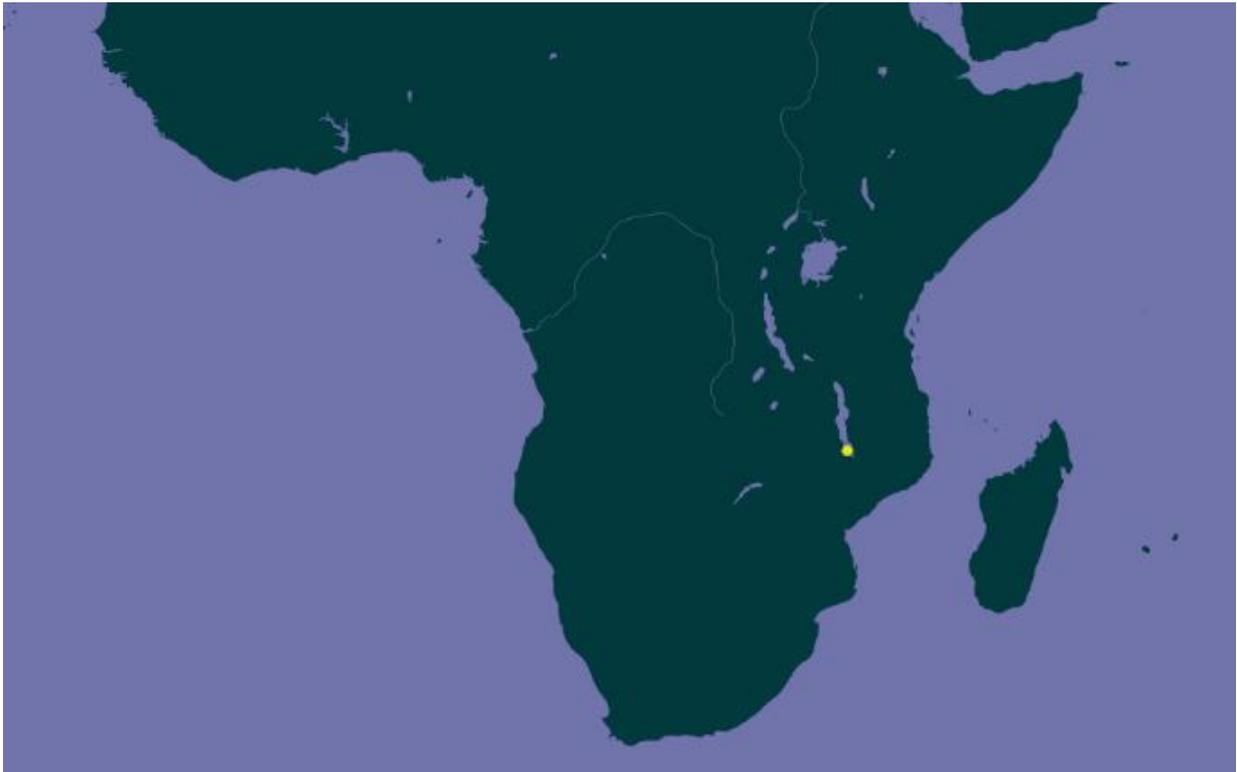


Figure 1. Known native distribution of *O. lithobates*, reported from southern Lake Malawi, Africa. Map from GBIF Secretariat (2017).



Figure 2. Map of Japan showing the location of the Okinawa Islands, where *O. lithobates* has been introduced. Map modified from Maximilian Dörrbecker (Chumwa). Licensed under Creative Commons BY-SA 3.0. Available: <https://commons.wikimedia.org/w/index.php?curid=4754765>. (January 2020).

5 Distribution within the United States

This species has not been reported as introduced or established 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 throughout the contiguous United States. The climate match was slightly higher, but still low, in peninsular Florida, southern and western Texas, southwestern New Mexico, southeastern

Arizona, and coastal California. Climate 6 score indicated that the contiguous United States has a low climate match overall. Scores of 0.005 and below are classified as low match; Climate 6 score for *O. lithobates* was 0.000.

Because of the lack of climate stations on small islands, the established population of *O. lithobates* in Japan was not included in the climate matching analysis. The absence of this Japanese population from the source locations increases the uncertainty of the climate matching results because this established location may have a different climate than the native range of *O. lithobates* in Lake Malawi.

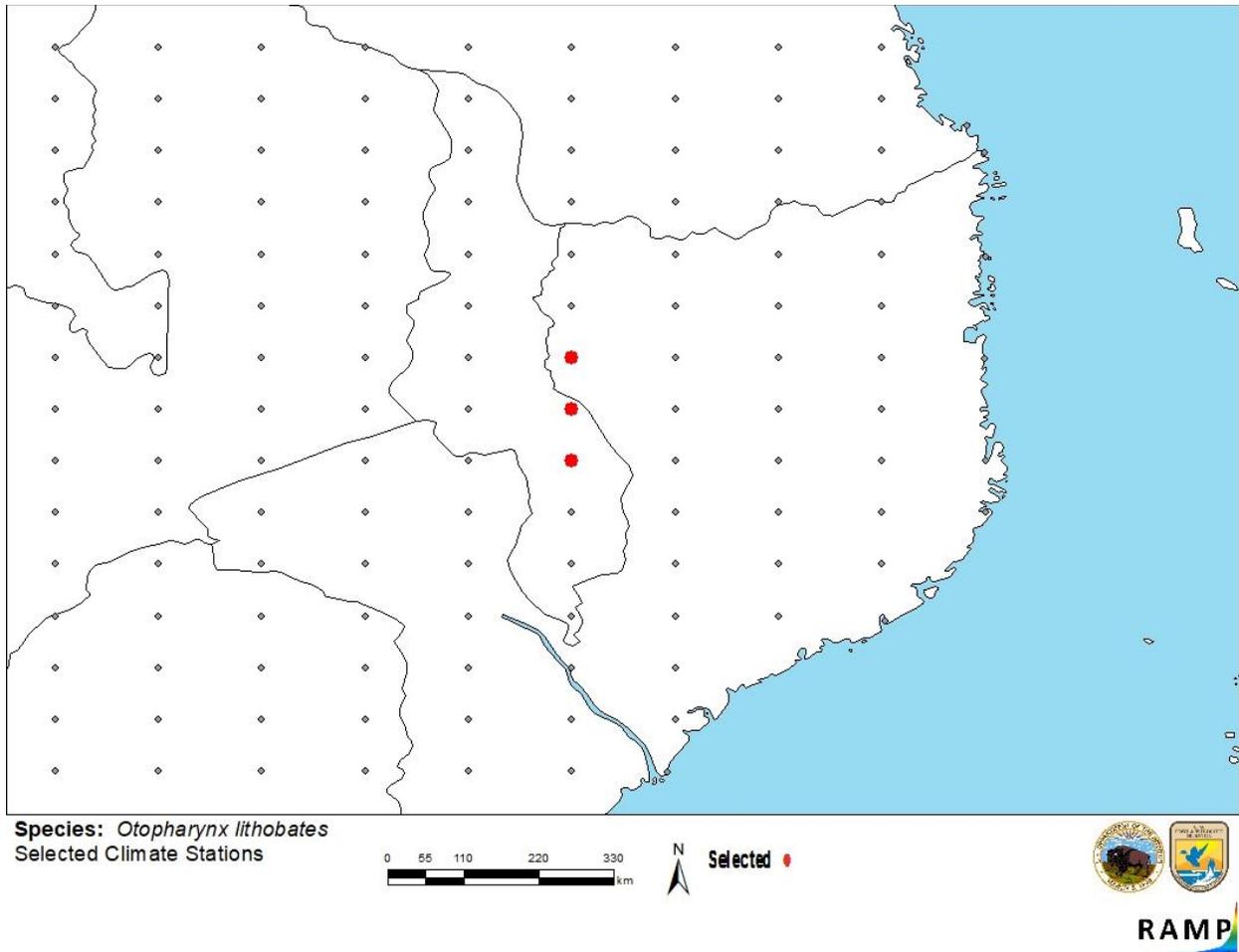


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations in southeastern Africa selected as source locations (red; Malawi, Mozambique) and non-source locations (gray) for *O. lithobates* climate matching. Source locations from GBIF Secretariat (2017). Although *O. lithobates* is established in Japan, no climate stations were located close enough to the population’s location to be selected for this climate matching analysis.

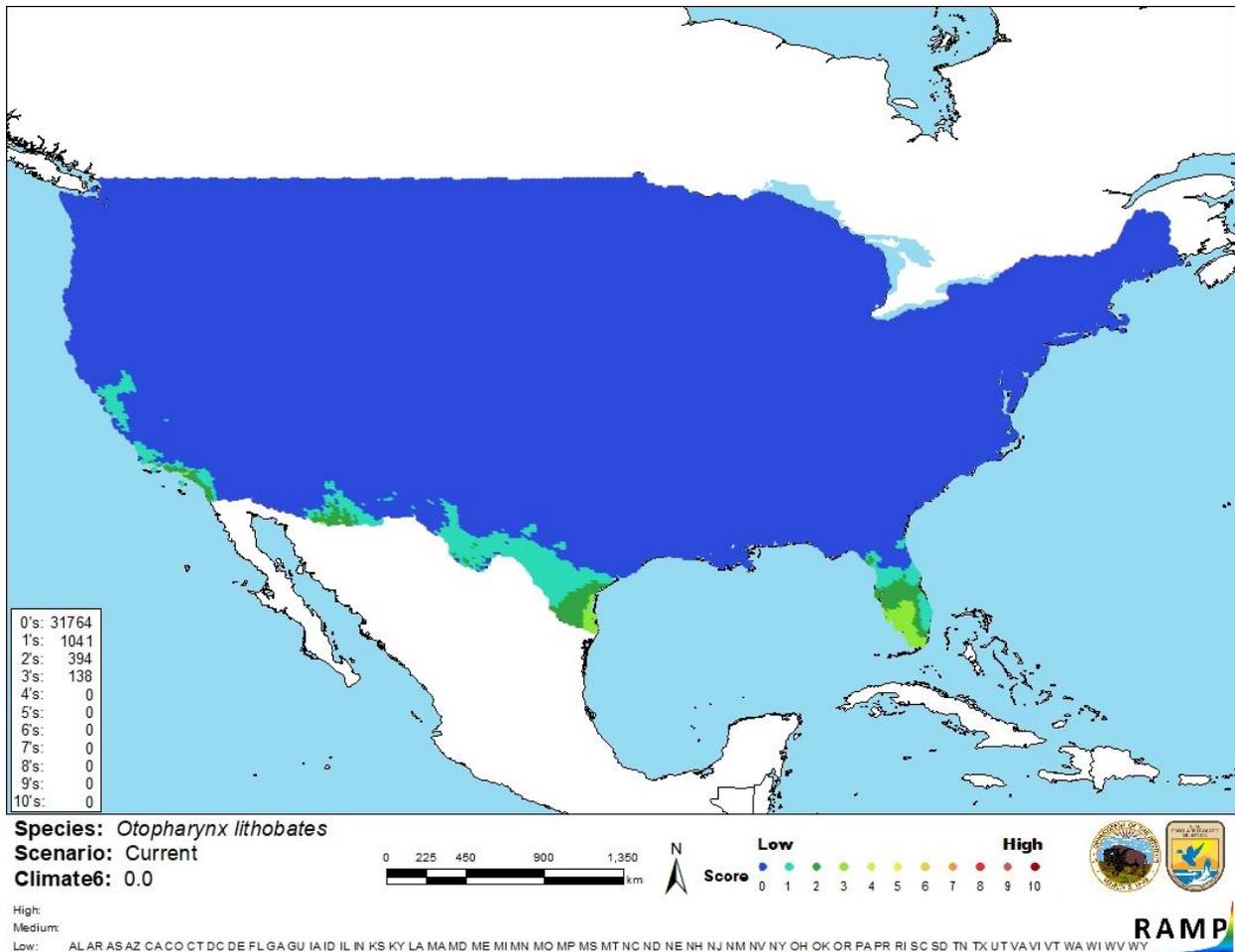


Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *O. lithobates* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). Counts of climate match scores are tabulated on the left. 0= Lowest match, 10= Highest match.

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 |
|--|---------------------------|
| $0.000 \leq X < 0.005$ | Low |
| $0.005 < X < 0.103$ | Medium |
| ≥ 0.103 | High |

7 Certainty of Assessment

Very little information is available on the biology or ecology of *O. lithobates*. The species has been reported as established on the southern Japanese island of Okinawa, but any impacts of this introduction remain unknown. Because of the lack of climate stations on small islands, the established population of *O. lithobates* in Japan was not included in the climate matching analysis, increasing the level of uncertainty in its results. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Otopharynx lithobates is a species of cichlid fish native to southern Lake Malawi, in southeastern Africa. *O. lithobates* was introduced to the island of Okinawa, Japan, through an aquarium release. The species is now established there, but no information is known about impacts of introduction so the history of invasiveness is categorized as “none documented”. *O. lithobates* is a popular species in the aquarium pet trade, and can be obtained from a variety of aquarium retailers in the United States. There have been no reports of *O. lithobates* introduction into natural habitats in the United States. Climate match with the contiguous United States is low. Overall risk posed by *O. lithobates* is uncertain.

Assessment Elements

- **History of Invasiveness: None Documented**
- **Climate Match: Low**
- **Certainty of Assessment: 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.

- Bluegrass Aquatics. 2018. *Otopharynx lithobates* – medium. Bluegrass Aquatics, Riverview, Florida. Available: <https://bluegrassaquatics.com/otopharynx-lithobates-medium.html>. (August 2018).
- Cleaver, R. M., A. F. Konings, and J. R. Stauffer, Jr. 2009. Two new cave-dwelling cichlids of Lake Malaŵi, Africa. *Ichthyological Exploration of Freshwaters* 20(2):163-178.
- Froese, R., and D. Pauly, editors. 2018. *Otopharynx lithobates* Oliver, 1989. FishBase. Available: <https://www.fishbase.de/summary/Otopharynx-lithobates.html>. (August 2018).
- GBIF Secretariat. 2017. GBIF backbone taxonomy: *Otopharynx lithobates* Oliver, 1989. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2372521>. (August 2018).
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- LiveFishDirect. 2018. Buy live Aristo Yellow Blaze (zimbabwe rock) *Otopharynx lithobates* (zimbabwe rock). LiveFishDirect, Draper, Utah. Available: <https://www.livefishdirect.com/store.php?fid=42>. (August 2018).
- NIES (National Institute for Environmental Studies). 2018. *Otopharynx lithobates*. In Invasive species of Japan. National Research and Development Agency, National Institute for Environmental Studies, Tsukuba, Japan. Available: <https://www.nies.go.jp/biodiversity/invasive/DB/detail/50370e.html>. (August 2018).
- Sanders, S., C. Castiglione, and M. Hoff. 2018. Risk Assessment Mapping Program: RAMP, version 3.1. U.S. Fish and Wildlife Service.
- Tampa Bay Cichlids. 2018. *Otopharynx lithobates*, Aristo Yellow Blaze Z Rock (German strain), hap. Tampa Bay Cichlids, Riverview, Florida. Available: <https://www.tampabaycichlids.com/products/otopharynx-lithobates-aristo-yellow-blaze-z-rock-german-strain-haplochromide-african-cichlid>. (August 2018).

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.

- Baensch, H. A., and R. Riehl. 1995. Aquarien Atlas, volume 4. Mergus Verlag GmbH, Verlag für Natur-und Heimtierkunde, Melle, Germany.
- Konings, A. 1990. Ad Konings's book of cichlids and all the other fishes of Lake Malawi. T.F.H. Publications, Inc.