Kenyi Cichlid (*Maylandia lombardoi*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, April 2011
Revised, July 2018
Web Version, 8/3/2018

Photo: Ged~commonswiki. Public domain. Available: https://commons.wikimedia.org/wiki/File:Maylandia_lombardoi.jpg. (July 2018).

1 Native Range and Status in the United States

Native Range

From Kasembe (2017):

"Endemic to Lake Malawi. Occurs at Mbenji Island and Nkhomo reef [Malawi]."

From Froese and Pauly (2018):

"Africa: Endemic to Mbenji Island, Lake Malawi [Malawi]."

Status in the United States

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

From Imperial Tropicals (2018):

"Kenyi Cichlid (*Pseudotropheus lombardoi*) […] $ 7.99 […] UNSEXED 1" FISH"

Means of Introductions in the United States

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

Remarks

There is taxonomic uncertainty concerning *Maylandia lombardoi*. Because it has recently been grouped in the genera *Metriaclima* and *Pseudotropheus*, these names were also used when searching for information in preparation of this assessment.

From Kasembe (2017):

"This species previously appeared on the IUCN Red List in the genus *Maylandia* but is now considered valid in the genus *Metriaclima* (Konings 2016, Stauffer et al. 2016)."

From Seriously Fish (2018):

"There is ongoing debate as to the true genus of this species, it having been variously grouped in both *Maylandia* and *Metriaclima*, as well as the currently valid *Pseudotropheus*. It is unlikely it will remain in *Pseudotropheus*, however, and many sources already consider it a member of *Metriaclima*."

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 *Pseudotropheus*
Species *Pseudotropheus lombardoi* Burgess, 1977"

From Eschmeyer et al. (2018):

"Current status: Valid as *Maylandia lombardoi* (Burgess 1977). Cichlidae: Pseudocrenilabrinae."

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Max length : 8.7 cm SL male/unsexed; [Maréchal 1991]"

Environment

From Froese and Pauly (2018):

"Freshwater; demersal; pH range: 8.0 - ? ; dH range: 10 - 20; depth range 6 - 30 m. […] 24°C - 26°C [Baensch and Riehl 1985; assumed to be recommended aquarium temperature range]; […]"

Climate/Range

From Froese and Pauly (2018):

"Tropical; […] 13°S - 14°S"

Distribution Outside the United States

Native

From Kasembe (2017):

"Endemic to Lake Malawi. Occurs at Mbenji Island and Nkhomo reef [Malawi]."

From Froese and Pauly (2018):

"Africa: Endemic to Mbenji Island, Lake Malawi [Malawi]."

Introduced

From Froese and Pauly (2018):

"Introduced to Namalenje Island [Malawi]."

Froese and Pauly (2018) report that *M. lombardoi* has been introduced to Israel and that a population is maintained through continuous restocking.

Means of Introduction Outside the United States
From Froese and Pauly (2018):

"ornamental"

Short Description
From Seriously Fish (2018):

"In a reverse of the common sexual dichromatism in mbuna, dominant mature males are yellow in colour whilst females are blue. Confusingly, sub-dominant males often adopt the blue colouration of the females, and mouth-brooding females can adopt the yellow colour of dominant males!"

Biology
From Froese and Pauly (2018):

"Inhabits the sediment-rich regions and is often found over sandy and muddy patches between rocks. Abundant in waters > 10 m [Ribbink et al. 1983]. Feeds by brushing the loose algae from the rocks and also on plankton in open water [Konings 1990]. Aggressive males exhibit territoriality over sand-dug nests. Females, juveniles and non-territorial adult males occur singly or in small groups [Ribbink et al. 1983]."

"Females are mouthbrooders [Baensch and Riehl 1985]. Males adorn one eggspot on the anal fin which mimics eggs and apparently functions to lure females to pick up this egg enabling fertilization of the rest of the eggs being brooded in the females's mouth [Couldridge 2002]. In one experimental study, females are attracted to males with one large eggspot more than to those with numerous tiny eggs covering the same area [Couldridge 2002]."

Human Uses
From Froese and Pauly (2018):

"Aquarium: commercial"

From Kasembe (2017):

"Collection for the aquarium trade. Subsistence fishing."

Diseases
From Froese and Pauly (2018):

"Fin-rot Disease (late stage), Bacterial diseases
White spot Disease, Parasitic infestations (protozoa, worms, etc.)
Columnaris Disease (Ornament.), Bacterial diseases
Fin Rot (early stage), Bacterial diseases

Cryptobia Infestation, Parasitic infestations (protozoa, worms, etc.)
Pseudomonas infection, Bacterial diseases
Bacterial Infections (general), Bacterial diseases"

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

Threat to Humans

From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions

No information available.

4 Global Distribution

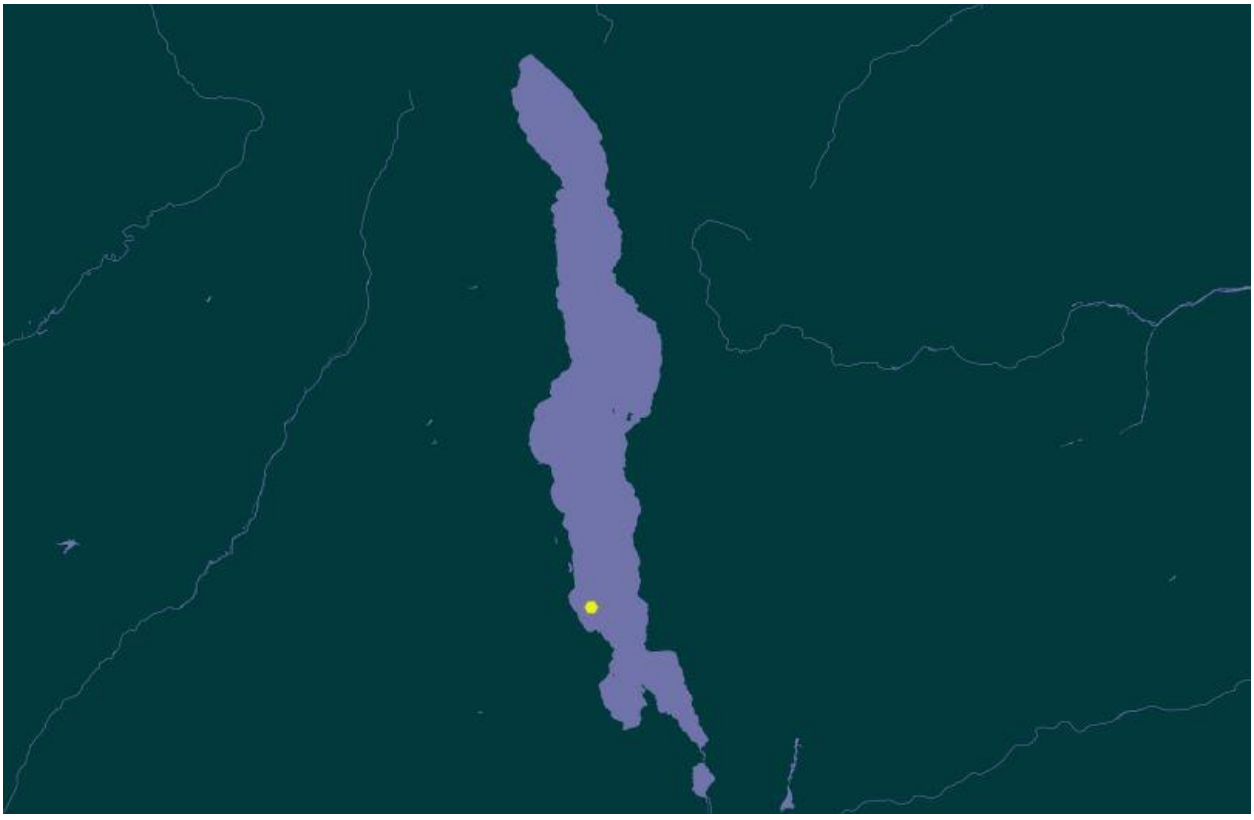

Figure 1. Known global distribution of *Maylandia lombardoi* in Lake Malawi in southeastern Africa. Map from GBIF Secretariat (2018). A point in Hawaii was excluded from the extent of this map and from climate match analysis because it was from a fountain pond, not a wild population.

5 Distribution Within the United States

This species has not been reported as introduced or established in the wild 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 0.000, which is a low climate match. The range for a low climate match is from 0.000 to 0.005, inclusive. The climate match was categorically low in every state. Areas of the Southwest, the Pacific Coast, and southern Florida had a slightly higher climate match; most of these areas would still be considered low match except for a small portion of southeastern Arizona that was a medium match.

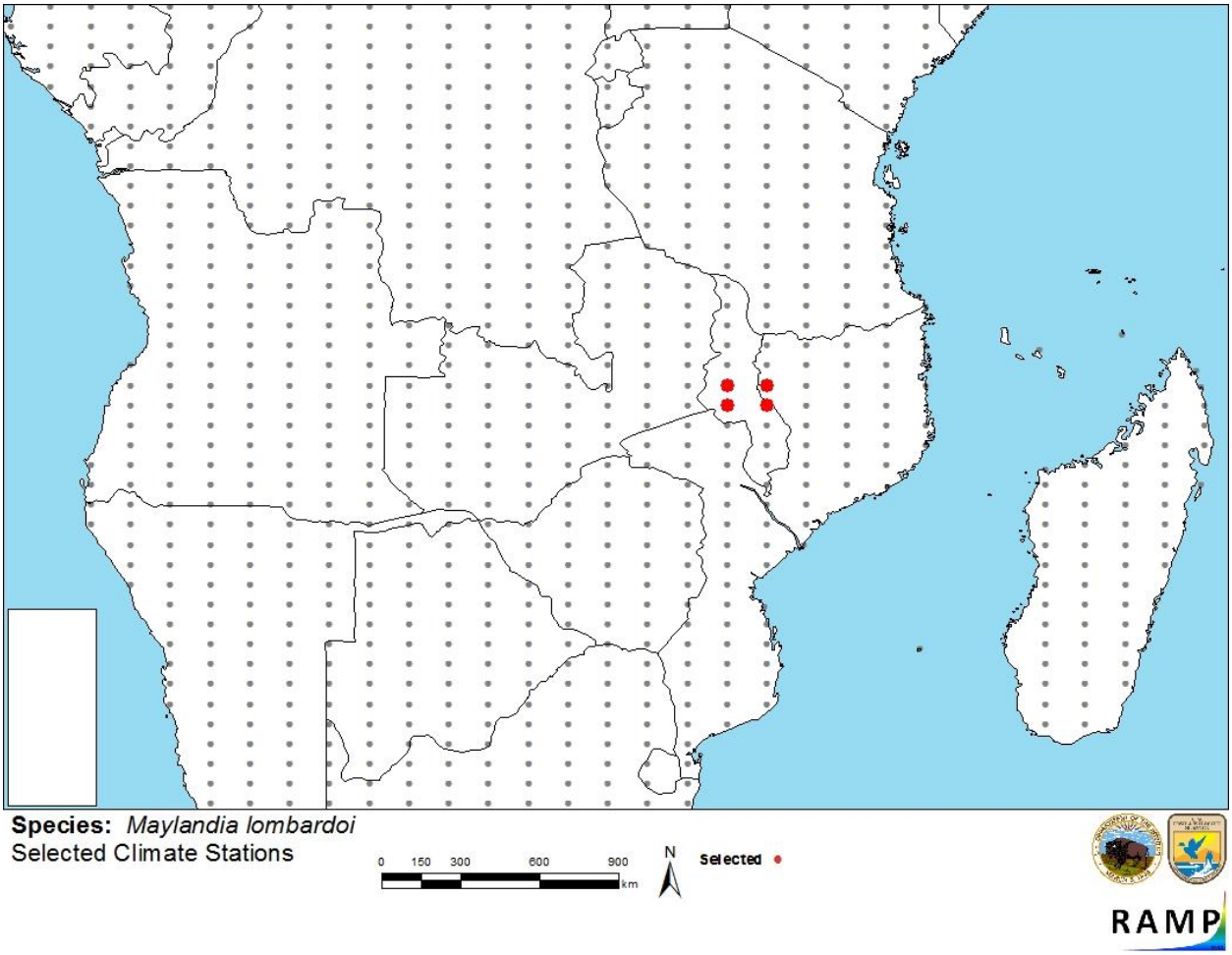

Figure 2. RAMP (Sanders et al. 2014) source map of southeastern Africa showing weather stations selected as source locations (red; Malawi; Mozambique) and non-source locations (gray) for *Maylandia lombardoi* climate matching. Source locations from GBIF Secretariat (2018). Source locations are selected for being located within 100 km of a reported occurrence and do not necessarily represent the exact location of an occurrence.

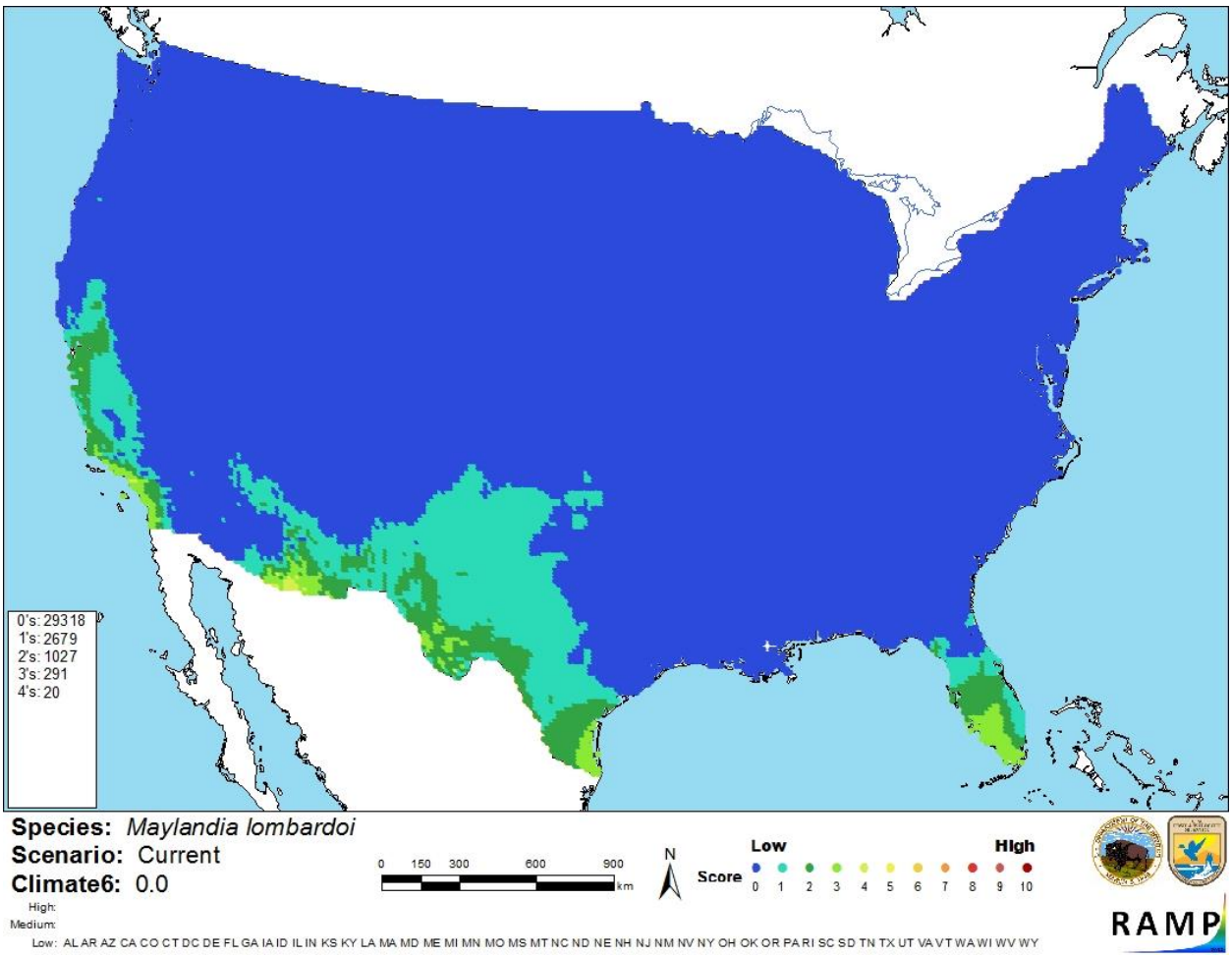

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Maylandia lombardoi* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0= Lowest match, 10=Highest match.

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 some information available on the biology of *Maylandia lombardoi*. Its native range is known. It has been reported as introduced outside of its native range (from one island to another within Lake Malawi, as well as to Israel), but no information is available regarding impacts of this introduction. A detailed description of this species could not be found. Further information is needed to adequately assess the risk this species poses to the contiguous United States, so the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Maylandia lombardoi, the Kenyi Cichlid, is a small, colorful cichlid species native to Lake Malawi in southeastern Africa. There is some disagreement about the taxonomy of this species; it has been placed in several genera. *M. lombardoi* is used in the aquarium trade, including in the United States, and for subsistence fishing. It can be afflicted by numerous bacterial diseases and parasitic infestations. *M. lombardoi* has been reported as introduced outside of its native range from one island to another within Lake Malawi and to Israel. No information is available about the status of the introduced population in Malawi, while the introduced population in Israel is maintained through continuous stocking. No impacts of its introduction have been documented. *M. lombardoi* has a low climate match with the contiguous United States. Certainty of this assessment is low because of a general lack of information about this species. The overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **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.

Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2018. Catalog of fishes: genera, species, references. Available: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp. (July 2018).

Froese, R., and D. Pauly, editors. 2018. *Maylandia lombardoi* (Burgess, 1977). FishBase. Available: https://www.fishbase.de/summary/Maylandia-lombardoi.html. (July 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Maylandia lombardoi*, Burgess, 1977. Global Biodiversity Information Facility, Copenhagen. Available: https://www.gbif.org/species/2372997. (July 2018).

Imperial Tropicals. 2018. Kenyi Cichlid (*Pseudotropheus lombardoi*). Available: https://imperialtropicals.com/products/kenyii?variant=10555568897. (July 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Pseudotropheus lombardoi* (Burgess, 1977). Integrated Taxonomic Information System, Reston, Virginia. Available:

https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=648881#null. (July 2018).

Kasembe, J. 2017. *Metriaclima lombardoi* (amended version of 2006 assessment). The IUCN Red List of Threatened Species 2017: e.T61146A120811522. Available: http://www.iucnredlist.org/details/61146/0. (July 2018).

Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

Seriously Fish. 2018. *Pseudotropheus lombardoi* (Kennyi). Available: https://www.seriouslyfish.com/species/pseudotropheus-lombardoi/. (July 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. 1985. Aquarien atlas, volume 2. Mergus, Verlag für Natur-und Heimtierkunde GmbH, Melle, Germany.

Couldridge, V. C. K. 2002. Experimental manipulation of male eggspots demonstrates female preference for one large spot in *Pseudotropheus lombardoi*. Journal of Fish Biology 60(3):726-730.

Konings, A. 1990. Ad Konings's book of cichlids and all the other fishes of Lake Malawi. TFH Publications, New Jersey.

Konings, A. 2016. Malawi cichlids in their natural habitat, 5th edition. Cichlid Press, El Paso, Texas.

Maréchal, C. 1991. *Pseudotropheus*. Pages 401-415 *in* J. Daget, J.-P. Gosse, G. G. Teugels, and D. F. E. Thys van den Audenaerde, editors. Check-list of the freshwater fishes of Africa (CLOFFA), volume 4. ISNB, Brussels, Belgium; MRAC, Tervuren, Belgium; and ORSTOM, Paris.

Ribbink, A. J., B. A. Marsh, A. C. Marsh, A. C. Ribbink, and B. J. Sharp. 1983. A preliminary survey of the cichlid fishes of rocky habitats in Lake Malawi. South African Journal of Zoology 18(3):147-310.

Stauffer, J. R., Jr., A. F. Konings, and T. M. Ryan. 2016. Redescription of *Pseudotropheus livingstonii* and *Pseudotropheus elegans* from Lake Malawi, Africa. Zootaxa 4154(2):169-178.