

Rednose Labeo (*Labeo altivelis*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, May 2012

Revised, March 2018

Web Version, 5/30/2018



Photo: South African Institute for Aquatic Biodiversity. Used under CC BY 4.0. Available: <https://www.gbif.org/occurrence/1230394044>. (March 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

“Africa: lower and middle reaches of the Zambezi River system, including the Shire and Lake Malawi. Also in Lake Mweru and the Luapula (upper Congo River basin)[Tshibwabwa 1997]. Range thought to extend to some East Coast rivers (Rufiji system) [Reid 1985].”

Status in the United States

This species has not been reported as introduced or established in the U.S.

Means of Introductions in the United States

This species has not been reported as introduced or established in the U.S.

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 Ostariophysi
Order Cypriniformes
Superfamily Cyprinoidea
Family Cyprinidae
Genus *Labeo*
Species *Labeo altivelis* Peters, 1852”

From Eschmeyer et al. (2018):

“Current status: Valid as *Labeo altivelis* Peters 1852. Cyprinidae: Labeoninae.”

Size, Weight, and Age Range

From Froese and Pauly (2017):

“Max length : 49.0 cm TL male/unsexed; [Kolding et al. 1992]; max. published weight: 3.6 kg [Skelton 1993]; max. reported age: 9 years [Skelton 1993]”

Environment

From Froese and Pauly (2017):

“Freshwater; benthopelagic; potamodromous [Riede 2004].”

Climate/Range

From Froese and Pauly (2017):

“Tropical; 13°S - 22°S”

Distribution Outside the United States

Native

From Froese and Pauly (2017):

“Africa: lower and middle reaches of the Zambezi River system, including the Shire and Lake Malawi. Also in Lake Mweru and the Luapula (upper Congo River basin)[Tshibwabwa 1997]. Range thought to extend to some East Coast rivers (Rufiji system) [Reid 1985].”

Introduced

This species has not been reported as introduced or established outside of its native range.

Means of Introduction Outside the United States

This species has not been reported as introduced or established outside of its native range.

Short Description

From Boulenger (1909):

“Body strongly compressed, its depth 3 to $3\frac{1}{4}$ times in total length. Head $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, $4\frac{1}{2}$ to 5 times in total length; snout rounded, moderately prominent; eye perfectly lateral, in middle of head, 4 to 6 times in length of head; interorbital width $\frac{1}{2}$ to $\frac{2}{5}$ length of head; width of mouth, with lips, $2\frac{1}{2}$ to 3 times in length of head; both lips with several rows of papillae, those of the outer row large and subconical, forming a strong fringe; edge of rostral flap entire; a minute barbel, hidden under folds on skin; tubercles on snout very small or absent. Dorsal III-IV 11-13, equally distant from head or eye and from caudal, its upper edge convex, longest rays $1\frac{1}{2}$ to $2\frac{1}{3}$ times length of head. Anal III 5, reaching, or nearly reaching, root of caudal. Pectoral as long as head or slightly shorter, not reaching ventral, the first ray of which falls below 3rd or 4th branched ray of dorsal. Caudal deeply emarginated, crescentic. Caudal peduncle as long as deep or a little deeper than long. [...] Olive above, yellowish beneath, with or without pink streaks along the series of scales; fins grey.”

Biology

From Froese and Pauly (2017):

“Prefers large rivers but is also found in large lakes and dams. Grazes on algae and `aufwuchs' from rocks [Skelton 1993]. From October to December in Lake Moëro, the adults gather and migrate to the spawning grounds. They go up the Luapula River up to the foot of Johnston Falls where they undergo one massive spawning between January and March. This massive spawning of short duration is known as kapata in the Luapula-Moëro system and in the tributaries of the Luapula.”

Human Uses

From Bills et al. (2010):

“This species is of some economic importance especially during the low water conditions of the dry season.”

From Froese and Pauly (2017):

“This species is intensely fished and caviar is produce from eggs collected during migration from Lake Moëro to Luapula River [Tshibwabwa 1997].”

Diseases

From Khalil (1973):

“One mature female specimen of this species [*Camallanus kirandensis*] was recovered from the intestine of *Labeo altivelis* Peters, 1852.”

“One mature female specimen of a species of the genus *Philometroides* was recovered from *Labeo altivelis* Peters, 1852, from Banyati River, Rhodesia.”

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

Threat to Humans

From Froese and Pauly (2017):

“Harmless”

3 Impacts of Introductions

This species has not been reported as introduced or established outside of its native range.

4 Global Distribution

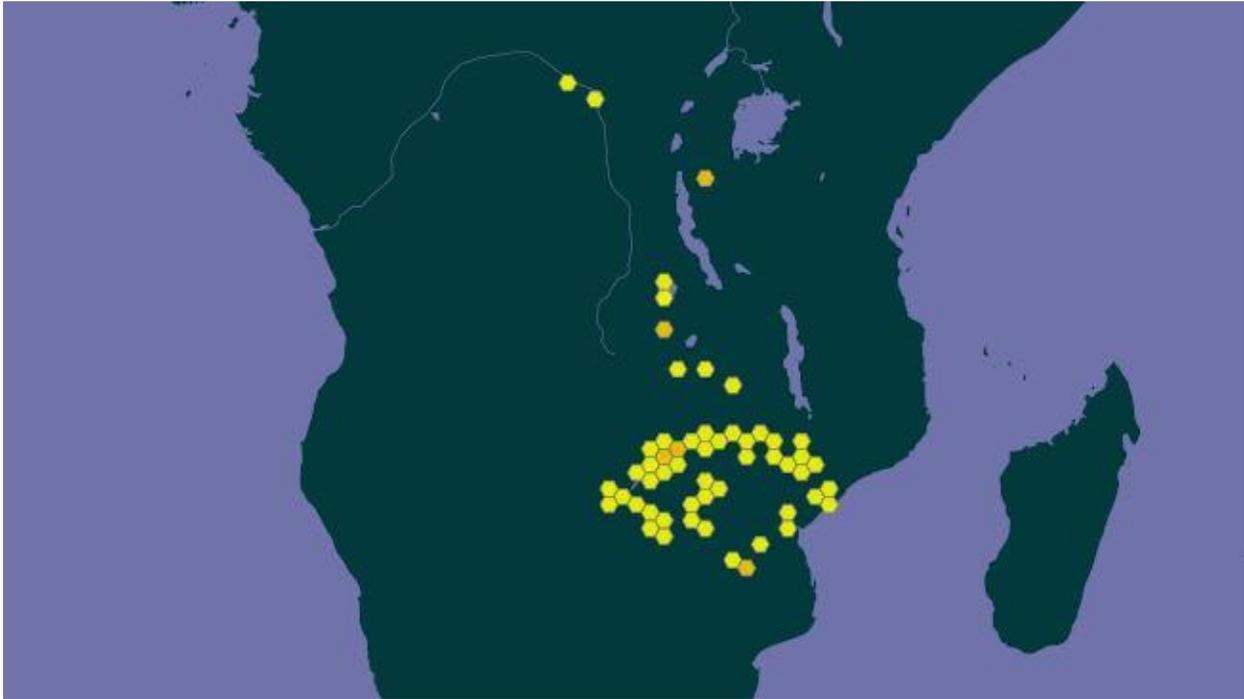


Figure 1. Known global distribution of *Labeo altivelis*. Map from GBIF Secretariat (2018).

5 Distribution Within the United States

This species has not been reported as introduced or established in the U.S.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the Continental U.S. was 0.007, which is a medium climate match. In general, the Southern U.S. had a medium climate match, and all other parts of the U.S. had a low climate match. The climate match was high in Florida, medium in Arizona and Texas, and low in all other states.

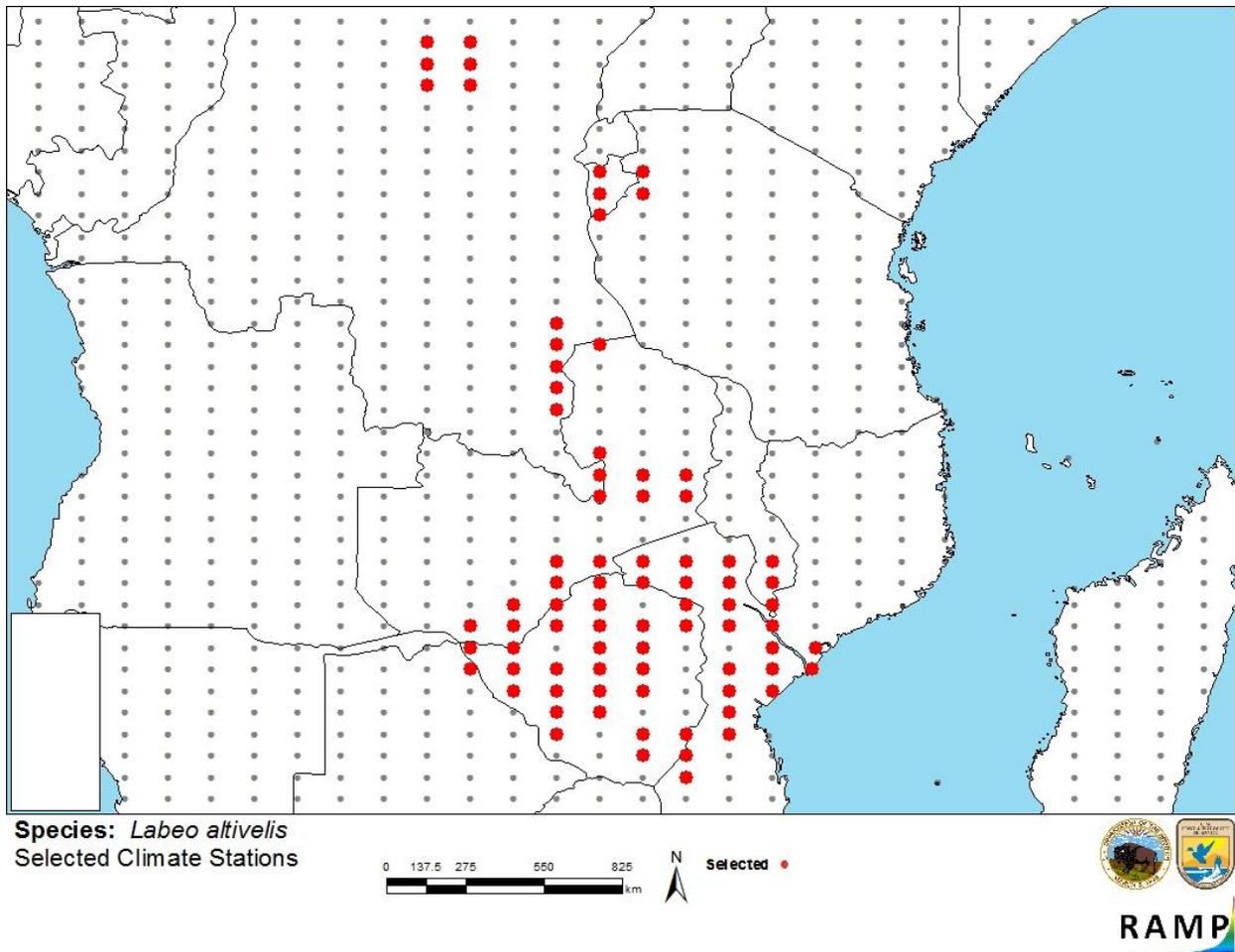


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Zimbabwe, Mozambique, Zambia, Malawi, Democratic Republic of the Congo, Burundi, and Tanzania) and non-source locations (gray) for *Labeo altivelis* climate matching. Source locations from GBIF Secretariat (2018).

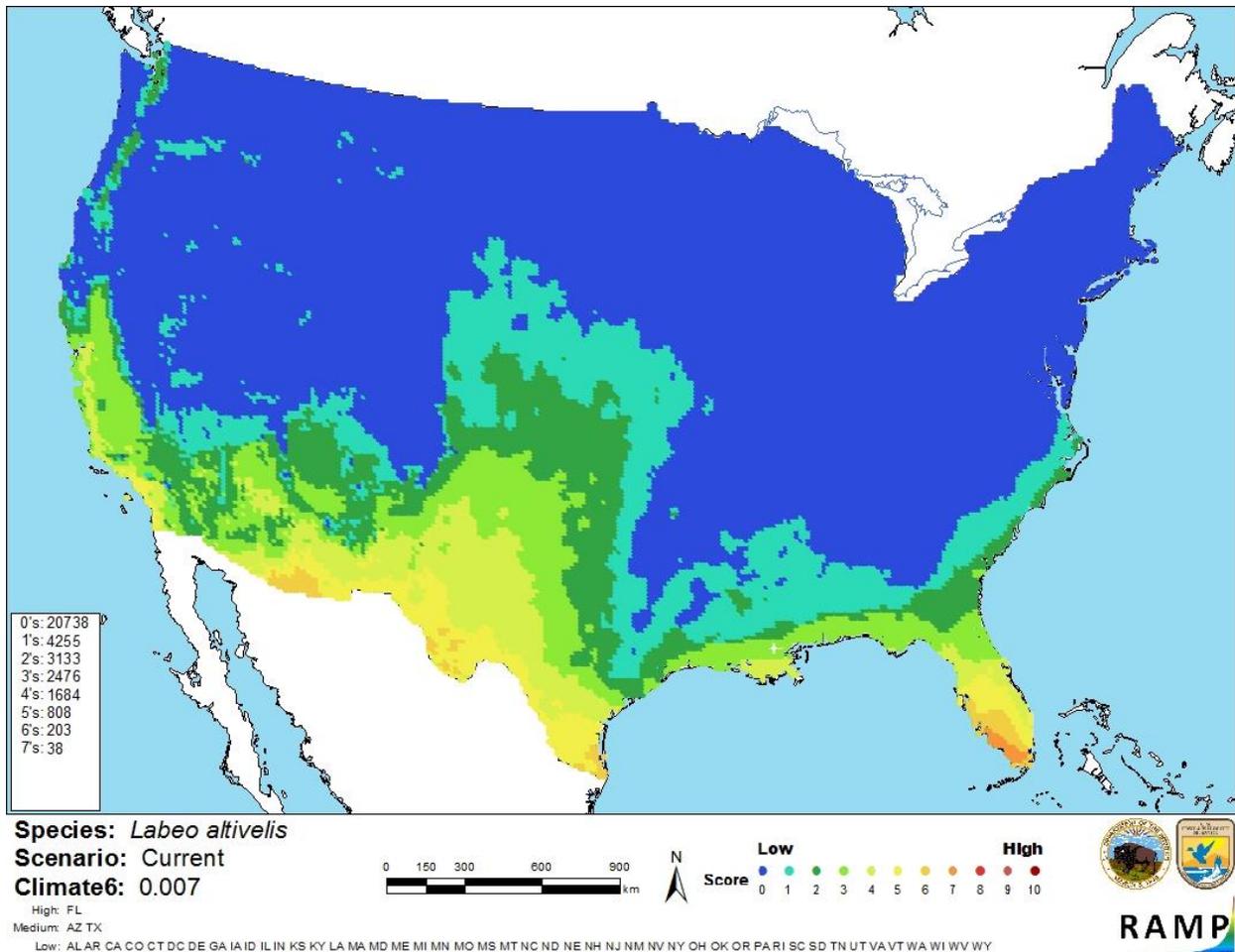


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Labeo altivelis* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0=Lowest match, 10=Highest match.

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 and distribution of *Labeo altivelis*. No introductions of this species outside of its native range have been documented. Because of this, no impacts of introductions have been documented, so certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Labeo altivelis is a carp native to Africa. This species is important as a food fish, but it has never been reported as introduced outside of its native range. *L. altivelis* has a medium climate match with the contiguous United States. Because of a lack of information from which to base an assessment of invasive potential, certainty of this assessment is low. The overall risk assessment category is Uncertain.

Assessment Elements

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

Bills, R., B. Marshall, T. Moelants, and E. Vreven. 2010. *Labeo altivelis*. The IUCN Red List of Threatened Species 2010: e.T182578A7918663. Available: <http://www.iucnredlist.org/details/182578/0>. (March 2018).

Boulenger, G. A. 1909. Catalogue of the fresh-water fishes of Africa in the British Museum (Natural History). Volume 1. London.

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>. (March 2018).

Froese, R., and D. Pauly, editors. 2017. *Labeo altivelis* (Peters, 1852). FishBase. Available: <http://www.fishbase.org/summary/7738>. (March 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Labeo altivelis*, Peters, 1852. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/5206090>. (March 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Labeo altivelis* (Peters, 1852). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=689261#null. (March 2018).

Khalil, L. F. 1973. Some Nematodes from the freshwater fishes of Rhodesia with the description of a new species *Cithariniella petterae* n. sp. *Annales de Parasitologie Humaine et Comparee* 48(6):811-818.

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

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.

Kolding, J., E. M. Tirasin and L. Karengé. 1992. Growth, mortality, maturity and length-weight parameters of fishes in Lake Kariba, Africa. *Naga ICLARM Q.* 15(4):39-41.

Reid, G. M. 1985. A revision of African species of *Labeo* (Pisces: Cyprinidae) and a re-definition of the genus. Verlag von J. Cramer, Braunschweig, Germany.

Riede, K. 2004. Global register of migratory species - from global to regional scales. Final Report of the R&D-Projekt 808 05 081. Federal Agency for Nature Conservation, Bonn, Germany.

Skelton, P. H. 1993. A complete guide to the freshwater fishes of southern Africa. Southern Book Publishers, Johannesburg, South Africa.

Tshibwabwa, S. M. 1997. Systématique des espèces africaines du genre *Labeo* (Teleostei, Cyprinidae) dans les régions ichtyogéographiques de Basse-Guinée et du Congo. I. Presses Universitaires de Namur, Namur, Belgium.