

Leaden Labeo (*Labeo molybdinus*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, March 2012

Revised, May 2018

Web Version, 6/15/2018



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<https://www.inaturalist.org/observations/11283776>. (May 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“Africa: the Limpopo, Incomati and Usutu-Pongolo systems, Tugela and from Lake Kariba, Zambezi system. Also known from Lake Sibaya [Skelton 1993; Botswana, Mozambique, South Africa, Swaziland, Zambia, and Zimbabwe].”

From Roux et al. (2017):

“Middle and lower Zambezi River System [Mozambique, Malawi, Zambia, Zimbabwe] south to the Tugela River in southern KwaZulu-Natal, South Africa.”

Status in the United States

This species has not been reported as introduced or established in the United States. There is no indication that this species is present in trade in the United States.

Means of Introductions in the United States

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

Remarks

From Roux et al. (2017):

“Taxonomic status of populations in different river catchments needs to be examined. There is some morphological variation in what is currently recognised as *Labeo molybdinus*. Populations of a *Labeo* from the Rovuma River, northern Mozambique are considered separately but may be a population of *L. molybdinus*.”

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* Cuvier, 1816
Species *Labeo molybdinus* Du Plessis, 1963”

From Eschmeyer et al. (2018):

“Current status: Valid as *Labeo molybdinus* Du Plessis 1963. Cyprinidae: Labeoninae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 38.0 cm SL male/unsexed; [Skelton 1993]; max. published weight: 1.7 kg [Skelton 1993]”

From du Plessis (1963):

“Maximum length recorded 395 mm. (2 lb. 9 oz.) from the Marico Bosveld Irrigation Dam on the Marico River.”

Environment

From Froese and Pauly (2018):

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

Climate/Range

From Froese and Pauly (2018):

“Tropical; 11°S - 30°S”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“Africa: the Limpopo, Incomati and Usutu-Pongolo systems, Tugela and from Lake Kariba, Zambezi system. Also known from Lake Sibaya [Skelton 1993; Botswana, Mozambique, South Africa, Swaziland, Zambia, and Zimbabwe].”

From Roux et al. (2017):

“Middle and lower Zambezi River System [Mozambique, Malawi, Zambia, Zimbabwe] south to the Tugela River in southern KwaZulu-Natal, South Africa.”

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 du Plessis (1963):

“Closely resembling *L. forskallii* and *L. cylindricus*. The popular name of leadfish, from which the species name is derived, refers to the dark leaden grey colour on the back and sides. Body slightly compressed and 1.1- 1.5 times as deep as wide, as measured anterior to the dorsal fin.”

“Dorsal profile steeper than in *cylindricus* and resembling Boulenger's figure of *forskallii*, except for the shorter dorsal. Snout projecting well beyond mouth. Horny warts seldom present on snout, but craterlike scars always visible in larger specimens. Strong rostral flap with slightly irregular edge. Upper lip smooth, with transverse plicae on inside, and also on inside of lower lip. Ventral surface of lower lip flattened, with conical papillae along anterior edge, and the hind margin thin and irregular. Both lips have a hard cutting ridge on the inside. The mouth lies in a recess of the head.”

“The anterior barbel is absent, except in very small specimens, while the posterior one is minute, flattened at its base and hidden at the corner of the mouth. The ventral aspect of the head is rigid and flat.”

“Dorsal iii 9-10, posterior edge concave; length equals or just exceeds head-length.”

“Caudal deeply forked. Anal ii-iii 5, hind margin slightly concave.”

“38-41 scales in the lateral line, with 39 as typical. 17-21 scales round caudal peduncle, with 18 and 19 as typical. Caudal peduncle 1.0-1.4 times as long as deep. 6, rarely 5 or 7, scales above, and 7-9, rarely 6, below the lateral line.”

Biology

From Froese and Pauly (2018):

“Prefers high veldt rapids but is absent from the coldest streams. Occurs more often in large permanent pools of seasonal rivers [Reid 1985]. Favors deep pools, but will enter rapids; grazes algae and ‘aufwuchs’ from firm surfaces. Migrates upstream in rain-swollen rivers to breed [Skelton 1993].”

Human Uses

From Froese and Pauly (2018):

“Fisheries: subsistence fisheries; gamefish: yes”

Diseases

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

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

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

4 Global Distribution

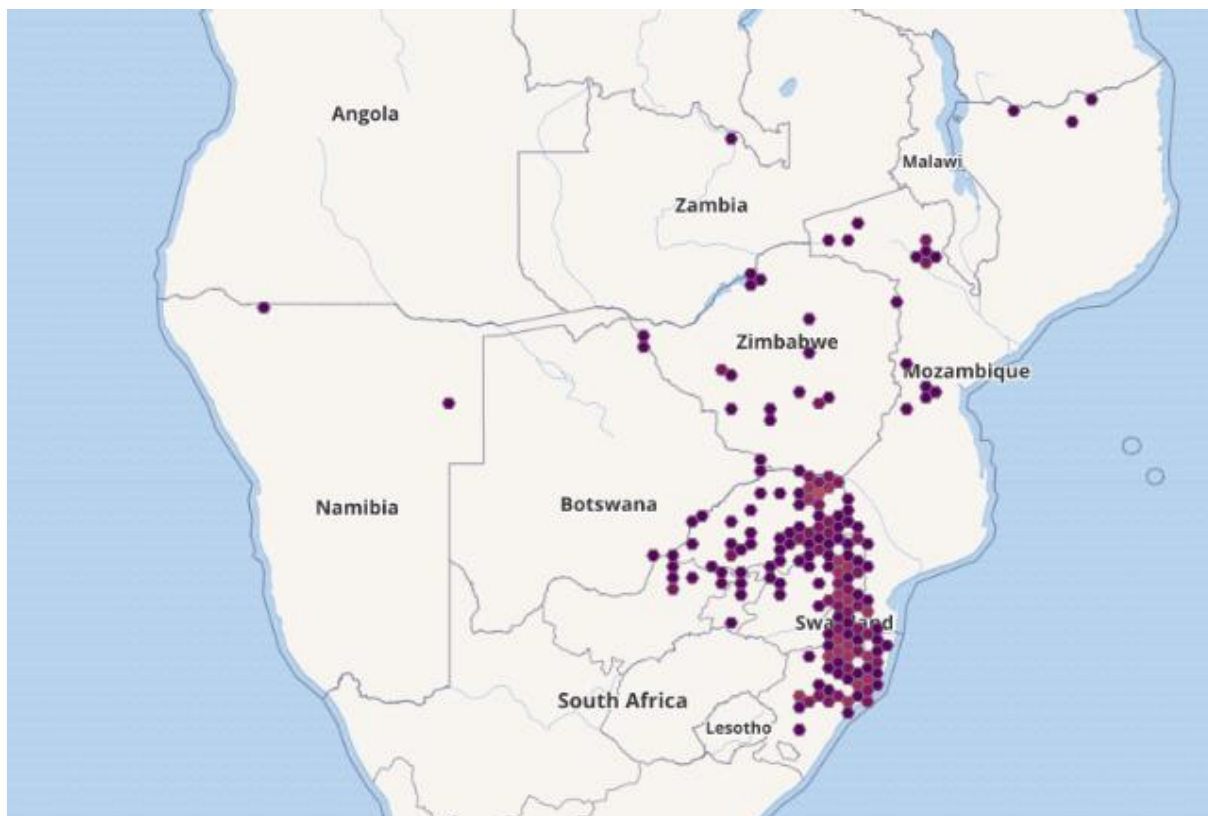


Figure 1. Known global distribution of *Labeo molybdinus*, reported from southern Africa. Map from GBIF Secretariat (2017). Locations in Namibia and in northern Mozambique along the Tanzanian border were not included in the climate matching analysis because they are not reported as locations of established populations.

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 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.054, which is a medium climate match. The range for a medium climate match is between 0.005 and 0.103. The climate match score was high overall in Arizona, Florida, New Mexico, and Texas, with a high match in the southernmost portions of these states. There was a medium match with coastal areas from North Carolina to Florida, in coastal California, in the Southern Great Plains, and in northern New Mexico and Arizona. There was a low match in the rest of the contiguous United States.

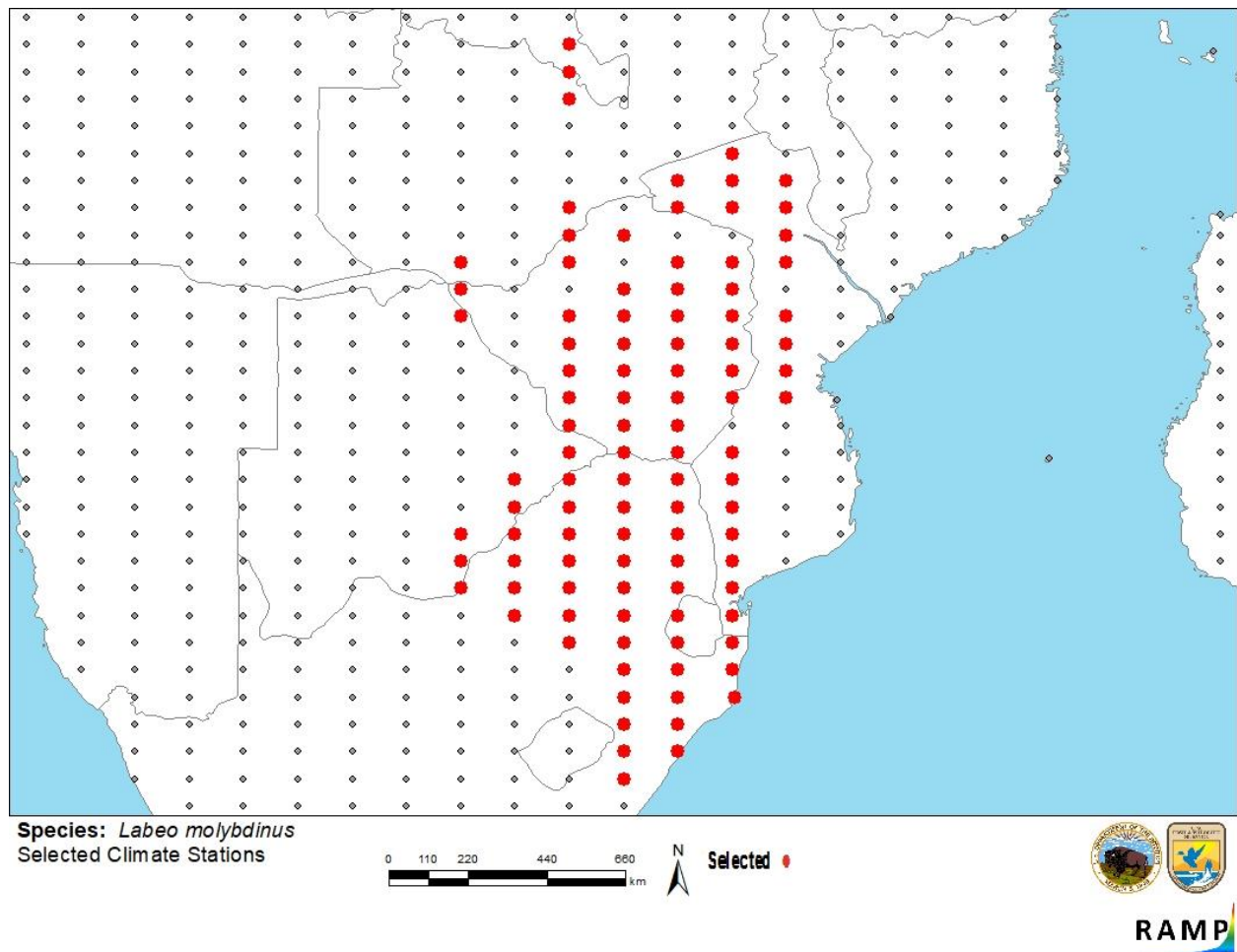


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in southern Africa selected as source locations (red; South Africa, Swaziland, Botswana, Zimbabwe, Mozambique, Zambia, and the Democratic Republic of the Congo) and non-source locations (gray) for *Labeo molybdinus* climate matching. Source locations from GBIF Secretariat (2017). Selected source locations are located within 100 km of a species occurrence, but do not represent the exact location of an occurrence.

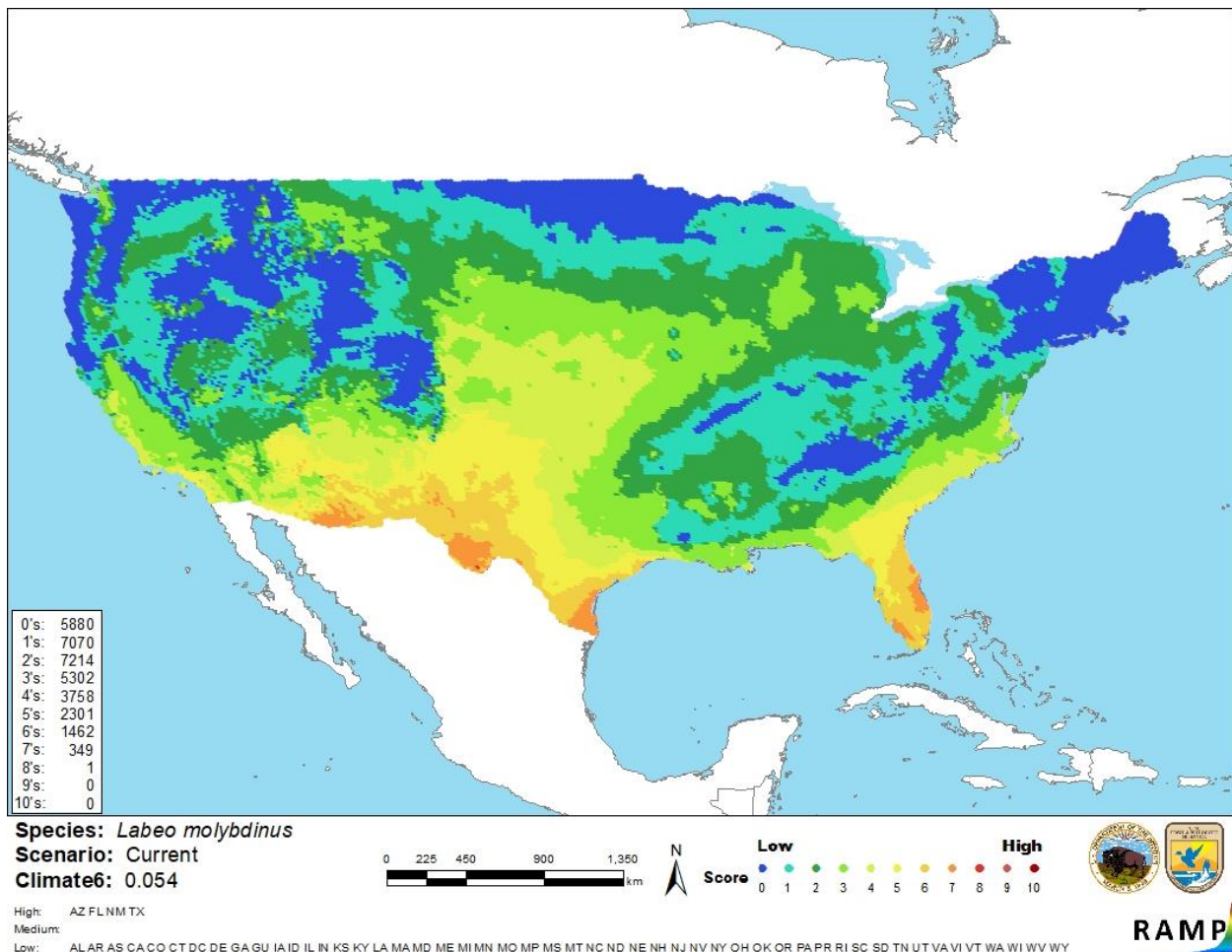


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Labeo molybdinus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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

7 Certainty of Assessment

There is some information available about *Labeo molybdinus*. This species has never been reported as introduced outside of its native range, so there is no information available on impacts of its introduction. Further information is needed to adequately assess the risk this species poses. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Leaden Labeo (*Labeo molybdinus*) is a species of carp native to southern Africa. *L. molybdinus* is used as a food fish. This species has not been reported outside of its native range. *L. molybdinus* has a medium climate match with the contiguous United States. Because of a lack of information on which to base a risk assessment, the 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.

du Plessis, S. S. 1963. A revision of the genus *Labeo* (Pisces: Cyprinidae) in the Transvaal, with a description of a new species. *Annals of the Transvaal Museum* 24(4):327-337.

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>. (May 2018).

Froese, R., and D. Pauly, editors. 2018. *Labeo molybdinus* (du Plessis, 1963). FishBase. Available: <https://www.fishbase.de/summary/Labeo-molybdinus.html>. (May 2018).

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Labeo molybdinus*, du Plessis, 1963. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/5206079>. (May 2018, June 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Labeo molybdinus* (du Plessis, 1963). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=689315#null. (May 2018).

Roux, F., A. Hoffman, R. Bills, and J. Cambray. 2017. *Labeo molybdinus*. The IUCN Red List of Threatened Species 2017: e.T63283A100161616. Available: <http://www.iucnredlist.org/details/63283/0>. (May 2018).

Sanders, S., C. Castiglione, and M. H. Hoff. 2018. Risk Assessment Mapping Program: RAMP, version 3.1. U.S. 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.

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.