

Rednose Labeo (*Labeo rosae*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2012

Revised, June 2018

Web Version, 7/13/2018



Photo: Frederick Hermanus Van der Bank, University of Johannesburg. Public domain.
Available: http://eol.org/data_objects/27230571. (June 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“Africa: Limpopo River, Incomati and Usuto-Pongolo basins [Reid 1985]. Also known from Lufira River, upper Congo River basin, in Democratic Republic of the Congo [Van Steenberge et al. 2014].”

From Bills et al. (2017):

“Most common in Lowveld reaches of the Limpopo, Incomati and Pongolo systems in South Africa, Mozambique and Swaziland. Described from the upper reaches of the Limpopo System in Botswana.”

“Botswana; Mozambique; South Africa (Gauteng, KwaZulu-Natal, Limpopo Province, Mpumalanga, North-West Province); Swaziland; Zimbabwe”

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 in trade in the United States.

Means of Introduction into the United States

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

Remarks

From Bills et al. (2017):

“Synonym(s):

Labeo hamiltoni Gilchrist & Thompson, 1917

Labeo transvaalensis Methuen, 1911”

The above synonyms were used in searching for evidence of introduction and impacts in addition to the accepted scientific name.

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 rosae* Steindachner, 1894”

“Current Standing: valid”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 40.0 cm FL male/unsexed; [Lévêque and Daget 1984]; max. published weight: 3.0 kg [Skelton 1993]”

Environment

From Froese and Pauly (2018):

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

From Bills et al. (2017):

“Typically found in main river channels over sandy substrates as well as in dams.”

Climate/Range

From Froese and Pauly (2018):

“Subtropical; 18°S - 27°S”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“Africa: Limpopo River, Incomati and Usuto-Pongolo basins [Reid 1985]. Also known from Lufira River, upper Congo River basin, in Democratic Republic of the Congo [Van Steenberge et al. 2014].”

From Bills et al. (2017):

“Most common in Lowveld reaches of the Limpopo, Incomati and Pongolo systems in South Africa, Mozambique and Swaziland. Described from the upper reaches of the Limpopo System in Botswana.”

“Botswana; Mozambique; South Africa (Gauteng, KwaZulu-Natal, Limpopo Province, Mpumalanga, North-West Province); Swaziland; Zimbabwe”

Introduced

From Van Steenberge et al. (2014):

“*Labeo rosae*, a species with a native range in Southern Africa, was discovered in the Congo basin by re-identification of two museum specimens previously identified as *Labeo mesops*. The occurrence of this species in the upper Congo implies a range extension of the species of more than 1000 km. [...] Two other large papillate *Labeo* also have disjunct distributions (Skelton, 2001). [...] It is, however, remarkable that *L. rosae* was only collected once in the Congo basin and within and downstream of an artificial lake 10 years after it was constructed (Magis, 1961). This raises the question whether the species is native to the basin. *Labeo rosae* is a popular angling species and it was repeatedly introduced into artificial lakes north of its native range (Marshall, 2011). Due to these introductions, it could have colonized the upper Runde in Zimbabwe (Skelton, 2001; Marshall, 2011). Hence, it is possible that *L. rosae* was introduced into or near Lake Koni as well, although the whereabouts of this introduction are unknown.”

“At the time of this study, it could not be established whether *L. rosae* is native or introduced to the Congo basin.”

Means of Introduction Outside the United States

From Van Steenberge et al. (2014):

“*Labeo rosae* is a popular angling species and it was repeatedly introduced into artificial lakes north of its native range (Marshall, 2011).”

Short Description

From Van Steenberge et al. (2016):

“*Labeo rosae* differs from all other *Labeo* from the Congo basin by a combination of 20 scales around the caudal peduncle and the presence of conical papillae on the upper labial fold. The specimens from the Lufira can further be distinguished from all African *Labeo* by the combination of conical papillae on the upper labial fold, 20 caudal peduncle scales, 13 branched dorsal rays, 36 lateral line scales and 33 vertebrae. As the study of a large series of specimens from Southern Africa falls outside of the scope of this study, no criteria were found that separate *L. rosae* from all other African species.”

Biology

From Froese and Pauly (2018):

“Occurs in the warmer reaches of rivers, particularly in sandy stretches [Reid 1985]. Feeds on detritus, algae, and small invertebrates. An active fish, leaps at barriers when migrating upstream in swollen rivers to breed in summer. Sexually mature at 15 cm TL [Skelton 1993].”

From Bills et al. (2017):

“Population: Abundant in suitable habitats.”

“Full migrant”

Human Uses

From Froese and Pauly (2018):

“Fisheries: ; [sic] gamefish: yes”

Diseases

From van As et al. (2017):

“*Chonopeltis meridionalis* Fryer, 1964 was originally described from *Labeo rosae* Steindachner collected in the River Nuanetsi in Rhodesia, now Zimbabwe, Limpopo River System.”

From Dos Santos and Avenant-Oldewage (2016):

“During routine parasitological surveys in the Olifants River in the Kruger National Park (KNP), South Africa, between 1990 and 1992, diploid specimens were collected from two indigenous cyprinid species: *Labeo rosae* Steindachner, 1894 and *Labeo congoro* Peters, 1852. [...] These specimens, with additional specimens collected from *L. rosae* in Flag Boshielo Dam in 2012 for both morphological and genetic information, are described here as *Paradiplozoon krugerense* n. sp.”

Robinson and Avenant-Oldewage (1996) report *L. rosae* as a host for the ectoparasite *Lernaea cyprinacea*.

Van As and Basson (1984) report *L. rosae* as a host for the following parasites: *Dactylogyrus pienaari*, *Dactylogyrus* sp., *Lernaea barnimiana*, and *Chonopeltis australis*.

From Moravec et al. (2015):

“A new nematode species, *Philometroides khalili* n. sp. (Philometridae), is described from female specimens recovered from the operculum of the freshwater cyprinid fish *Labeo rosae* Steindachner (Cyprinidae, Cypriniformes) caught in the Bubi River, Zimbabwe.”

No OIE-listed diseases have been reported for *Labeo rosae*.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No information available.

4 Global Distribution

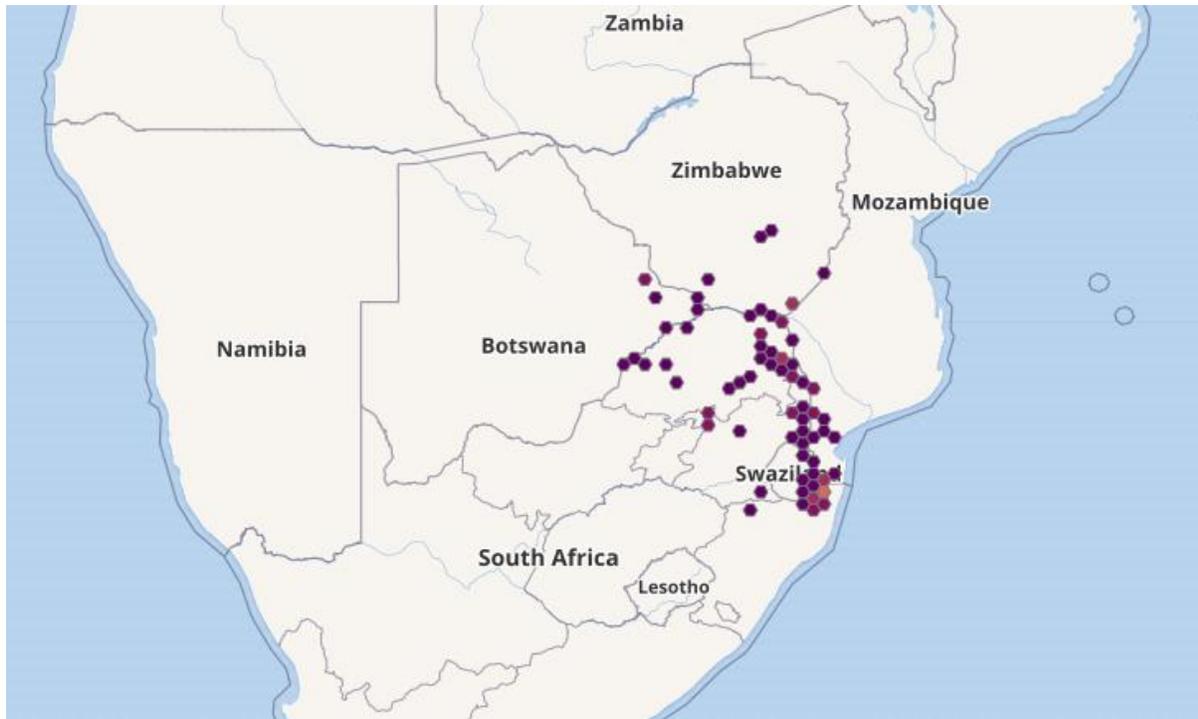


Figure 1. Known global distribution of *L. rosae*. Map from GBIF Secretariat (2017). No occurrences in the Democratic Republic of the Congo were reported in GBIF Secretariat (2017) and it is unknown whether the species is established there currently (Van Steenberge et al. 2014) so no source locations in the Democratic Republic of the Congo were used in the climate matching analysis.

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 high in Florida, Texas, New Mexico, and Arizona, with highest matches along the Atlantic coast of Florida and the southern portion of the other states. Medium matches extended into the Southern Plains, northern Arizona and New Mexico, the southern California coast and along the southeast Atlantic coastline as far north as southern Virginia. The remainder of the contiguous United States matched low. Climate 6 score indicated that the contiguous United States has a medium climate match overall. Scores between 0.005 and 0.103 are classified as medium match; Climate 6 score for *L. rosae* is 0.044.

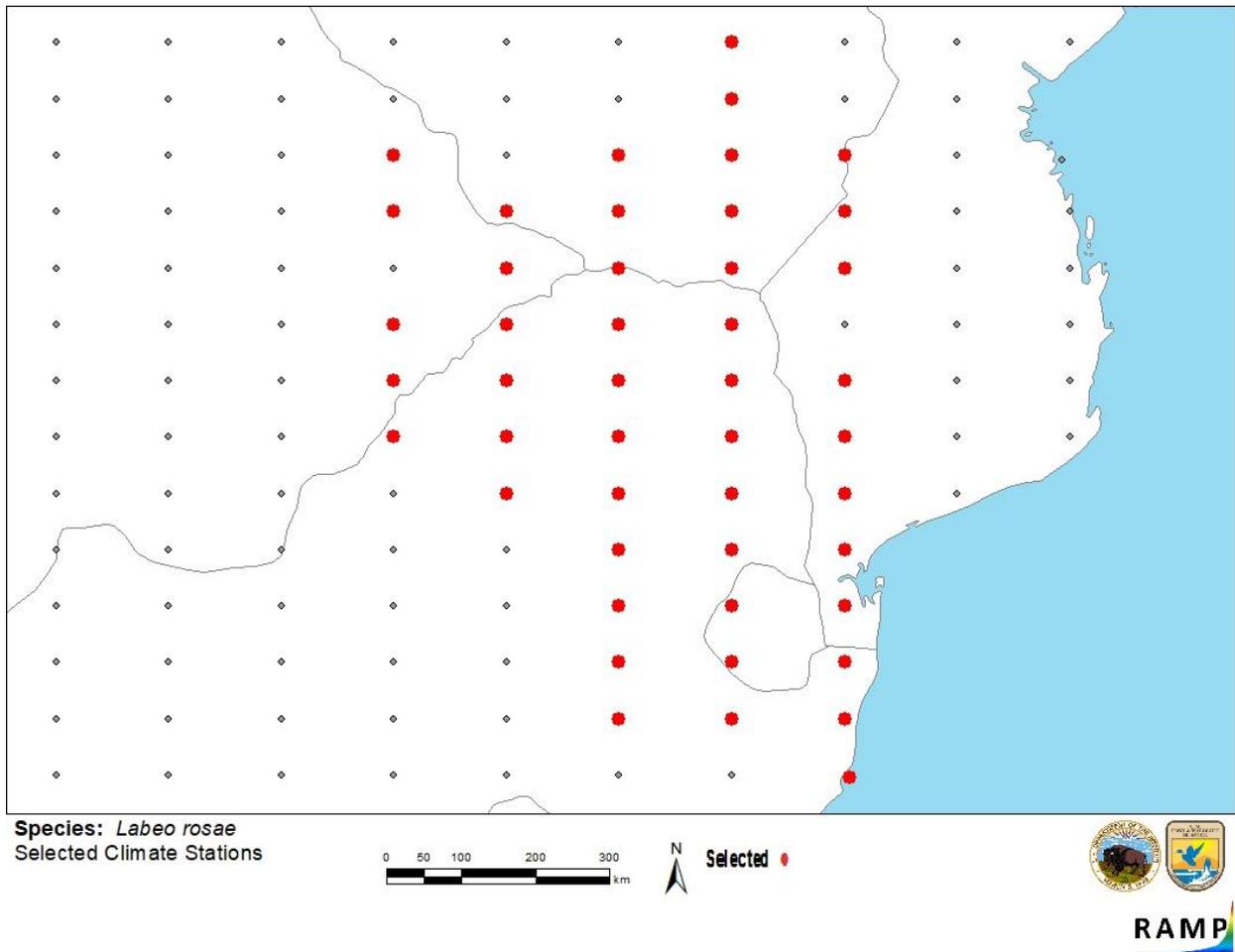


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in southeastern Africa selected as source locations (red; South Africa, Swaziland, Mozambique, Zimbabwe, Botswana) and non-source locations (gray) for *L. rosae* climate matching. Source locations from GBIF Secretariat (2017).

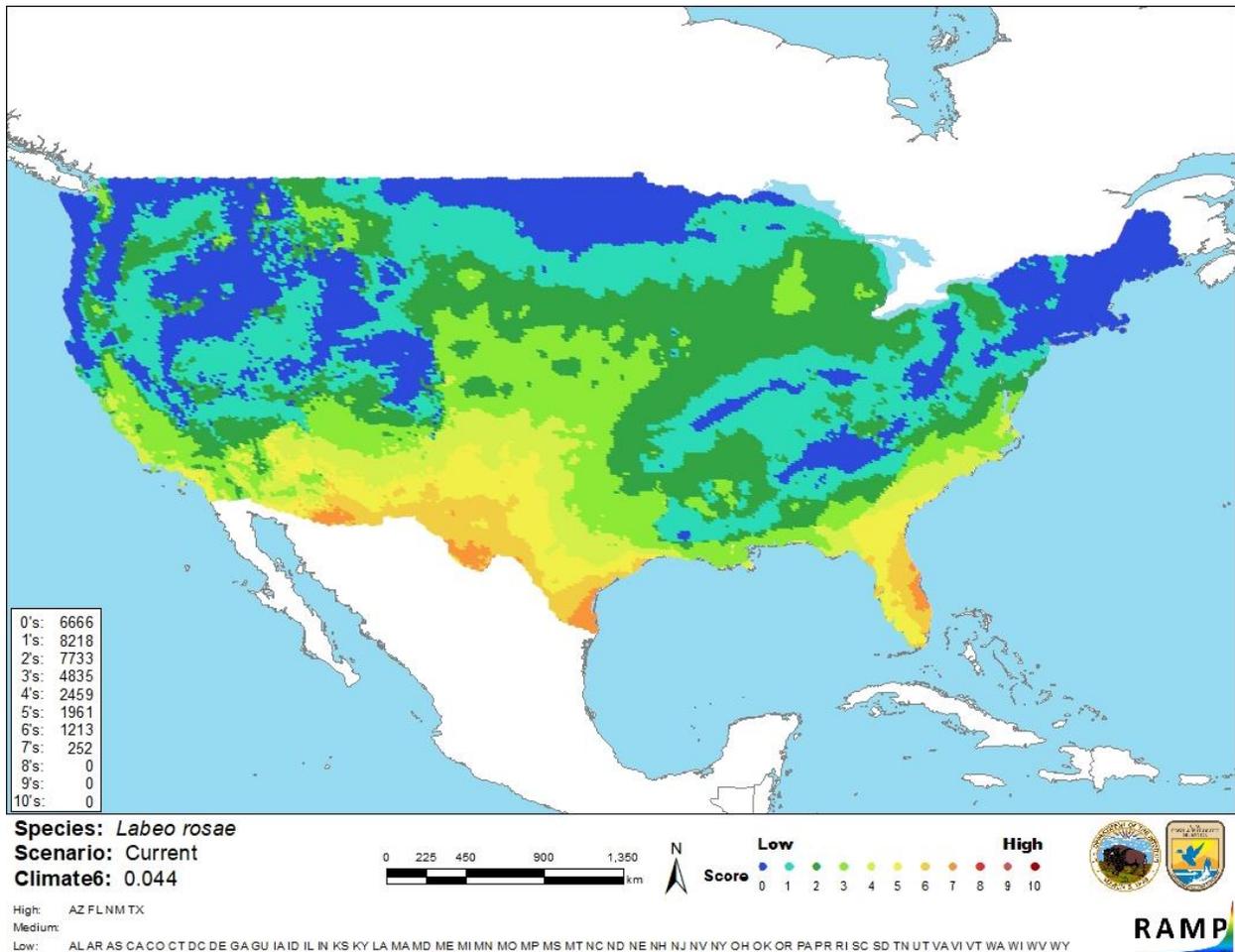


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *L. rosae* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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

7 Certainty of Assessment

Information is available on the biology and ecology of *Labeo rosae*. The distribution in southeastern Africa is well documented, although there are questions about the possible presence of the species in the Democratic Republic of the Congo. Very little information is available on introductions, with no information on impacts of these introductions. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Rednose Labeo (*Labeo rosae*) is a species of carp native to southeastern Africa and possibly also the Democratic Republic of the Congo. It is a popular gamefish and is reported to have been introduced to artificial lakes north of its native range for angling purposes. The impacts of any such introductions are unknown. Numerous parasites, ectoparasites and nematodes have been reported from *L. rosae*. Climate match to the contiguous United States was medium, with highest matches occurring in Florida, Texas, New Mexico, and Arizona. Because of the lack of information on impacts of introduction, the certainty of assessment is low and overall risk posed by *L. rosae* is uncertain.

Assessment Elements

- **History of Invasiveness: None Documented**
- **Climate Match: Medium**
- **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.

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- Van Steenberge, M., L. Gajdzik, A. Chilala, J. Snoeks, and E. Vreven. 2014. *Labeo rosae* (Cypriniformes: Cyprinidae) in the Congo basin: a relict distribution or a historical introduction? *Journal of Fish Biology* 85(5):1733-1738.
- Van Steenberge, M., L. Gajdzik, A. Chilala, J. Snoeks, and E. Vreven. 2016. Don't judge a fish by its fins: species delineation of Congolese *Labeo* (Cyprinidae). *Zoologica Scripta* 46(3):264-274.

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.

- Lévêque, C., and J. Daget. 1984. Cyprinidae. Pages 217-342 in J. Daget, J.-P. Gosse, and D. F. E. Thys van den Audenaerde, editors. Check-list of the freshwater fishes of Africa (CLOFFA), volume 1. ORSTOM, Paris, and MRAC, Tervuren, Belgium.
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