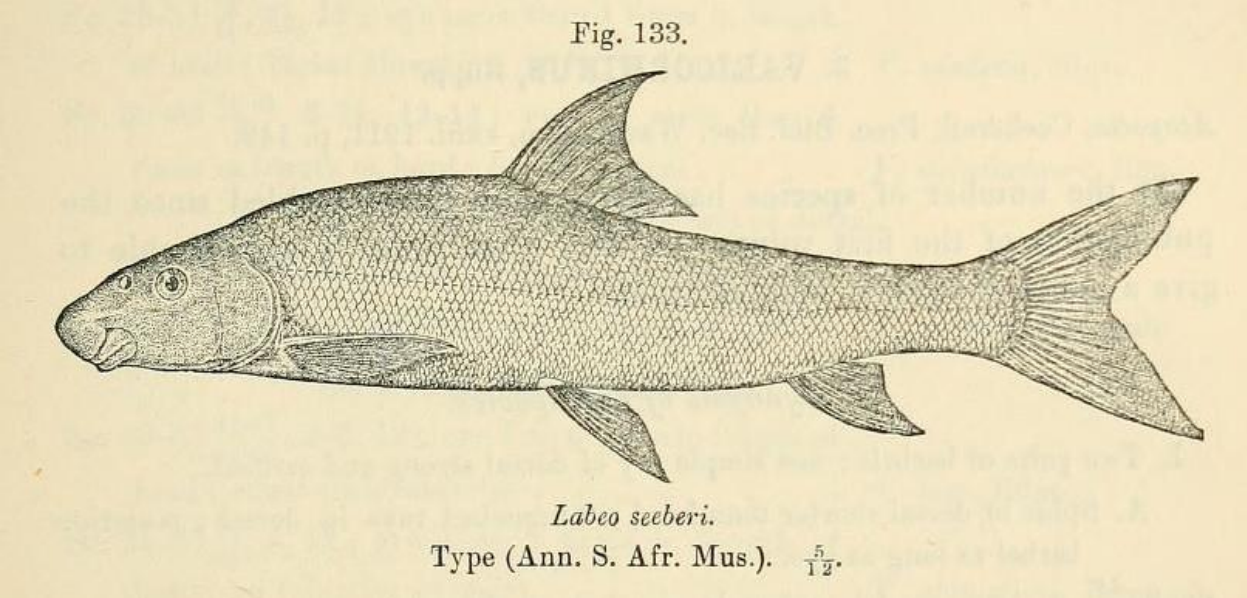
Clanwilliam Sandfish (*Labeo seeberi*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, February 2012
Revised, July 2018
Web Version, 7/13/2018



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

"Africa: within the drainage basin of the Olifants River, Limpopo system, Transvaal, South Africa. *Labeo seeberi* is apparently no longer found at the type locality, due to the effects of exotic fish introductions."

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 Jordaan et al. (2017):

"Historically, Clanwilliam Sandfish (*Labeo seeberi*) were widespread throughout the Olifants-Doring River System (ODRS) (Van Rensburg 1966) but significant declines occurred in main stream populations as a result of the introduction of predatory black Bass (*Micropterus* spp.) in the 1930s (de Moor and Bruton 1988) and the construction of large instream dams which probably disrupted spawning migrations. This species is believed to be extinct from the Olifants River System, and the Doring River subpopulations are severely fragmented (small, non-viable isolated subpopulations) (Paxton *et al*. 2002). Quantitative surveys have been conducted post 2000 but population size reductions could not be determined given the lack of comparable historical data."

"The only viable and recruiting subpopulation of Clanwilliam Sandfish is in the Oorlogskloof River. A large part of the river where the species occurs is located within the Oorlogskloof Provincial Nature Reserve in the Northern Cape Province where an annual monitoring programme has been initiated in 2010."

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 seeberi* Gilchrist and Thompson, 1911"

"Current Standing: valid"

Size, Weight, and Age Range
From Froese and Pauly (2018):

"Max length : 35.5 cm SL male/unsexed; [Skelton 1993]; max. published weight: 269.00 g [Skelton 1993]"

Environment
From Froese and Pauly (2018):

"Freshwater; benthopelagic; potamodromous [Riede 2004]."

Climate/Range
From Froese and Pauly (2018):

"Subtropical; 31°S - 34°S"

Distribution Outside the United States
Native
From Froese and Pauly (2018):

"Africa: within the drainage basin of the Olifants River, Limpopo system, Transvaal, South Africa. *Labeo seeberi* is apparently no longer found at the type locality, due to the effects of exotic fish introductions."

Introduced
No introductions of this species have been reported.

Means of Introduction Outside the United States
No introductions of this species have been reported.

Short Description
From Impson (1997):

"D IV, 9–10; A III, 5; 77–90 scales in lateral line, 36–50 scales around caudal peduncle. Body slender with narrow caudal peduncle. Head smooth, snout subequal to postorbit, mouth with well-developed papillose lips and a single pair of barbels. Body colour olive-grey (Skelton 1993)."

Biology
From Froese and Pauly (2018):

"Lives in the mainstream and larger tributaries, favors pools and deep runs of the river. Feeds on algae, detritus and small invertebrates by grazing off rocks as well as grubbing in soft sediments.

In the clear water of the Olifants this species is frequently observed as silvery flashes as it rolls and twists when feeding. Migrates upstream in masses during spring and summer for breeding [Skelton 1993]."

From Impson (1997):

"Once widespread and abundant in the Olifants system. There has been a dramatic reduction in numbers and range in the last 20 years (Cape Nature Conservation [CNC] database). The only healthy population, in the Oorlogskloof River, represents less than 10% of the original distribution range; other populations comprise low numbers of primarily adult fish."

"Age and growth have not been studied but captive juveniles are known to attain 20 mm after 3 months."

"Spawns mainly in spring (Gaigher 1973) during upstream migrations (Jubb 1967). Maturity is reached at approximately 250 mm SL (Jubb 1967) and 2 kg captive females yield about 80000 eggs, indicative of an altricial life-history style."

Human Uses

From Froese and Pauly (2018):

"Gamefish: yes"

From Jordaan et al. (2017):

"Clanwilliam Sandfish is listed as an Endangered Wild Animal under Schedule 1 of the Provincial Nature Conservation Ordinance for the Western Cape, thereby preventing the collection and trade of the species without a permit. It is also listed nationally as a Threatened or Protected Species under South Africa's National Environmental Management: Biodiversity Act of 2004. It is occasionally caught by anglers who generally target the species on a catch and release basis. It is also occasionally caught by subsistence fishermen for consumption which is likely to put further pressure on this species. Translocations of *L. seeberi* are controlled by CapeNature's Indigenous Fish Utilisation policy (Jordaan *et al*. 2016). It is sometimes kept in public aquaria for awareness and education purposes."

Diseases

L. seeberi may be susceptible to Epizootic Ulcerative Syndrome, **an OIE-reportable disease**. However, the available information did not clarify whether or not the disease has already been documented in *L. seeberi*:

From Paxton et al. (2011):

"Epizootic Ulcerative Syndrome (EUS) has been recognized worldwide as a major threat to brackish and freshwater fish populations, causing large fish kills even in relatively pristine systems. The most likely agent of EUS is considered to be a fungus, *Aphanomyces invaderis*, that causes liquefactive necrosis of muscle tissue in infected fishes. EUS has recently been reported

in the Western Cape in the Palmiet and Eerste River catchments. Infection in the Oorlogskloof River may severely compromise the viability of sandfish populations and may provide the banded tilapia with a competitive advantage since this species is considered less susceptible to infection. It should be noted that the control of the disease in natural waters is not possible, but vigilance with regard to its outbreak in the Oorlogskloof River should be maintained through periodic monitoring."

Threat to Humans

From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions

No information available. No introductions of this species have been reported.

4 Global Distribution

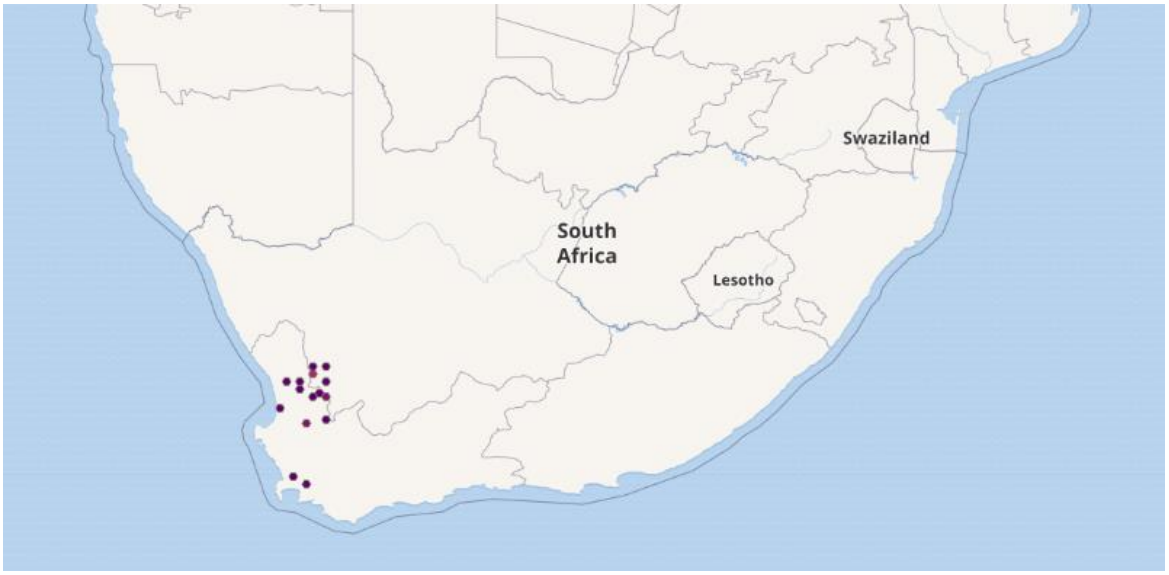

Figure 1. Known global distribution of *L. seeberi*. Map from GBIF Secretariat (2017). The two southernmost locations near Cape Town were excluded from the climate matching analysis because the species is not established there and the occurrence records note coordinate inaccuracy or imprecision (GBIF Secretariat 2017). The western coastal location was excluded from the climate matching analysis because of uncertainty in the location (GBIF Secretariat 2017).

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 highest in southern California, with high matches through much of California, northern Arizona, and southern Nevada. Medium climate matches were found in New Mexico, western Texas, and scattered through the Rocky Mountains. All of the eastern United States had low climate match, as did the Pacific Coast north of San Francisco and the northern United States as far west as Montana. Climate 6 score indicated that the contiguous United States has a medium climate match overall. Scores between 0.005 and 0.103 indicate a medium climate match; Climate 6 score for *L. seeberii* was 0.039.

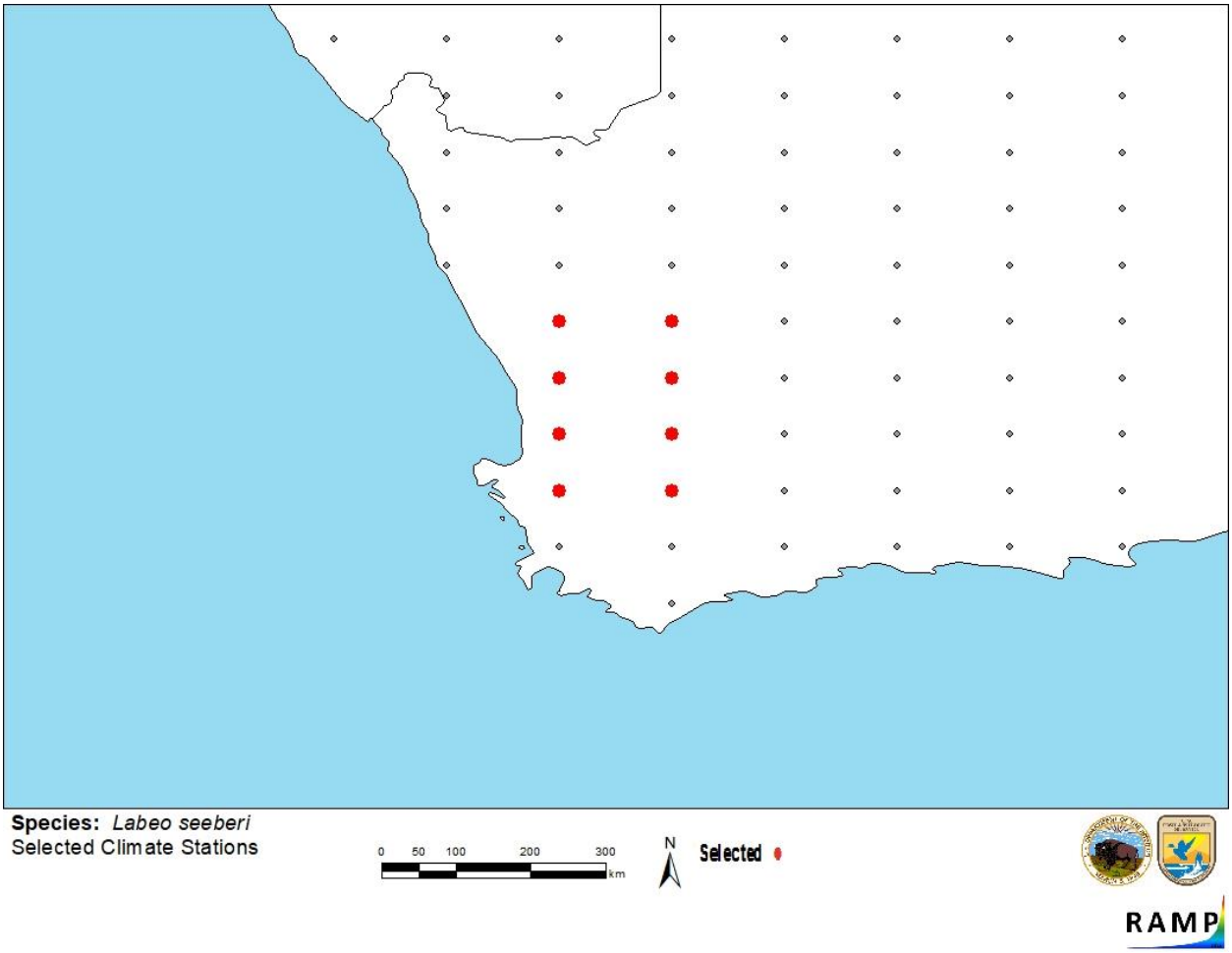

Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in western South Africa selected as source locations (red) and non-source locations (gray) for *L. seeberi* climate matching. Source locations from GBIF Secretariat (2017).

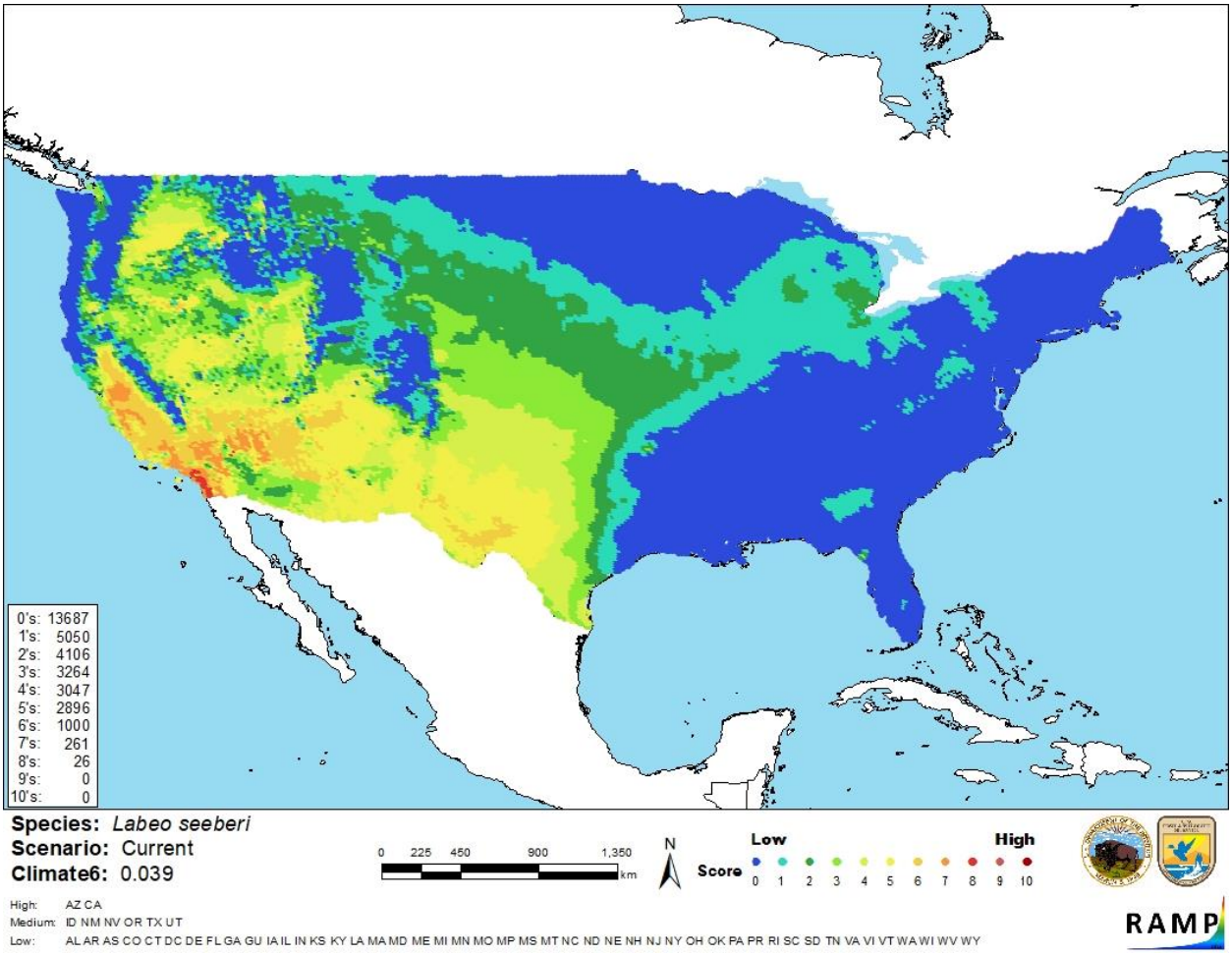

Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *L. seeberi* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

Information is available on the biology, ecology, and distribution of *Labeo seeberi*, but no introductions of this species have been reported. Without any possibility of evaluating the impacts of introduction of *L. seeberi*, the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Clanwilliam Sandfish (*Labeo seeberi*) is an endangered carp native to western South Africa. It is used as a gamefish, but national protections applicable to the species discourage collection and trade. No introductions of *L. seeberi* have been reported, so its potential for negative impacts on other ecosystems or humans is unknown. It may be susceptible to the OIE-reportable disease Epizootic Ulcerative Syndrome. Climate match to the contiguous United States is medium, with highest matches occurring in southern California. Without a history of introduction, the overall risk posed by *L. seeberi* is uncertain.

Assessment Elements

- **History of Invasiveness: Uncertain**
- **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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Jordaan, M., A. Lubbe, C. Bragg, B. R. Paxton, M. Schumann, R. Van der Walt, and T. Ngobela. 2017. *Labeo seeberi*. The IUCN Red List of Threatened Species 2017: e.T11071A100162293. Available: http://www.iucnredlist.org/details/full/11071/0. (July 2018).

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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.

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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.

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