Tugela Labeo (*Labeo rubromaculatus*)
Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, February 2012
Revised, June 2018
Web Version, 8/16/2018


1 Native Range and Status in the United States

Native Range
From Froese and Pauly (2018):

“Africa: endemic to the Tugela River system of the southern Cape watershed in 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 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.
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 rubromaculatus Gilchrist and Thompson, 1913”

“Current Standing: valid”

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

“Max length : 50.0 cm SL male/unsexed; [Skelton 1993]; max. published weight: 2.9 kg [Lévêque and Daget 1984]”

Environment
From Froese and Pauly (2018):

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

Climate/Range
From Froese and Pauly (2018):

“Subtropical; 25°S - 29°S”

“Occurs from near sea level to nearly 1,520 m [Lévêque and Daget 1984].”
Distribution Outside the United States
Native
From Froese and Pauly (2018):

“Africa: endemic to the Tugela River system of the southern Cape watershed in Natal, South Africa”

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 Ramoejane (2016):

“The Labeo umbratus Group (hereafter LUG) contains four species: Labeo capensis (Smith 1841), Labeo umbratus (Smith 1841), Labeo seeberi Gilchrist and Thompson 1911 and Labeo rubromaculatus Gilchrist and Thompson 1913. […] Reid (1985) suggested that the anatomy of the mouth region of L. rubromaculatus is plesiomorphic compared with that of other species within the LUG, but L. rubromaculatus is otherwise morphologically similar to L. umbratus and L. capensis. Labeo rubromaculatus is distinct from the other species in the LUG in that its flanks are golden-red in live adult specimens and this species also has a higher gill raker count (43 vs 38-42 in the other LUG species; Reid, 1985).”

Biology
From Froese and Pauly (2018):

“Prefers deep pools and slow-flowing river stretches but does occur in rocky rapids. Feeds on green algae, diatoms and detritus. Shoals migrate upstream in spring and summer to breed. Large numbers of small eggs are laid and young are found in shallow backwaters.”

From Cambray (2007):

“Widespread and common in the Tugela system.”

Human Uses
From Froese and Pauly (2018):

“Fisheries: of potential interest; gamefish: yes”

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

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) for *Labeo rubromaculatus* was high in scattered locations in western Texas and New Mexico. Medium matches extended through peninsular Florida, the southern Great Plains, coastal Texas, much of the Southwest, and central coastal California. The remainder of the contiguous United States
showed low climate match. 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. rubromaculatus* was 0.007.

**Figure 2.** RAMP (Sanders et al. 2018) source map showing weather stations in eastern South Africa and adjacent countries selected as source locations (red; South Africa, Lesotho) and non-source locations (gray) for *L. rubromaculatus* climate matching. Source locations from GBIF Secretariat (2017). Source climate locations are within 100 km of species occurrences; they do not represent exact locations of occurrences.
Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *L. rubromaculatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

The “High”, “Medium”, and “Low” climate match categories are based on the following table:

<table>
<thead>
<tr>
<th>Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)</th>
<th>Climate Match Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000≤X&lt;0.005</td>
<td>Low</td>
</tr>
<tr>
<td>0.005≤X&lt;0.103</td>
<td>Medium</td>
</tr>
<tr>
<td>≥0.103</td>
<td>High</td>
</tr>
</tbody>
</table>

7 Certainty of Assessment

Limited information is available on the biology and ecology of *Labeo rubromaculatus*. No introductions of this species have been reported, so impacts of introduction remain unknown. Without further information on which to base the assessment of risk, certainty of this assessment is low.
8 Risk Assessment

Summary of Risk to the Contiguous United States

*Labeo rubromaculatus* is a species of carp endemic to the Tugela River basin in eastern South Africa. It is utilized as a gamefish and may have potential for development as a commercial fishery. *L. rubromaculatus* has a medium climate match with the contiguous United States, with high matches occurring in parts of Texas and New Mexico. However, the species has no reported history of introduction outside its native range. Certainty of the assessment is low and overall risk posed 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.*


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.


