

Barbless Carp (*Cyprinus pellegrini*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, September 2011
Revised, September 2018
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1 Native Range and Status in the United States

Native Range

From Fricke et al. (2018):

“Zingyunhu Lake and Qiluhu [*sic*] Lake [Xiangyun Lake and Jinu Lake], Yunnan Province, China.”

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 Introductions in the United States

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

Remarks

From Tang and Chen (2012):

“An investigation in 1982–1983 found that barbless carp had become extinct in Qilu Lake and was endangered in Xingyun Lake (Li et al., 1995). Barbless carp is legally protected and listed in China’s Red Data Book of Endangered Animals (Yue and Chen, 1998).”

From Deng et al. (2012):

“*Cyprinus pellegrini* has been re-introduced into Xingyun and Qilu Lakes where it is widely artificially reproduced and cultured as an excellent economic endemic species (Shen et al., 2009).”

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 *Cyprinus*
Species *Cyprinus pellegrini* Tchang, 1933”

From Fricke et al. (2018):

“Current status: Valid as *Cyprinus pellegrini* Tchang 1933. Cyprinidae: Cyprininae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 30.0 cm TL male/unsexed; [...]; common length : 12.0 cm SL male/unsexed; [Nichols 1943]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic.”

From Tang and Chen (2012):

“The Xingyun Lake is a shallow freshwater lake (24.28–24.38°N, 102.75–102.80°E; 1722 m above sea level) located in the Yunnan-Guizhou Plateau of southwestern China [...]. The lake has a surface area of 34.71 km² with a maximum length of 10.5 km and a maximum width of 5.8 km. It has a capacity of 1.84×10^8 m³ with a mean depth of 5.3 m and a maximum depth of 11 m. Annual mean values of temperature and precipitation are c. 15°C and 947 mm, respectively. Average water temperatures in summer and winter are c. 20.0°C and c. 10.0°C, respectively (Wang and Dou, 1998).”

Climate/Range

From Froese and Pauly (2018):

“Subtropical”

Distribution Outside the United States

Native

From Fricke et al. (2018):

“Zingyunhu Lake and Qiluhu [*sic*] Lake [Xiangyun Lake and Jinu Lake], Yunnan Province, China.”

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 Froese and Pauly (2018):

“Body blackish gray on back, silvery white on abdomen, yellow and green luster on sides; dorsal fin grayish dark, caudal fins light yellow and lower lobe of caudal fin red. Barbels absent or with a pair of papilla at corners of mouth; outer edge of dorsal fin markedly concave.”

From Nichols (1943):

“Depth in length to base of caudal, 3.3 to 3.6; head, 2.8 to 3; eye in head, 3.2 to 4 (specimens 90 to 120 mm. standard length). Dorsal rays, II, 16 to 18; anal, II, 5; scales, 34 to 38.

“Head very broad, mouth oblique, no barbels.”

Biology

From Tang and Chen (2012):

“[...] based on morphological and genetic analyses, our study shows that native barbless carp has been severely affected by hybridization with exotic common carp. Despite stronger reproductive isolation between barbless and common carp, asymmetrical introgression from the latter to the former for a long time, which is derived mostly by food completion of exotic bighead and silver carp and higher abundance of common carp, has caused that barbless carp has been evolved into an introgressed population containing massive amounts of common carp genes. In the introgressed population, only relatively few individuals were identified as barbless carp both morphologically and genetically, suggesting that barbless carp may be in danger of genetic extinction.”

From Froese and Pauly (2018):

“Lives in upper and middle layers of water bodies and dwells mainly in the deep parts of lakes [Wang 1998]. Feeds on plankton [Zhang 1998] and algae [Wang 1998]. Spawning period is from April to September, peak in May and June [Wang 1998].”

Human Uses

From Jia et al. (2008):

“*Cyprinus pellegrini*, a native species of the Xingyun Lake, was an important economic fish before the 1980's (Li et al. 1995).”

From Zhang et al. (2010):

“During the 1950s, it was an economically important fish of Xingyun and Qilu lakes; accounting for 70% of total fish production. Stocks have declined rapidly since the 1960s. Production in Xingyun Lake was 10% in 1966, 0.5% in 1986 and 0.1% in 1990 (Huang 1997; Wang et al. 1998).”

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

No georeferenced occurrences of this species were available from GBIF Secretariat (2017).

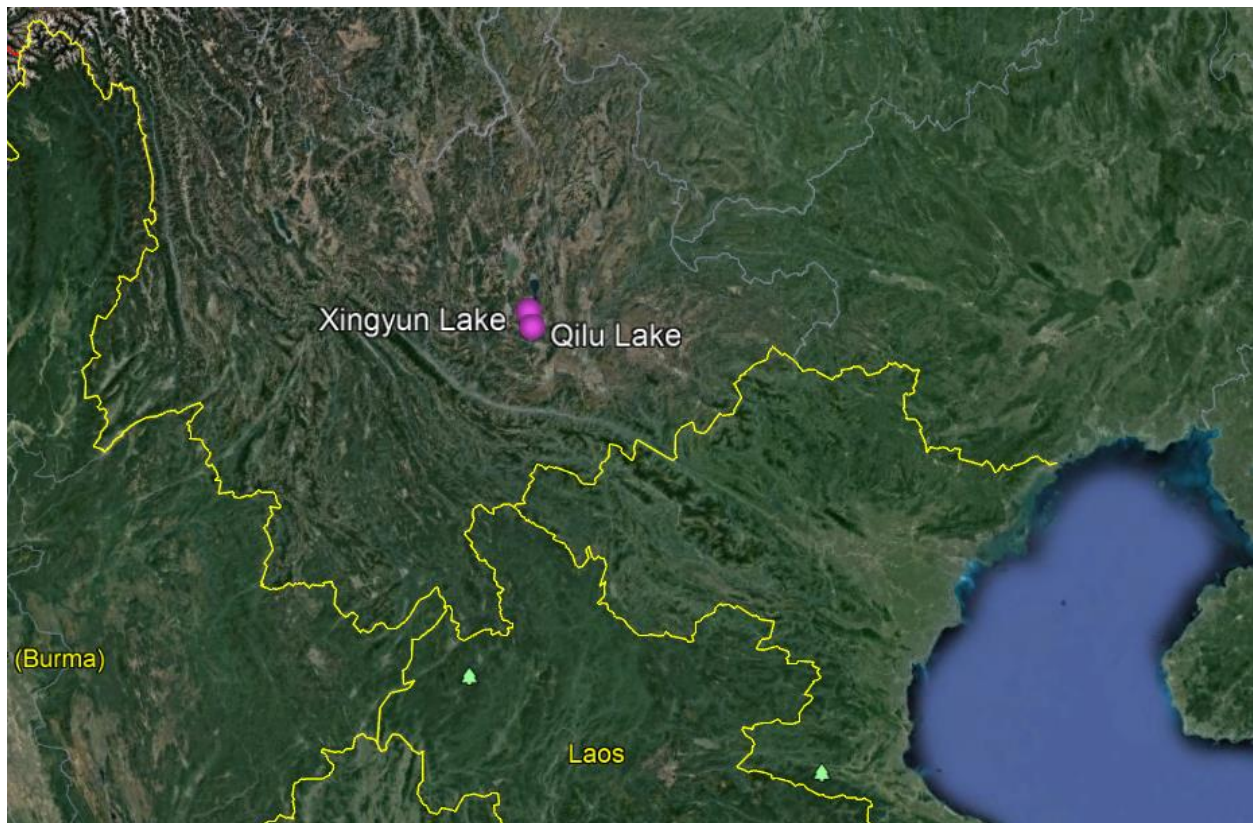


Figure 1. Known global distribution of *Cyprinus pellegrini*, reported from Xingyun and Qilu Lakes in Yunnan Province, southern China. Map based on the description of the range by Fricke et al. (2018) and made with Google Earth Pro 7.3.1.4507 (Google LLC, Mountain View, California).

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. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.0, which is low. A Climate 6 score of 0.005 or less indicates a low climate match. The climate match was categorically low in every state in the contiguous United States. There were areas of medium-low climate match in Florida and the Southwest.

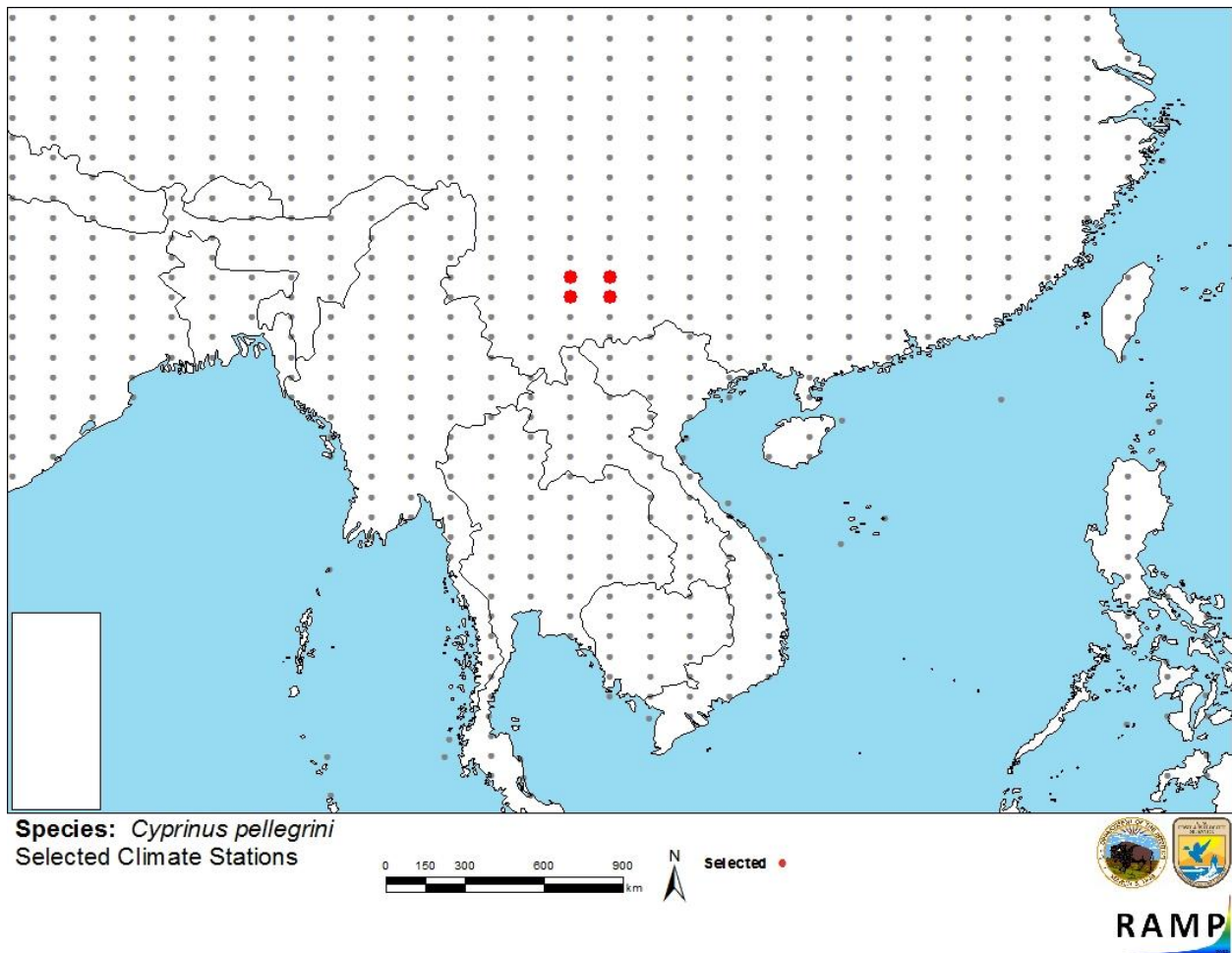


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Yunnan Province, southern China) and non-source locations (gray) for *Cyprinus pellegrini* climate matching. Source locations based on range from Fricke et al. (2018).

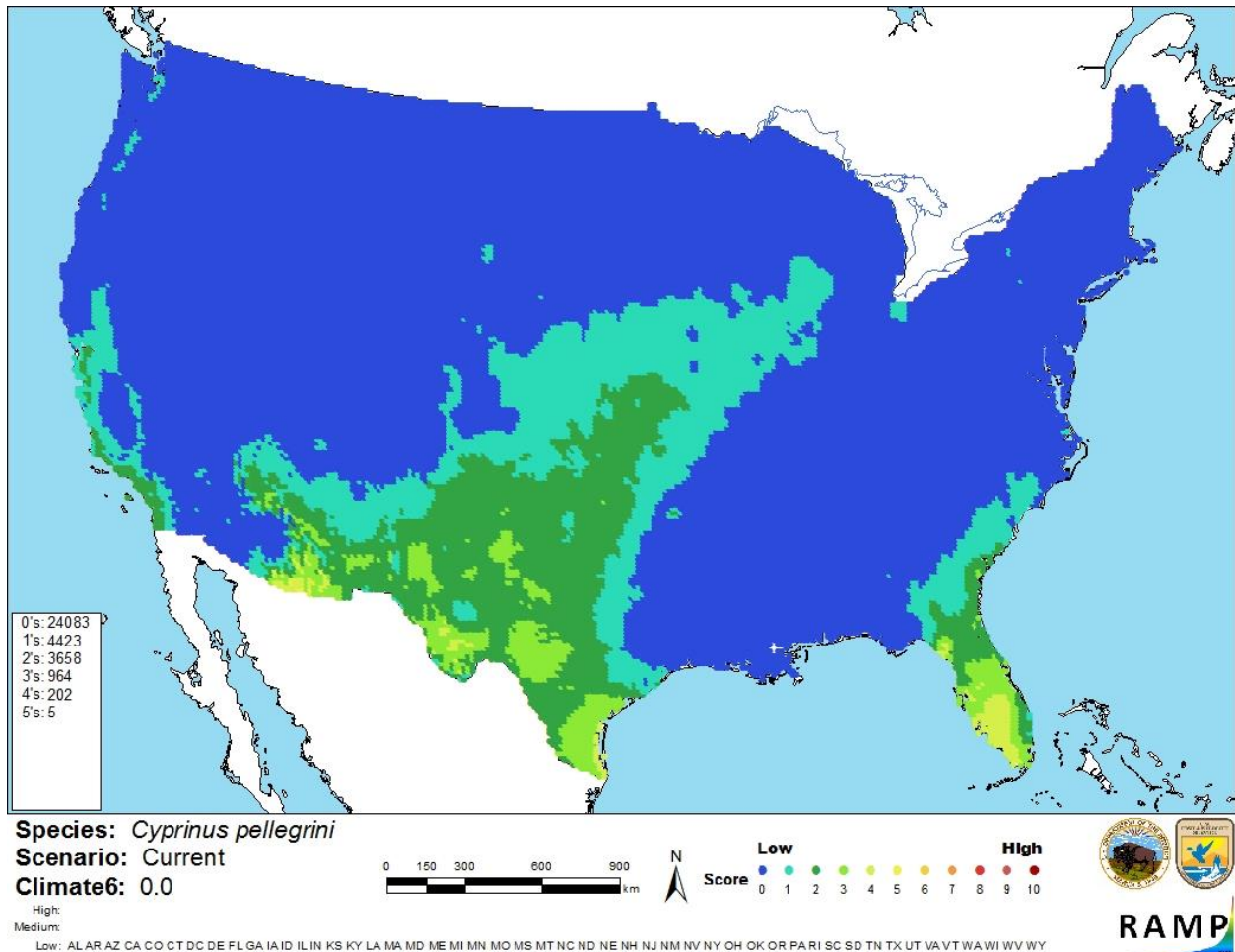


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Cyprinus pellegrini* in the contiguous United States based on species range reported by Fricke et al. (2018). 0= Lowest match, 10=Highest match.

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

7 Certainty of Assessment

There is adequate information available about the biology of *Cyprinus pellegrini*. There are no georeferenced points available documenting its range, but its native range is well-known and restricted to only two small lakes in China. There are no documented introductions of this species outside of its native range, so no information is available from which to base an assessment of the invasive potential of this species. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Cyprinus pellegrini, the Barbless Carp, is a fish species native to Xingyun and Qilu lakes in Yunnan Province in southern China. This species was previously an abundant and economically valuable fish used for food, but populations crashed due to hybridization with introduced common carp (*Cyprinus carpio*) and competition with introduced bighead and silver carp (*Hypophthalmichthys nobilis* and *H. molitrix*). *C. pellegrini* has been re-introduced into Xingyun and Qilu Lakes through aquaculture for harvest and human consumption. *C. pellegrini* itself has never been reported as introduced or established outside of its native range, therefore history of invasiveness is uncertain. This species has a low climate match with the contiguous United States. Because there is no information on past introductions from which to assess the risk this species poses to the contiguous United States, 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): Low**
- **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.

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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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