

# Barbel Steed (*Hemibarbus labeo*)

## Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, August 2012

Revised, February 2017

Web Version, 1/14/2018



Photo: Chinese Academy of Fishery Sciences. Licensed under CC BY-NC 3.0. Available: <http://fishbase.org/photos/PicturesSummary.php?StartRow=0&ID=17301&what=species&TotRec=9>. (February 2017).

## 1 Native Range and Status in the United States

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### Native Range

From Froese and Pauly (2016):

“Asia: throughout the Amur basin [Berg 1964]; eastern Asia from the Amur basin to northern Vietnam, Japan and islands of Hainan and Taiwan [Reshetnikov et al. 1997].”

### Status in the United States

This species has not been reported in the United States.

## Means of Introductions in the United States

This species has not been reported in the United States.

## Remarks

From CABI (2017):

“Other Scientific Names

*Acanthogobio oxyrhynchus* Nikolskii, 1903  
*Barbus labeo* Pallas, 1776  
*Barbus schlegelii* Günther, 1868  
*Cyprinus labeo* Pallas, 1776  
*Gobio barbus* Temminck & Schlegel, 1846  
*Gobiobarbus labeo* Pallas, 1776  
*Hemibarbus barbus* Temminck & Schlegel, 1846  
*Hemibarbus longianalis* Kimura, 1934  
*Pseudogobio chaoi* Evermann & Shaw, 1927”

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2017):

“Kingdom Animalia

Subkingdom Bilateria

Infrakingdom Deuterostomia

Phylum Chordata

Subphylum Vertebrata

Infraphylum Gnathostomata

Superclass Osteichthyes

Class Actinopterygii

Subclass Neopterygii

Infraclass Teleostei

Superorder Ostariophysi

Order Cypriniformes

Superfamily Cyprinoidea

Family Cyprinidae

Genus *Hemibarbus* Bleeker, 1860

Species *Hemibarbus labeo* (Pallas, 1776)”

“Taxonomic Status: valid”

## **Size, Weight, and Age Range**

From Froese and Pauly (2016):

“Max length : 62.0 cm TL male/unsexed; [Novikov et al. 2002]; common length : 33.0 cm TL male/unsexed; [Berg 1964]; common length :40.6 cm TL (female); max. published weight: 3.0 kg [Novikov et al. 2002]; max. reported age: 15 years [Novikov et al. 2002]”

## **Environment**

From Froese and Pauly (2016):

“Freshwater; benthopelagic; potamodromous [Takeshita and Kimura 1991]; depth range 5 - 20 m [Shao and Lim 1991]”

From CABI (2017):

“*H. labeo* has a preference for fast-flowing waters and rarely enters lakes (Petr, 1999). It prefers deep pools with running water in lower and middle reaches.”

## **Climate/Range**

From Froese and Pauly (2016):

“Temperate, preferred ?; 54°N - 19°N, 105°E - 143°E”

## **Distribution Outside the United States**

### **Native**

From Froese and Pauly (2016):

“Asia: throughout the Amur basin [Berg 1964]; eastern Asia from the Amur basin to northern Vietnam, Japan and islands of Hainan and Taiwan [Reshetnikov et al. 1997].”

### **Introduced**

From Froese and Pauly (2016):

“Recorded from Mekong basin in Laos which apparently the result of introduction, either in Laos, or more likely upriver in Mekong basin in China [Kottelat 2000].”

## **Means of Introduction Outside the United States**

From FAO (2017):

“accidental”

“diffused from other countries”

From CABI (2017):

“Based on observations of this species’ spread it appears *H. labeo* is capable of extensive translocation by itself.”

“*H. labeo* has been introduced for food and sporting purposes [locally].”

## **Short Description**

From Froese and Pauly (2016):

“Vertebrae: 40 - 42. Body spots absent in adults. Elongated body with slightly convex dorsal profile. Head length longer than body depth. Snout length much longer than postorbital head length. Lips well developed, lateral lobes of lower lip broad and thick, with folds, the median process small. Barbel length slightly thick, shorter or equal to eye diameter. Dorsal spine strong, 2/3 of HL. Origin of dorsal fin nearer the tip of snout than the caudal base. Gill rakers more than 15 [Yue 1995]. Anal fin with 6 1/2 branched rays; last simple dorsal rays ossified, spine-like [Kottelat 2001].”

## **Biology**

From Froese and Pauly (2016):

“Omnivorous, feeding mainly on benthic invertebrates [Nakabo 2002]. Females are larger than males [Berg 1964].”

From CABI (2017):

“*H. labeo* generally attains sexual maturity at ages over 4 years, although some males may mature early at 3 years. Their spawning season extends from late May until June (at water temperatures of 19-21°C), reproducing fish are dominated by fish of age 5 to 7 years old. The fish spawn in batches during daytime on a substrate of pebbles. Fecundity of females is between 10,000 and 120,000 eggs (Petr, 1999).”

“The species generally feeds on shrimps and aquatic insects (Shen, 1993).”

## **Human Uses**

From CABI (2017):

“*H. labeo* is a valuable commercial fish. In Lake Buyr, Mongolia it represents 6% of the total catch (Petr, 1999).”

“*H. labeo* is a popular target for sport angling in some regions; for example, it is one of the largest and hence most popular fishes of Taiwan (Shen, 1993).”

## Diseases

From CABI (2017):

“The myxosporean parasite *Myxobolus anisocapsularis* has been reported from the gill lamellae of *H. labeo* (Kaur and Singh, 2011) [...]”

From Kim et al. (2008):

“Eight species of freshwater fish from 17 different regions [in Korea] were recognized positive for the metacercariae of *C[lonorchis] sinensis*. The positive rates (range of metacercariae number per fish) of fish by the species were as follows: [...] 26.3% (1) in *Hemibarbus labeo*.”

From Urabe et al. (2007):

“At the end of 1999 and in January 2000, a fish disease caused by a heavy infection of bucephalid metacercariae broke out in cyprinid fish in the Uji River, central Japan [Urabe et al. 2001; Urabe 2002; Ogawa et al. 2004]. [...] No bucephalid species were reported from freshwater fishes in Japan before 1999 [Shimazu 2003]. The first species, *P[arabucephalopsis] parasiluri*, is certainly an exotic species introduced with its first intermediate hosts, and the second species, *Prosorhynchoides ozakii*, may also be introduced.”

“*P. parasiluri* Wang, 1985 [...] 2nd intermediate host: [...] *Hemibarbus labeo*”

“*P. ozakii* (Nagaty, 1937) [...] 2nd intermediate host: [...] *Hemibarbus labeo*”

## Threat to Humans

From Froese and Pauly (2016):

“Harmless”

## 3 Impacts of Introductions

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From CABI (2017):

“There are considerable knowledge gaps in the ecology, biology and invasiveness of *H. labeo*. Consequently, assessments of invasion impacts are difficult to complete.”

## 4 Global Distribution

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**Figure 1.** Known global established locations of *Hemibarbus labeo*. Map from VertNet (2016). Location in Thailand was not included in climate matching because it does not represent an established population.

## 5 Distribution Within the United States

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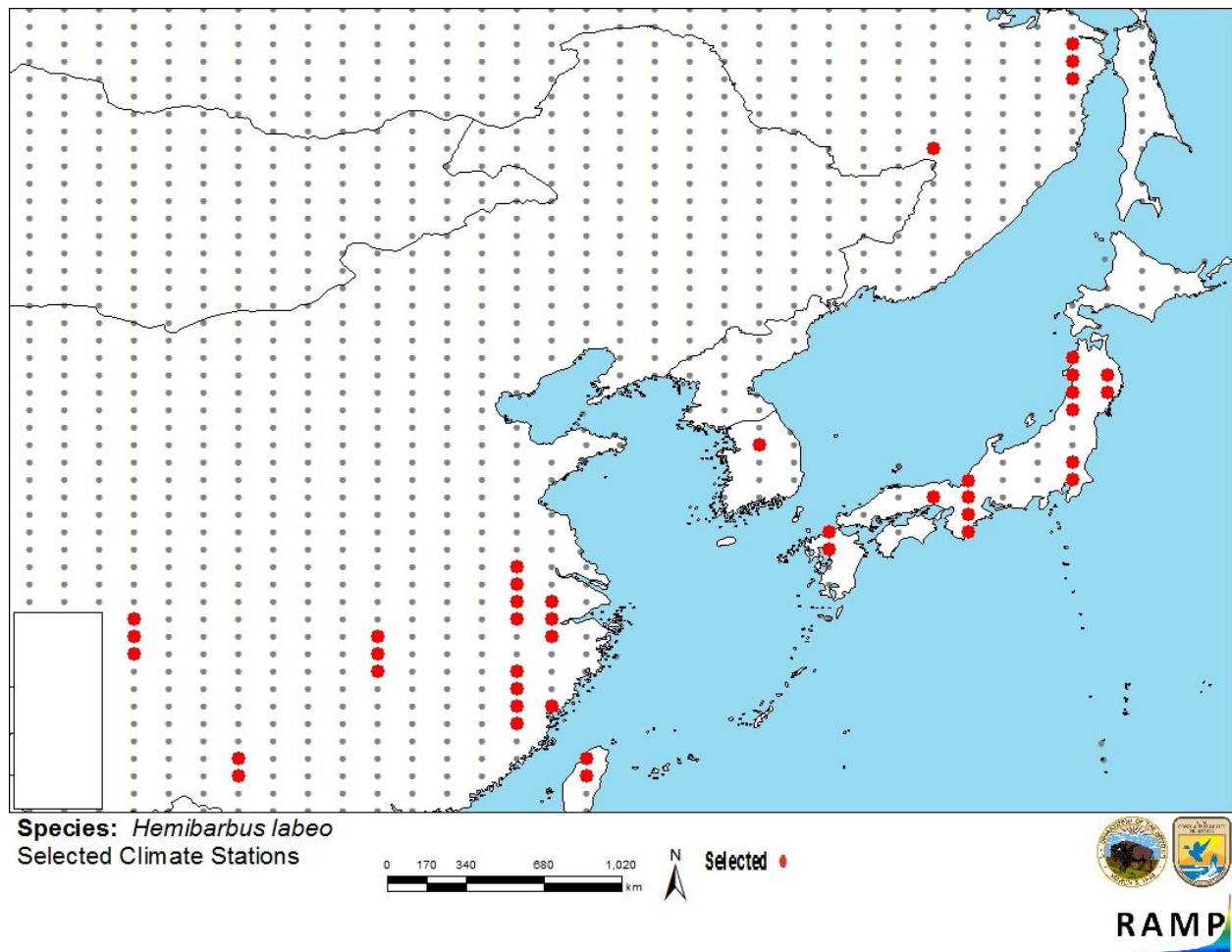
This species has not been reported in the United States.

## 6 Climate Matching

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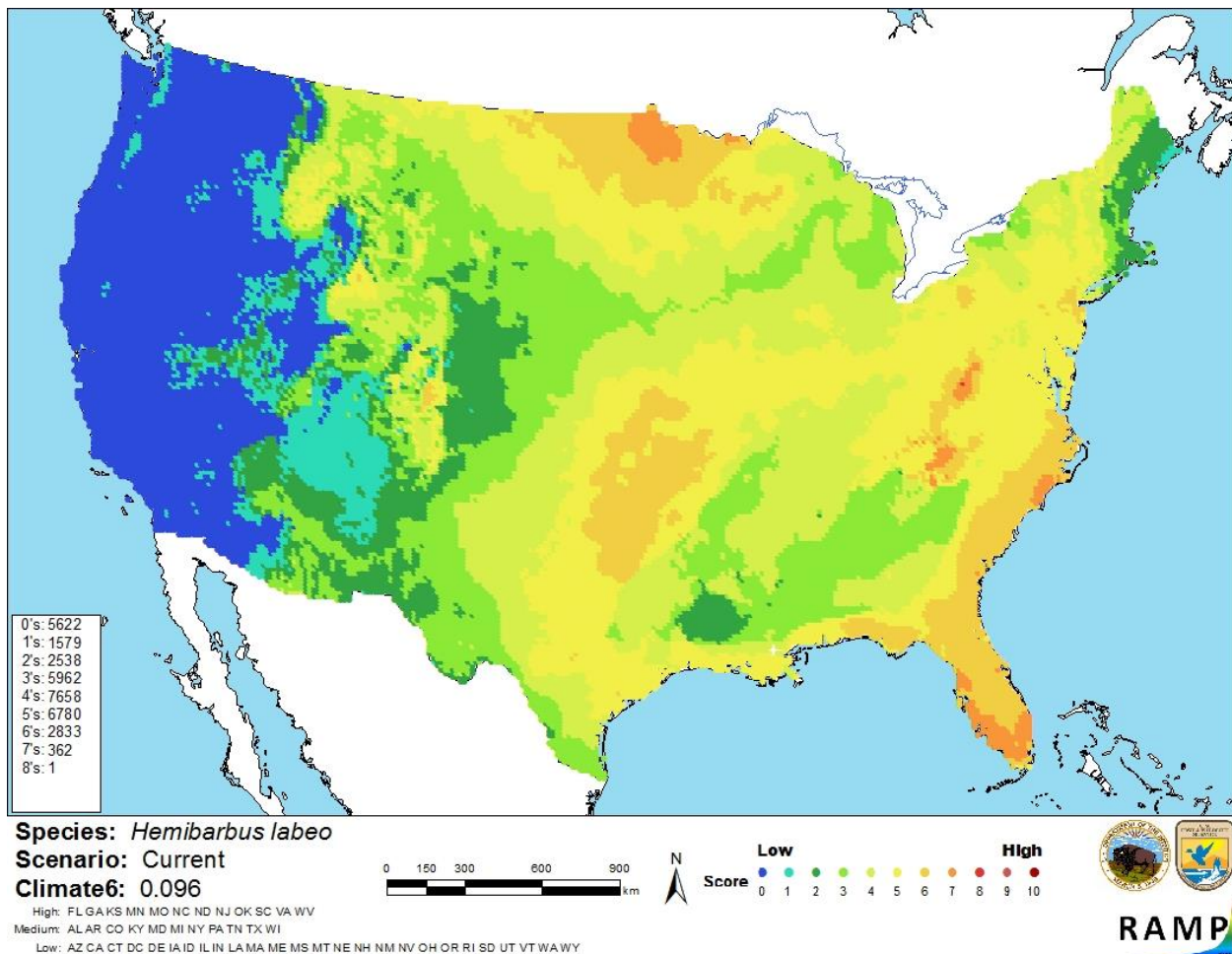
### Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean distance) was medium to high in southern Florida, coastal North Carolina, northwestern Minnesota, and part of central Appalachia. Medium matches were found across the South-Central U.S., much but not all of the Midwest, the eastern slopes of the Rocky Mountains, and the Mid-Atlantic states stretching into western New England. The climate match was low for eastern New England and for the West from the Rocky Mountains to the coast. Climate 6 proportion indicated that the contiguous U.S. has a medium climate match overall. The range of scores indicating a medium climate match is greater than 0.005 and less than 0.103; the Climate 6 proportion for *Hemibarbus labeo* was 0.096.



**Figure 2.** RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *Hemibarbus labeo* climate matching. Source locations from GBIF (2016) and VertNet (2016).





**Figure 3.** Map of RAMP (Sanders et al. 2014) climate matches for *Hemibarbus labeo* in the contiguous United States based on source locations reported by GBIF (2016) and VertNet (2016). 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:

| Climate 6: Proportion of<br>(Sum of Climate Scores 6-10) / (Sum of total Climate Scores) | Climate Match<br>Category |
|--|---------------------------|
| $0.000 \leq X \leq 0.005$  | Low                       |
| $0.005 < X < 0.103$  | Medium                    |
| $\geq 0.103$   | High                      |

## 7 Certainty of Assessment

Information was available on the biology and ecology of *Hemibarbus labeo*. Information on distribution was incomplete, while information on impacts of introduction was absent. Certainty of this assessment is low.



## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Hemibarbus labeo* is a cyprinid fish native to East Asia, where it is valuable for commercial and sport fishing. The only recorded introduction of *H. labeo* occurred in Laos, but no literature is available on impacts of that introduction. The species appears to be capable of long-distance spread through interconnected waterways. The climate match analysis resulted in a medium match for the contiguous United States. The overall risk assessment category is uncertain.

### Assessment Elements

- **History of Invasiveness: None Documented**
- **Climate Match: Medium**
- **Certainty of Assessment: Low**
- **Overall Risk Assessment Category: Uncertain**

## 9 References

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**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

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**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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