

## ***Barbodes rhombeus* (a fish, no common name)**

### **Ecological Risk Screening Summary**

U.S. Fish & Wildlife Service, February 2013

Revised, March 2019

Web Version, 8/19/2019



Photo: P. Thach. Licensed under Creative Commons BY-NC 3.0 unported. Available: <https://ffish.asia/?p=none&o=ss&id=509>. (March 6, 2019).

## **1 Native Range and Status in the United States**

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### **Native Range**

From Vidthayanon (2012):

“The species is very widespread in mainland Southeast Asia in the lower Mekong (from Lao PDR to the delta in Viet Nam, and in the Dong Nai River, southern Viet Nam; Freyhof et al. 2000), and in tributaries (e.g., the Xe Kong and the Xe Bang Fai in Lao PDR; Kottelat 1998, 2011), the Chao Phraya and Mae Khlung basins (Thailand), and the Malay Peninsula north of isthmus of Kra. The species has also been recorded from south-central Viet Nam in the Duc My River, Khanh Hoa province (Herder and Freyhof 2006).”

From Froese and Pauly (2019a):

“Recorded from Gelami and Tinggi Rivers, Pahang River system [Malaysia] [Miyazaki et al. 2013].”

## Status in the United States

No record of *Barbodes rhombeus* in the wild or in trade in the United States was found.

## Means of Introductions in the United States

No record of *Barbodes rhombeus* in the wild in the United States was found.

## Remarks

Information searches were conducted using both the valid name, *Barbodes rhombeus*, and the synonym, *Puntius rhombeus*.

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From Fricke et al. (2019):

“**Current status:** Valid as *Barbodes rhombeus* (Kottelat 2000).”

From Froese and Pauly (2019b):

“Animalia (Kingdom) > Chordata (Phylum) > Vertebrata (Subphylum) > Gnathostomata (Superclass) > [...] Actinopterygii (Class) > Cypriniformes (Order) > Cyprinidae (Family) > Barbinae (Subfamily) > *Barbodes* (Genus) > *Barbodes rhombeus* (Species)”

### Size, Weight, and Age Range

From Ho et al. (2016:43):

“This fish can reach lengths of 7cm.”

### Environment

From Froese and Pauly (2019a):

“Freshwater; benthopelagic.”

From Herder and Freyhof (2006):

“In addition to its occurrence at sites with high current velocity, *P. [Barbodes] rhombeus* was distinguished from *L. hasselti* by occupying deeper water (mainly 11–30 cm, compared to <11 cm).”

### Climate/Range

From Froese and Pauly (2019a):

“Tropical”

## **Distribution Outside the United States**

### **Native**

From Vidthayanon (2012):

“The species is very widespread in mainland Southeast Asia in the lower Mekong (from Lao PDR to the delta in Viet Nam, and in the Dong Nai River, southern Viet Nam; Freyhof et al. 2000), and in tributaries (e.g., the Xe Kong and the Xe Bang Fai in Lao PDR; Kottelat 1998, 2011), the Chao Phraya and Mae Khlong basins (Thailand), and the Malay Peninsula north of isthmus of Kra. The species has also been recorded from south-central Viet Nam in the Duc My River, Khanh Hoa province (Herder and Freyhof 2006).”

From Froese and Pauly (2019a):

“Recorded from Gelami and Tinggi Rivers, Pahang River system [Malaysia] [Miyazaki et al. 2013].”

### **Introduced**

From Vidthayanon (2012):

“EXTANT & INTRODUCED (RESIDENT)  
Philippines”

From Ho et al. (2016:43):

“In Singapore [where it is introduced], found around rural and open streams, as well as reservoirs.”

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

From Ho et al. (2016:43):

“This fish was probably introduced into Singapore via the aquarium trade, either as a feeder fish or as a pet fish in its own right.”

## **Short Description**

From Kottelat (2000):

“Distinguished from the other species of the genus in Southeast Asia by the following combination of characters: two pairs of barbels; 24-25 + 3 4 lateral line scales; dorsal profile more or less straight; a small black spot immediately below dorsal-fin origin, one on middle of caudal peduncle at caudal-fin base; a faint longitudinally elongate blotch immediately behind upper extremity of gill opening, followed along body midline by a dark spot below dorsal and one or two above anal fin (these spots are usually indistinct in specimens larger than about 30 mm SL); black crescent at the base of scales; a narrow black distal margin on anal fin in large individuals.”

From Ho et al. (2016:43):

“This barb is generally silvery-grey to golden, [...]”

“The fins are tinged red, [...]”

## **Biology**

From Vidthayanon (2012):

“This species inhabits streams and marshlands from lowland to submontane areas.”

From Herder and Freyhof (2006):

“*Osteochilus lini*, *P. [Barbodes] rhombeus* and both juvenile and adult *R. paviei* were found to occur at sites characterized by submerged vegetation. Like *L. hasselti*, *P. rhombeus* showed a high electivity for bays, which were avoided by most other species [...].”

“*Puntius [Barbodes] rhombeus* appeared to be a specialized detritivore, although its relative gut length was the lowest of the non-insectivorous species [...]. Detritus might serve as a temporary dietary item when its preferred food is not available, a pattern known to occur in several omnivorous species (Lowe-McConnell, 1975; Bowen, 1983).”

From Ho et al. (2016:43):

“A shoaling fish that can form large schools, [...]”

“If frequents the middle column of the water, and is omnivorous, feeding mostly on small invertebrates and organic matter.”

## **Human Uses**

From Vidthayanon (2012):

“This species is occasionally seen in the aquarium trade.”

## **Diseases**

**No records of OIE-reportable diseases (OIE 2019) were found for *Barbodes rhombeus*.**

According to Wang (2012), *Barbodes rhombeus* (listed under *Puntius rhombeus*) is an intermediate host for liver fluke (*Opisthorchis viverrini*).

## Threat to Humans

From Wang (2012):

“Liver fluke (*Opisthorchis viverrini*, *O.v.*) infection [*B. rhombeus* is identified by author as an intermediate host], along with its associated cholangiocarcinoma [bile duct cancer], is a major public health problem in Southeast Asia.”

## 3 Impacts of Introductions

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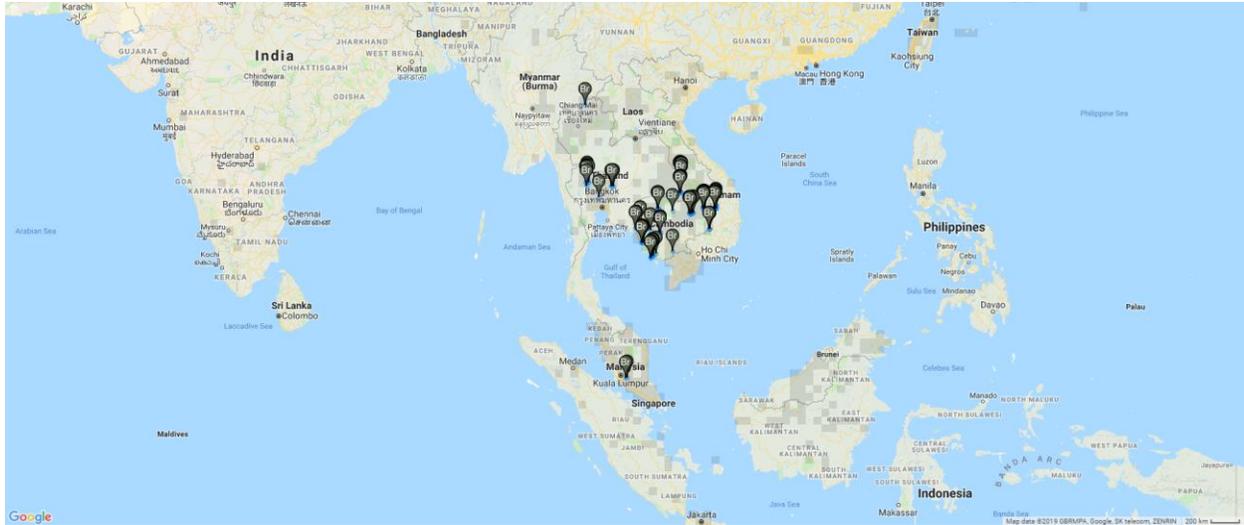
Records of introduction to Singapore (Ho et al. 2016) and the Philippines (Vidthayanon 2012) were found but no information on impacts of introductions was found.

## 4 Global Distribution

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**Figure 1.** Known global distribution of *Barbodes rhombeus*. Locations are in Thailand, Cambodia, and Malaysia. Map from GBIF Secretariat (2019).



**Figure 2.** Additional known global distribution of *Barbodes rhombeus*. Locations are in Thailand, Laos, Cambodia, Vietnam, and Malaysia. Map from Nagao Natural Environment Foundation (2019).

Additional collection locations in Laos are given in Kottelat (2011) and in Vietnam in Freyhof et al. (2000).

Vidthayanon (2012) reported *Barbodes rhombeus* as introduced to the Philippines but it was not clear if the species is established there and no georeferenced observations were found for the species in that country.

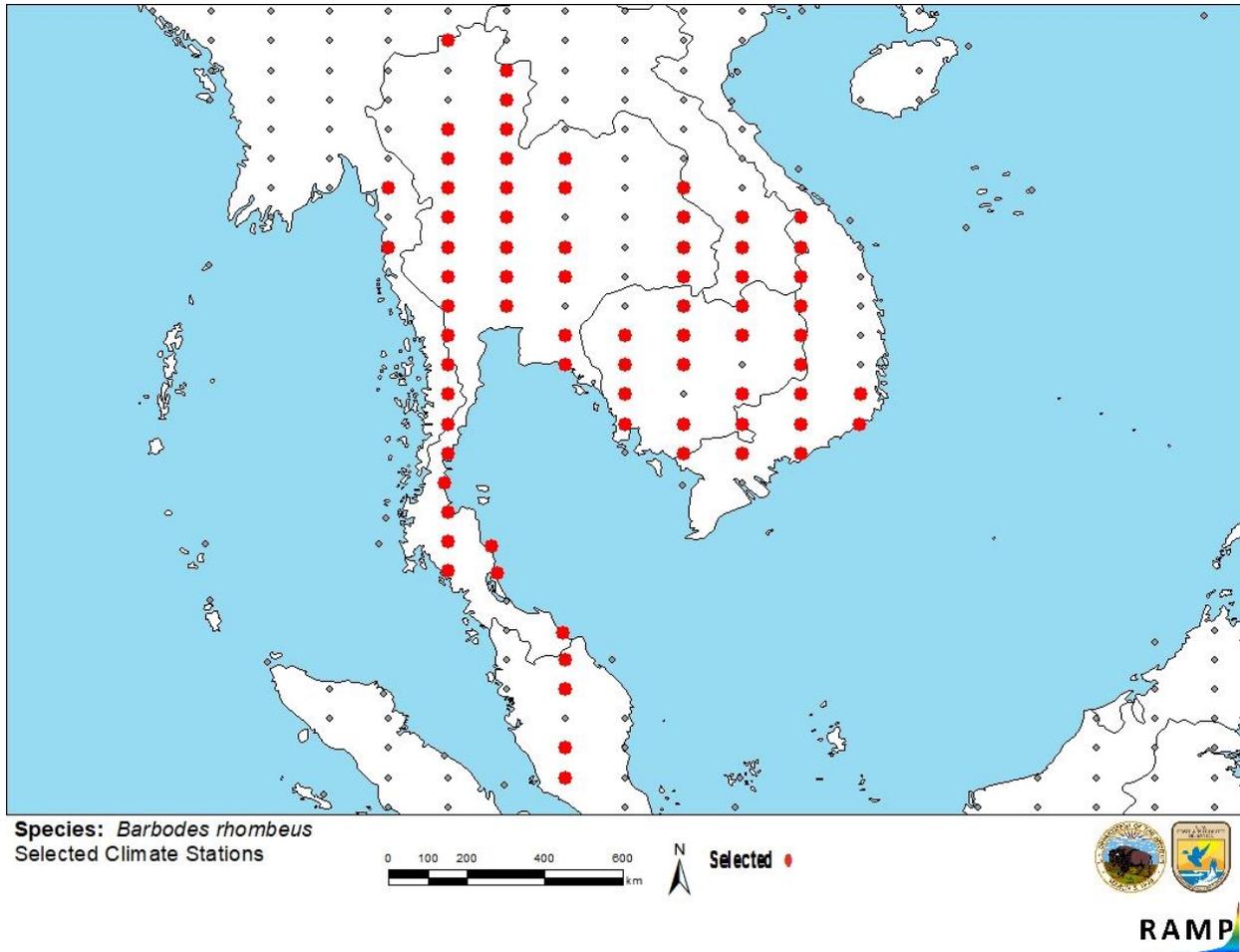
## 5 Distribution Within the United States

No record of *Barbodes rhombeus* in the wild in the United States was found.

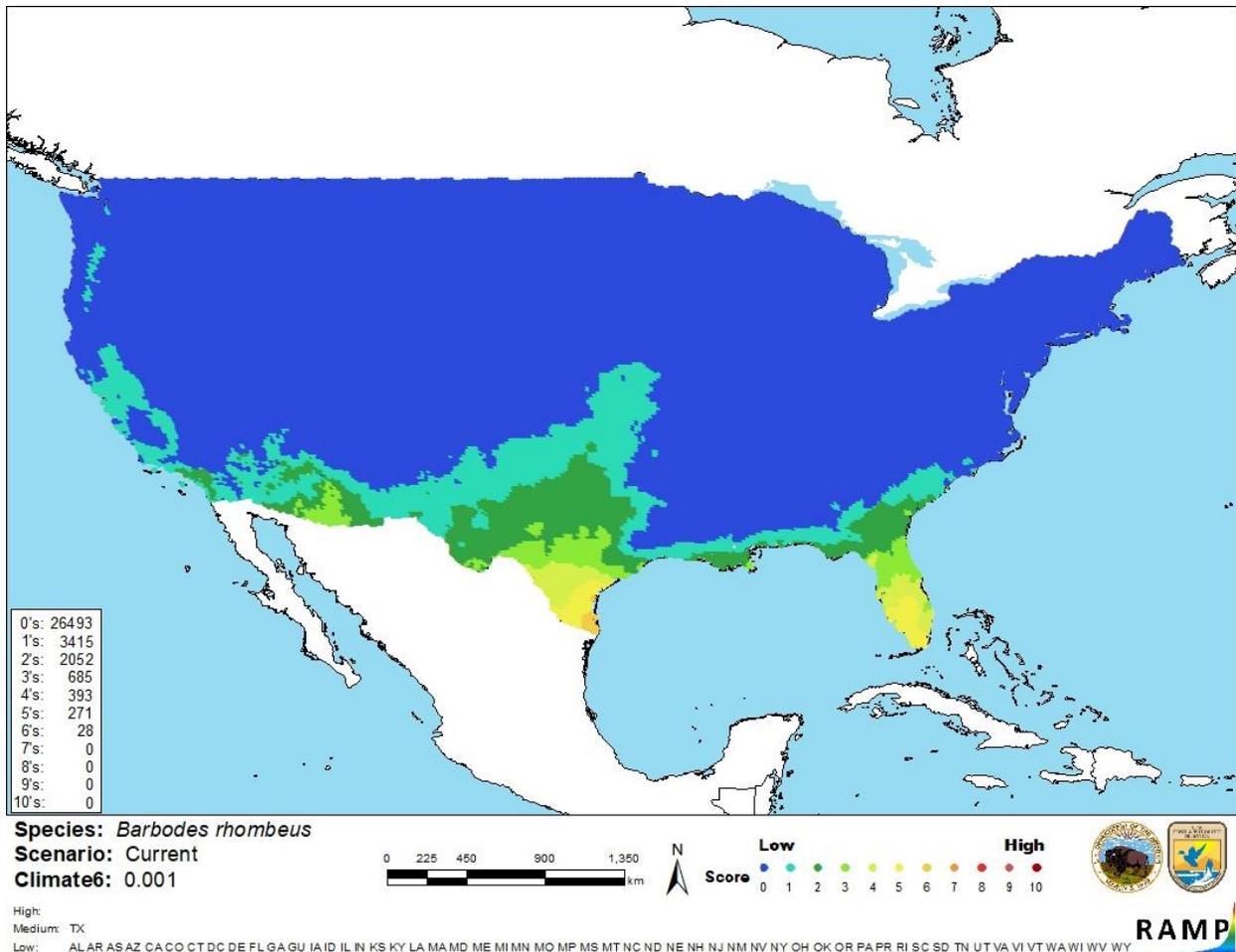
## 6 Climate Matching

### Summary of Climate Matching Analysis

The climate match for *Barbodes rhombeus* was low for most of the contiguous United States. There were areas of medium match in peninsular Florida and southern Texas. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for contiguous United States was 0.001, low (scores between 0.000 and 0.005, inclusive, are classified as low). All States had low individual climate scores except for Texas, which had a medium climate score.



**Figure 3.** RAMP (Sanders et al. 2018) source map showing weather stations in Southeast Asia selected as source locations (red; Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia) and non-source locations (gray) for *Barbodes rhombeus* climate matching. Source locations from Freyhof et al. (2000), Kottelat (2011), GBIF Secretariat (2019), and Nagao Natural Environment Foundation (2019). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.



**Figure 4.** Map of RAMP (Sanders et al. 2018) climate matches for *Barbodes rhombeus* in the contiguous United States based on source locations reported by Freyhof et al. (2000), Kottelat (2011), GBIF Secretariat (2019), and Nagao Natural Environment Foundation (2019). 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
$\geq 0.103$	High

## 7 Certainty of Assessment

Certainty of assessment for *Barbodes rhombeus* is low. There is some biological and ecological information available for the species. There were two records of introduction found with at least one resulting in an established population. However, no information on impacts of introduction was found.

## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Barbodes rhombeus* is a fish in the minnow family (Cyprinidae), native to Southeast Asia. It is sometimes present in the aquarium trade. *B. rhombeus* has been reported as an intermediate host for the parasite *Opisthorchis viverrini*, which can be transferred to humans when consuming raw fish. The history of invasiveness for *B. rhombeus* is not documented. Two records of introduction were found with the introduction in Singapore resulting in established populations. No information on any impacts from that introduction was found. The climate match to the contiguous United States for *B. rhombeus* was low. The only areas of medium match were in peninsular Florida and southern Texas; there were no areas of high match. The certainty of assessment is low. The overall risk assessment category is uncertain.

### Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information:** No additional information.
- **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.**

- Freyhof, J., D. V. Serov, and T. N. Nguyen. 2000. A preliminary checklist of the freshwater fishes of the River Dong Nai, South Vietnam. *Bonner Zoologische Beiträge* 49:93–99.
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- Kottelat, M. 2000. Diagnosis of a new genus and 64 new species of fishes from Laos (Teleostei: Cyprinidae, Balitoridae, Bagridae, Syngnathidae, Chaudhuriidae and Tetraodontidae). *Journal of South Asian Natural History* 5(1):37–82.
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- Wang, Y.-C. 2012. Examining landscape determinants of *Opisthorchis viverrini* transmission. *EcoHealth* 9:328–341.

## 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.**

- Bowen, S. H. 1983. Detritivory in neotropical fish communities. *Environmental Biology of Fishes* 9:137–144.
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