

Siamese Mud Carp (*Henicorhynchus siamensis*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, June 2012

Revised, September 2018

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1 Native Range and Status in the United States

Native Range

From Vidthayanon (2012):

“Recorded from the Mekong basin (Thailand, Lao PDR, Viet Nam and Cambodia), as well as the Mae Khlong and Chao Phraya basins, and associated lowland areas.”

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.

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 *Henicorhynchus*
Species *Henicorhynchus siamensis* (Sauvage, 1881)”

From Fricke et al. (2018):

“Current status: Valid as *Henicorhynchus siamensis* (Sauvage 1881). Cyprinidae: Labeoninae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 20.0 cm SL male/unsexed; [Roberts 1997]”

Environment

From Froese and Pauly (2018):

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

Climate/Range

From Froese and Pauly (2018):

“Tropical”

Distribution Outside the United States

Native

From Vidthayanon (2012):

“Recorded from the Mekong basin (Thailand, Lao PDR, Viet Nam and Cambodia), as well as the Mae Khlong and Chao Phraya basins, and associated lowland areas.”

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):

“Vertebrae: 33 - 34. Head large and broad, width 5.5-6.7 times in SL; relatively deep body, 3.2-3.4 times in SL; snout not or weakly projecting; plain silvery body [Kottelat 2001].”

Biology

From Suvarnaraksha et al. (2011):

“Most riverine cyprinids spawn during the early part of the rainy season (De Silva, 1983), although *H. siamensis* can develop their gonads as early as the late dry season around March to April and peak during May and June (Sokheng et al., 1999), but in this study the GSI [gonadosomatic index] began to develop at the beginning of the rainy season.”

“As a member of the littoral community, *H. siamensis* is known to be a mainly plant and detritus feeder, with the trophic level between 2.0–2.19. In a newly impounded condition, rich in nutrients and with a dominance of planktonic algae, *H. siamensis* was shown as restricted to being a phytoplankton feeder (i.e. trophic level range is 2.0: Thapanand et al., 2009). The presence of a few zooplankton in the stomach contents of *H. siamensis* in this study would put its trophic level slightly higher than 2.0. Feeding mostly on phytoplankton and plant materials, which have low energetic values, means that *H. siamensis* consumes a large quantity of food and has a long feeding period during the daytime (Amarasinghe et al., 2008). *H. siamensis* showed an exclusively herbivore pattern although there were temporal variations in the food components during the different seasons, similar to the population in the Mekong mainstream (Chheng et al., 2004), although most riverine cyprinids in the Mekong had flexible diets (i.e. omnivores: Warren et al., 1998).”

From Froese and Pauly (2018):

“Often found in great abundance at midwater to bottoms depths in large and small rivers. Feeds on algae, periphyton and phytoplankton. Not known to prosper in impoundments. Well known

for its annual trophic migrations out to the floodplains in wet season. Returns to rivers as water levels begin to fall in October with numbers increasing through December and then slowly declining [Rainboth 1996]. From just upstream Phnom Penh in Cambodia to the Khone Falls this species is reported to migrate upstream during the period October-February. At Muk Kompul in Kandal Province, it migrates upstream just before the full moon. Further upstream near Kratie, migration occurs during full moon and at Sambor, migration takes place immediately after full moon. Near the Khone Falls, upstream movements continue through March but in April fish are moving in both direction. From May to July, at the start of the rainy season, it migrates downstream from the Khone Falls to the Mekong Delta. Here, the fish is reported to move out of the Mekong into canals and flooded areas in August-September. When water recedes in November-December, fish migrates to the Mekong again. Upstream the Khone Falls near Ubolratchatani in Thailand, this species moves upstream between February and June, consisting mainly of juveniles in February-March and of adults (15-20 cm) in April-June. Further upstream from Xayabouri in Laos to Chiang Khong in Thailand, upstream migrations takes place between March to July, first by juveniles, later by adults [Sokheng et al. 1999]. Used to make prahoc along the Tonlé Sap, Cambodia. Often seen in the aquarium trade [Rainboth 1996].”

Human Uses

From Froese and Pauly (2018):

“Fisheries: commercial; aquarium: commercial”

From Suvarnaraksha et al. (2011):

“The riverine species, *Henicorhynchus siamensis* (Sauvage 1881), is an important source of protein and an economical fish for the rural population of inland Indochina.”

“*H. siamensis* is also the main fish catch produced by the commercial bag-net fisheries in Tonle Sap, Cambodia, where it constitutes more than 60% of the catch and accounts for almost 10% of the total value generated (Deap et al., 1998). Moreover, *H. siamensis* is ranked as the top species commonly consumed by Cambodians. These advantages play a crucial role as the most important animal food for the poor (Kent, 1997) and also fulfill a role as a dietary source of vitamins and minerals (Roos et al., 2007).”

Diseases

From Kumchoo et al. (2005):

“This study aimed to investigate *Haplorchis taichui* metacercarial infection in fish collected from the Chom Thong and Mae Taeng districts, Chiang Mai Province [Thailand] during November 2001 to October 2002.”

“*Haplorchis taichui* is one of the intestinal trematodes of the family Heterophyidae. The adult fluke is able to develop in the small intestine of birds and mammals, including humans (Faust and Nishigori, 1926; Yamaguti, 1958; Cheng, 1974).”

Kumchoo et al. (2005) report *H. taichui*, *H. pumillo*, *Haplorchoides* sp., and *Centrocestus caninus* metacercariae collected from *Henicorhynchus siamensis*.

From Boonchot and Wongsawad (2005):

“*Henicorhynchus siamensis* was infected with *Dactylogyrus* sp III, *Haplorchis taichui*, and *Rhabdochona* sp with an infection rate of 82.47%.”

No OIE-reportable diseases have been documented for this species.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

From Kumchoo et al. (2005):

“*Haplorchis taichui* is one of the intestinal trematodes of the family Heterophyidae. The adult fluke is able to develop in the small intestine of birds and mammals, including humans (Faust and Nishigori, 1926; Yamaguti, 1958; Cheng, 1974).”

Kumchoo et al. (2005) report *H. taichui* collected from *Henicorhynchus siamensis*.

3 Impacts of Introductions

This species has not been reported as introduced or established outside of its native range.

4 Global Distribution

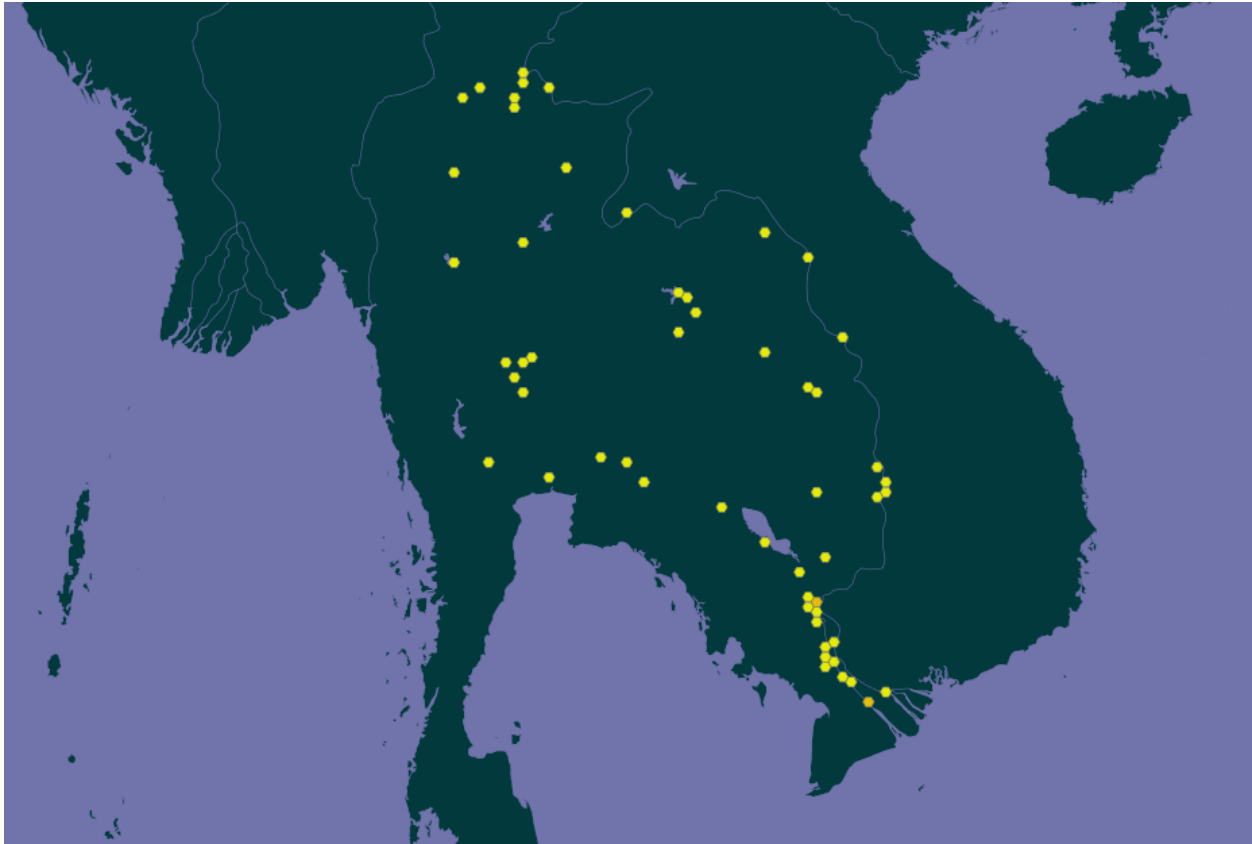


Figure 1. Known global distribution of *Henicorhynchus siamensis*, reported from Thailand, Cambodia, Vietnam, and Laos. Map from GBIF Secretariat (2017).

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 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.001, which is a low climate match. A Climate 6 score of 0.005 or below indicates a low climate match. The climate score was low for every state in the contiguous United States except for Texas, where it was medium. There were areas of medium climate match in south Texas and peninsular Florida; the remainder of the contiguous United States had a low match.

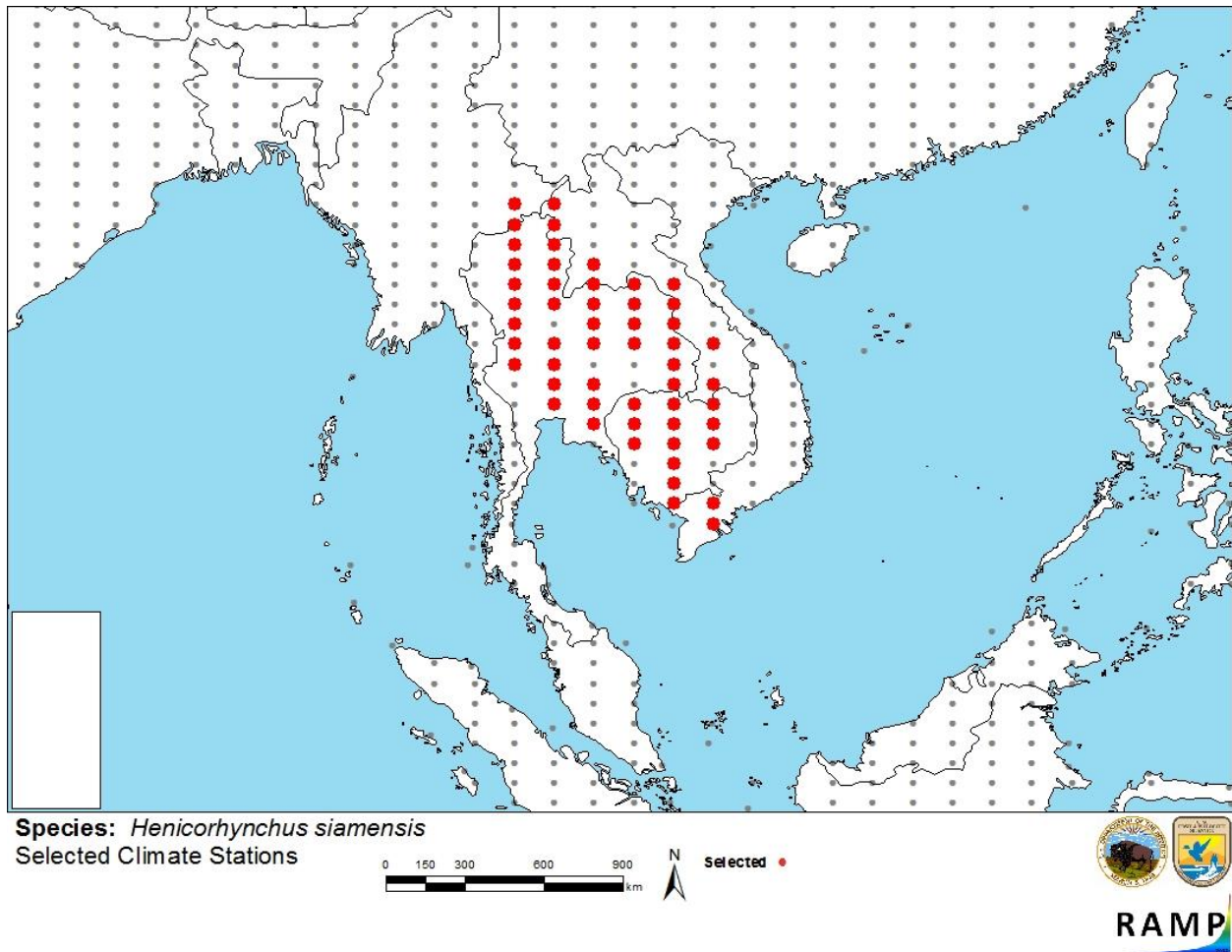


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Thailand, Cambodia, Vietnam, Laos, and Myanmar) and non-source locations (gray) for *Henicorhynchus siamensis* climate matching. Source locations from GBIF Secretariat (2017). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

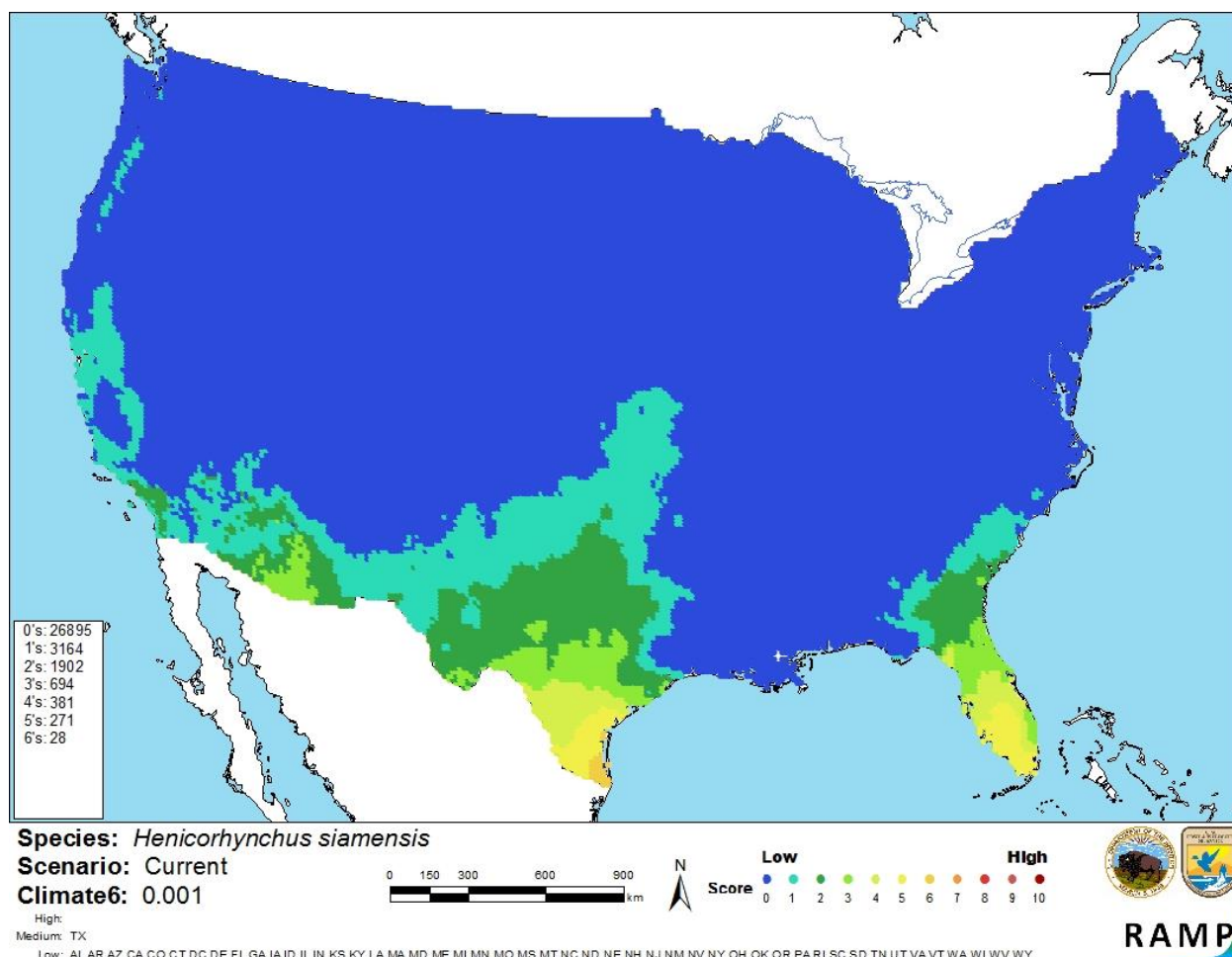


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Henicorhynchus siamensis* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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

7 Certainty of Assessment

There is adequate information available on the biology, ecology, and distribution of *Henicorhynchus siamensis*. This species has not been reported as introduced outside of its native range. Therefore, there is no information available about potential or realized negative impacts of introductions of *H. siamensis*. Without this information, the risk this species poses to the contiguous United States cannot be assessed with certainty. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

The Siamese Mud Carp, *Henicorhynchus siamensis*, is a small freshwater fish species native to the Mekong, Mae Khlong, and Chao Phraya basins in Southeast Asia. It is an important part of the diets of rural people in the species' native range. There is no indication that this species is in trade in the United States. There are no reports of introductions. Therefore, history of invasiveness is uncertain. *H. siamensis* has a low climate match with the contiguous United States overall, and a medium climate match in southern Texas and peninsular Florida. Certainty of this assessment is low because of a lack of information about the invasive potential of this species. 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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