

Glass Barb (*Pethia guganio*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, August 2013

Revised, July 2018

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Available: <https://www.gbif.org/occurrence/656971757>. (July 2018).

1 Native Range and Status in the United States

Native Range

From Dahanukar (2015):

“*Pethia guganio* is widely distributed in India (Ganga, Brahmaputra, Yamuna river systems in the Gangetic Provinces, Assam, Bihar, Uttar Pradesh, West Bengal), Bangladesh. Jayaram (1991).”

From Eschmeyer et al. (2018):

“Ganga-Brahmaputra basin, Nepal, India and Bangladesh.”

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

Both the accepted name *Pethia guganio* and the synonym *Puntius guganio* were used when researching in preparation of this assessment.

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 *Puntius*
Species *Puntius guganio* (Hamilton, 1822) – glass-barb”

From Eschmeyer et al. (2018):

“Current status: Valid as *Pethia guganio* (Hamilton 1822). Cyprinidae: Smiliogastrinae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 8.0 cm TL male/unsexed; [Talwar and Jhingran 1991]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic.”

Climate/Range

From Froese and Pauly (2018):

“Tropical”

Distribution Outside the United States

Native

From Dahanukar (2015):

“*Pethia guganio* is widely distributed in India (Ganga, Brahmaputra, Yamuna river systems in the Gangetic Provinces, Assam, Bihar, Uttar Pradesh, West Bengal), Bangladesh. Jayaram (1991).”

From Eschmeyer et al. (2018):

“Ganga-Brahmaputra basin, Nepal, India and Bangladesh.”

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 Hamilton (1822):

“[...] ten rays in the dorsal, and seven in the anal fin; with scarcely any lateral line, and with a diaphanous body.”

“The form is compressed, deep, and more prominent below than above. It is diaphanous, so that eleven ribs on each side may be seen through the scales. The back is dotted: the head, eyes, the membrane lining the visceral cavity, and the spine, are coloured like silver. The fins are diaphanous, the fore part of the dorsal being dotted.”

“The head is oval, small, blunt, and dotted. The mouth is small. The jaws protrude in opening; the upper is the longest. The nostrils cannot be clearly distinguished. The eyes are far forward on the sides of the head, and large. The membrane of each gill-cover contains four rays.”

“Before the fin the back slopes downward. The scales are large in proportion, and adhere firmly. The lateral line, if any exists, is very faint. The vent is behind the middle.”

“The dorsal fin is near the middle: the first of its rays is short, the second strong, undivided, and indented behind: the others are branched. Each of the pectoral fins has about twelve rays; but the lower ones are so slender as to be scarcely visible. Each of the ventral fins has nine rays, of

which the first and last are undivided. The first ray of the anal fin is short, and the last divided to the root. The tail fin is divided into two lobes.”

Biology

From Dahanukar (2015):

“This species breeds in upper reaches of permanent rivers, ponds and lakes.”

From Froese and Pauly (2018):

“Found in rivers, canals, beels and ponds [Rahman 1989]. Occurs in backwaters of flowing rivers over sandy substrate [Menon 1999].”

From Seriously Fish (2018):

“Probably a micropredator feeding on small insects, worms, crustaceans and other zooplankton in nature.”

Human Uses

From Dahanukar (2018):

“It is used as an aquarium fish.”

From Seriously Fish (2018):

“This species is almost unheard of in the aquarium hobby.”

“This species is poorly known in the aquarium hobby and little information regarding its captive maintenance exists.”

From Froese and Pauly (2018):

“Fisheries: of no interest”

Diseases

Hossian et al. (2011) reports *Pseudomonas* spp. and *Aeromonas* spp. as pathogenic bacteria isolated from *Puntius guganio* (synonym of *Pethia guganio*).

No OIE-reportable diseases (OIE 2019) 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



Figure 1. Known global distribution of *Pethia guganio*, reported from India, Nepal, and Bangladesh. Map from GBIF Secretariat (2019). The occurrences reported in central India and on Nicobar Island were excluded from the climate matching analysis because of incorrect coordinates.

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. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.0, which indicates a low overall climate match. (Scores between 0.000 and 0.005, inclusive, are classified as low.) The climate match was very low across almost all of the contiguous United States. The only area of medium-low to medium climate match was located in southwestern Florida. All States had low climate scores.

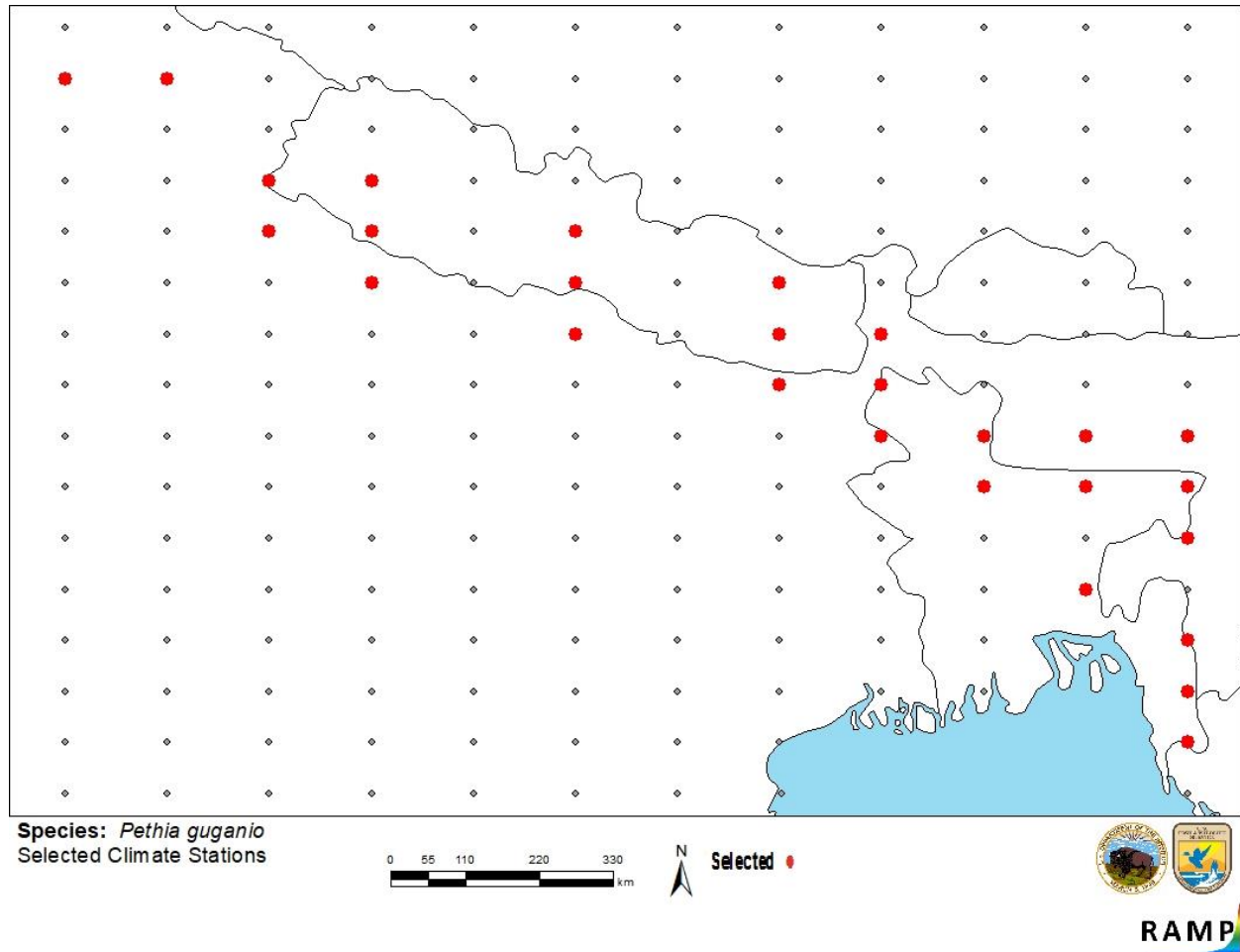


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in southern Asia selected as source locations (red; northeastern India, Nepal, Bangladesh) and non-source locations (gray) for *Pethia guganio* climate matching. Source locations from GBIF Secretariat (2019).

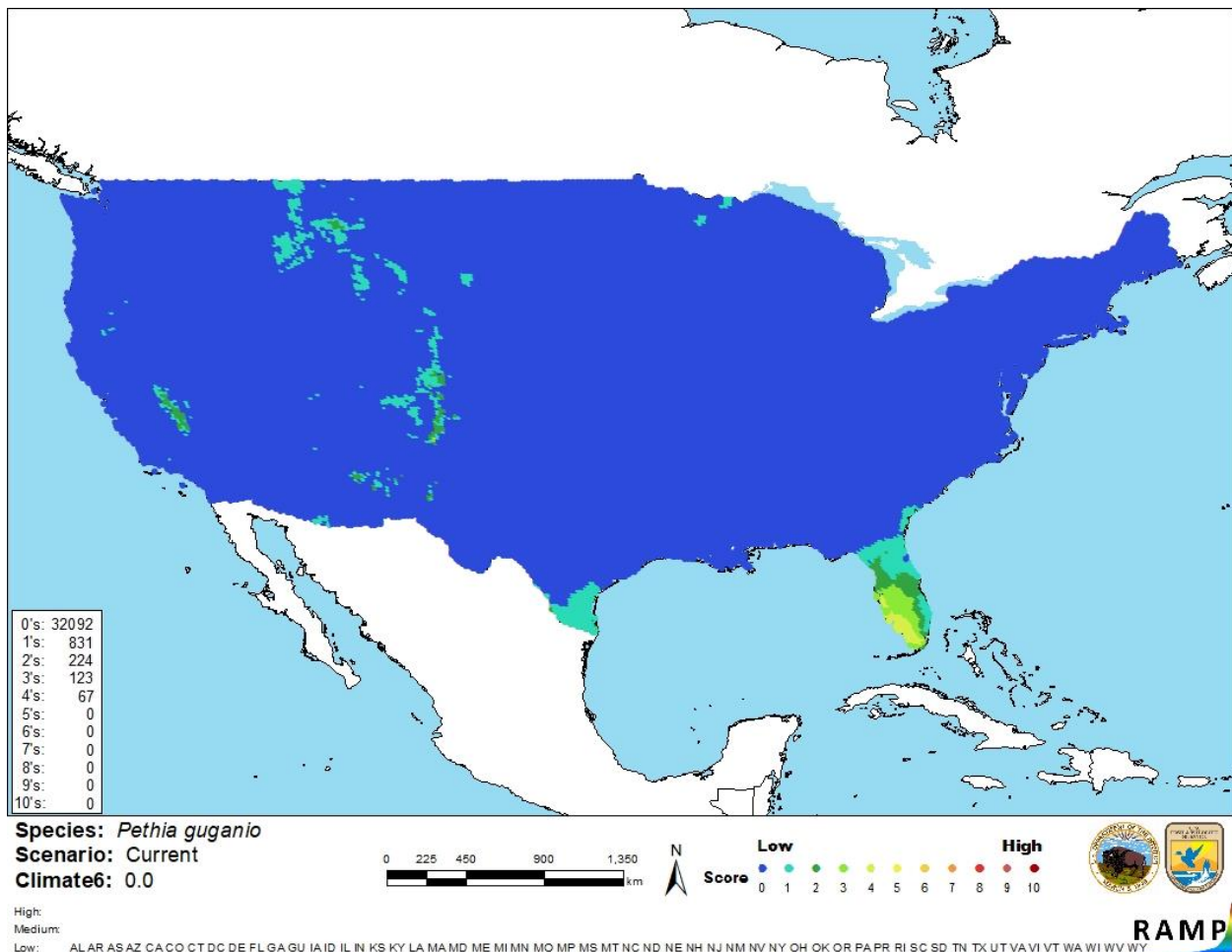


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Pethia guganio* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match.

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

7 Certainty of Assessment

There is limited information available on the biology, ecology, and distribution of *Pethia guganio*. It has never been reported as introduced outside of its native range, so there are no documented impacts of introductions of this species from which to base an assessment of risk. Certainty of this assessment is therefore low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Pethia guganio, the Glass Barb, is a small cyprinid fish native to Nepal, India, and Bangladesh. It is used, although rarely, in the aquarium trade. This species has a low climate match with the contiguous United States; only southwestern peninsular Florida had a medium match. *P. guganio* has never been reported as introduced or established outside of its native range. History of invasiveness is uncertain. Due to a lack of information about this species, the certainty of this assessment is low. The overall risk assessment category is, therefore, 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.

Dahanukar, N. 2015. *Pethia guganio*. The IUCN Red List of Threatened Species 2015: e.T166607A70089235. Available: <http://www.iucnredlist.org/details/166607/0>. (July 2018).

Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2018. Catalog of fishes: genera, species, references. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. (July 2018).

Froese, R., and D. Pauly, editors. 2018. *Pethia guganio* (Hamilton, 1822). FishBase. Available: <https://www.fishbase.de/summary/Pethia-guganio.html>. (July 2018).

GBIF Secretariat. 2019. GBIF backbone taxonomy: *Pethia guganio*, Hamilton, 1822. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/7510327>. (August 2019).

Hamilton, F. 1822. An account of the fishes found in the river Ganges and its branches. Hurst, Robinson, and Company, Edinburgh, Scotland.

Hossain, M. M. M., M. A. Rahman, S. Mondal, A. S. M. Sahadat Mondal, and M. B. R. Chowdhury. 2011. Isolation of some emergent bacterial pathogens recovered from capture and culture fisheries of Bangladesh. Bangladesh Research Publications Journal 6(1):77-90.

ITIS (Integrated Taxonomic Information System). 2018. *Puntius guganio* (Hamilton, 1822). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=163707#null. (July 2018).

OIE (World Organisation for Animal Health). 2019. OIE-listed diseases, infections and infestations in force in 2019. World Organisation for Animal Health, Paris. Available: www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/. (August 2019).

Sanders, S., C. Castiglione, and M. H. Hoff. 2018. Risk Assessment Mapping Program: RAMP, version 3.1. U.S. Fish and Wildlife Service.

Seriously Fish. 2018. '*Puntius*' *guganio*. Available: <https://www.seriouslyfish.com/species/puntius-guganio/>. (July 2018).

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.

Jayaram, K. C. 1991. Revision of the genus *Puntius* Hamilton from the Indian region (Pisces: Cypriniformes, Cyprinidae, Cyprininae). Records of the Zoological Survey of India Occasional Paper 135:1-178.

Menon, A. G. K. 1999. Check list - fresh water fishes of India. Records of the Zoological Survey of India, Miscellaneous Publications, Occasional Paper 175.

Rahman, A. K. A. 1989. Freshwater fishes of Bangladesh. Zoological Society of Bangladesh. Department of Zoology, University of Dhaka, Dhaka, Bangladesh.

Talwar, P. K., and A. G. Jhingran. 1991. Inland fishes of India and adjacent countries, volume 1. A. A. Balkema, Rotterdam, The Netherlands.