

# Dwarf Barb (*Pethia gelius*)

## Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, May 2011  
Revised, July 2018  
Web Version, 8/7/2019



Photo: F. M. Greco. Licensed under CC BY 3.0. Available:  
[https://commons.wikimedia.org/wiki/File:Pethia\\_gelius.jpg](https://commons.wikimedia.org/wiki/File:Pethia_gelius.jpg). (July 2018).

## 1 Native Range and Status in the United States

---

### Native Range

From Dahanukar (2015):

“*Pethia gelius* has a wide distribution in India (Madhya Pradesh, Uttar Pradesh, Orissa, West Bengal, Assam, Bihar) and Bangladesh (Jayaram 1991, Menon 1999).”

### Status in the United States

Nico and Neilson (2018) report *Pethia gelius* from Florida (Southeast Coast and South Atlantic-Gulf Region). The earliest observation occurred in 1974 and the last observation occurred in 1984.

From Nico and Neilson (2018):

“Failed in Florida.”

This species is in trade in the United States. For example, from Bluegrass Aquatics (2018):

“\$4.62 [...] DWARF GOLDEN BARB::: *Barbus gelius* [...]”

## Means of Introductions in the United States

From Nico and Neilson (2018):

“Probable escape from fish farm.”

## Remarks

From Nico and Neilson (2018):

“[...] Pethiyagoda et al. (2012) reassigned this species from *Puntius* to *Pethia*, [...]”

The name *Puntius gelius* still commonly appears in scientific literature and as a trade name, so it was also used when researching in preparation of this report.

## 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 gelius* (Hamilton, 1822)”

From Eschmeyer et al. (2018):

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

### Size, Weight, and Age Range

From Froese and Pauly (2019):

“Max length : 5.1 cm TL male/unsexed; [Rahman 1989]”

## Environment

From Froese and Pauly (2019):

“Freshwater; benthopelagic; pH range: 6.0 - 7.0; dH range: ? - 10. [...] 18°C - 22°C [Riehl and Baensch 1991; assumed to be recommended aquarium temperature range]”

## Climate/Range

From Froese and Pauly (2019):

“Subtropical”

## Distribution Outside the United States

Native

From Dahanukar (2015):

“*Pethia gelius* has a wide distribution in India (Madhya Pradesh, Uttar Pradesh, Orissa, West Bengal, Assam, Bihar) and Bangladesh (Jayaram 1991, Menon 1999).”

Introduced

According to Froese and Pauly (2019), *P. gelius* has been introduced to Colombia and the Philippines. It is established in Colombia and its status is unknown in the Philippines.

According to Sandilyan (2016), *P. gelius* has been introduced into southeastern India, but according to Sandilyan et al. (2018), there is no breeding population in the wild.

## Means of Introduction Outside the United States

From FAO (2018):

“*Puntius gelius* introduced to Colombia from unknown”

“Reasons of Introduction : 1) ornamental”

From Sandilyan (2016):

“Some of the ornamental species even enter into the new geographical boundary during the river-linking projects. For instance, *Badis badis*, *Pethia gelius*, *Osteobrama cotio* and *Lepidocephalus guntea* have invaded Chennai [southeastern India] lakes only after the river-linking projects [Knight and Balasubramanian 2015, Daniels and Rajagopal 2004].”

## Short Description

From Froese and Pauly (2019):

“Dorsal soft rays (total): 11; Anal soft rays: 8. This species can be diagnosed from all congeners by the combination of the following characters: lateral line incomplete, with 3-4 pored scales;

21-22 + 1 scales in lateral series,  $\frac{1}{4}/1/2\frac{1}{2}$  [*sic*] scales in transverse line on body; 8 predorsal scales; last unbranched dorsal-fin ray thick, straight, serrated, with 20-25 serrae on posterior margin; barbels absent; a broad black band around the caudal peduncle covering scales 19-21 in the longitudinal series. Three diffuse black blotches on the body, first behind opercle, second below dorsal-fin origin, third above anal-fin origin. Black spot at base and origins of dorsal, anal and pelvic fins [Knight 2013].”

From Dahanukar (2015):

“Sexes are alike.”

From Seriously Fish (2018):

“In live specimens the body is pale yellow in colour and the dorsal, pelvic and anal fins bright yellow [...].”

“*Pethia* species are defined by the following combination of characters: rostral barbels absent; maxillary barbels minute or absent; possession of a stiff, serrated last unbranched dorsal-fin ray; presence of a black blotch on the caudal peduncle, and frequently, black blotches, spots or bars on the side of the body; infraorbital 3 deep and partially overlapping the preoperculum.”

## **Biology**

From Froese and Pauly (2019):

“Occurs in rivers and standing water over silt and mud [Menon 1999]. Feeds on small crustaceans and insects [Mills and Vevers 1989].”

“The fish spawn in shallow water (15cm).”

From Dahanukar (2015):

“They eat their eggs just as soon as they drop them (Talwar and Jhingran 1991).”

From Seriously Fish (2018):

“Many of its habitats are subject to seasonal variation in water depth, flow and turbidity.”

## **Human Uses**

From Froese and Pauly (2019):

“Widely transported around the world and quite popular with aquarists.”

“Fisheries: of no interest; aquarium: commercial”

## Diseases

No information available. No OIE-reportable diseases (OIE 2019) have been documented for this species.

## Threat to Humans

From Froese and Pauly (2019):

“Harmless”

## 3 Impacts of Introductions

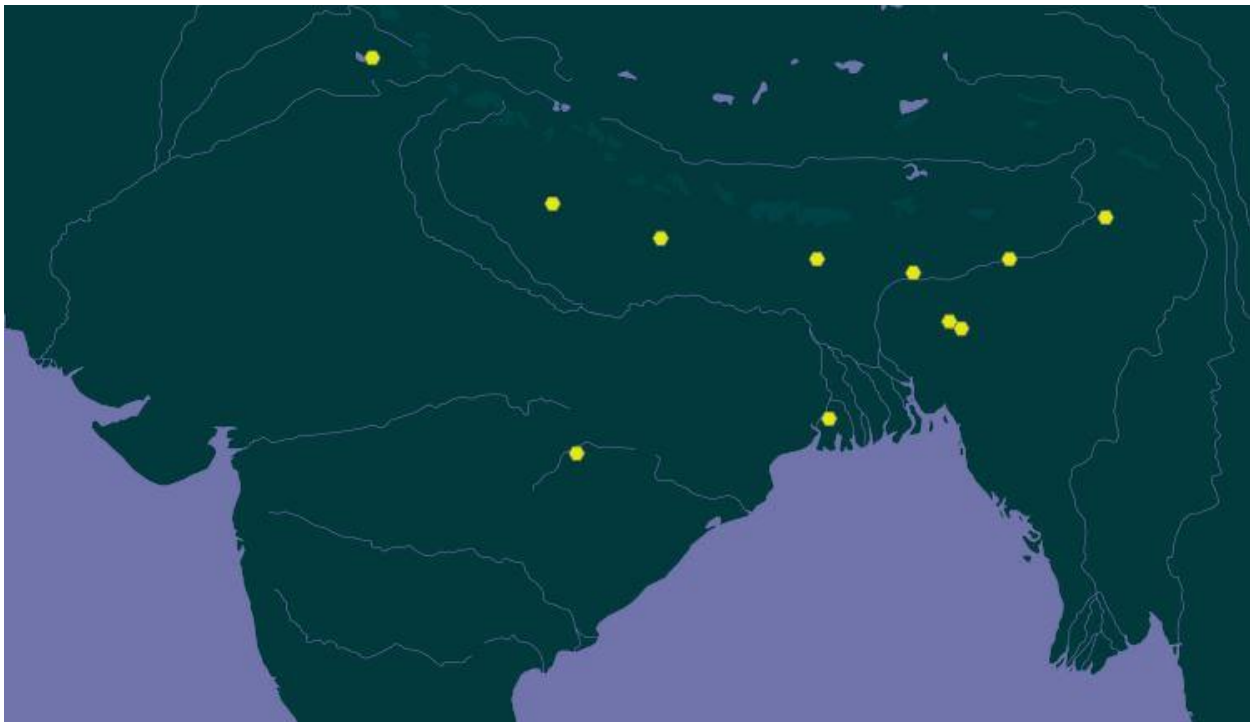
---

From Nico and Neilson (2018):

“Unknown; likely none.”

## 4 Global Distribution

---



**Figure 1.** Known global distribution of *Pethia gelius*, reported from India and Bangladesh. Map from GBIF Secretariat (2018). No georeferenced occurrences were available for the part of the species established range in Colombia.

## 5 Distribution Within the United States

---

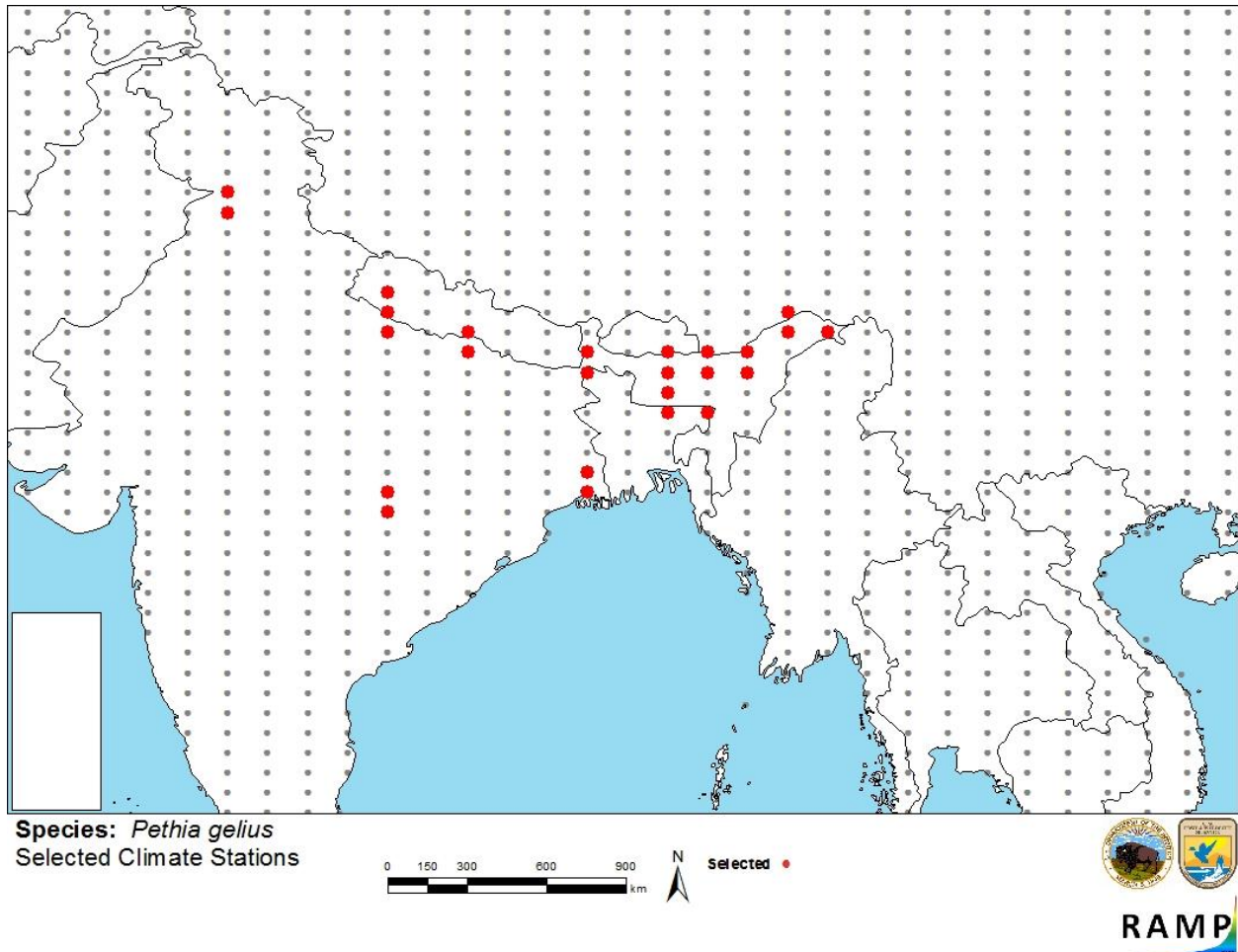


**Figure 2.** Known distribution of *Pethia gelius* in the United States. Map from Nico and Neilson (2018). Both points represent failed populations of this species.

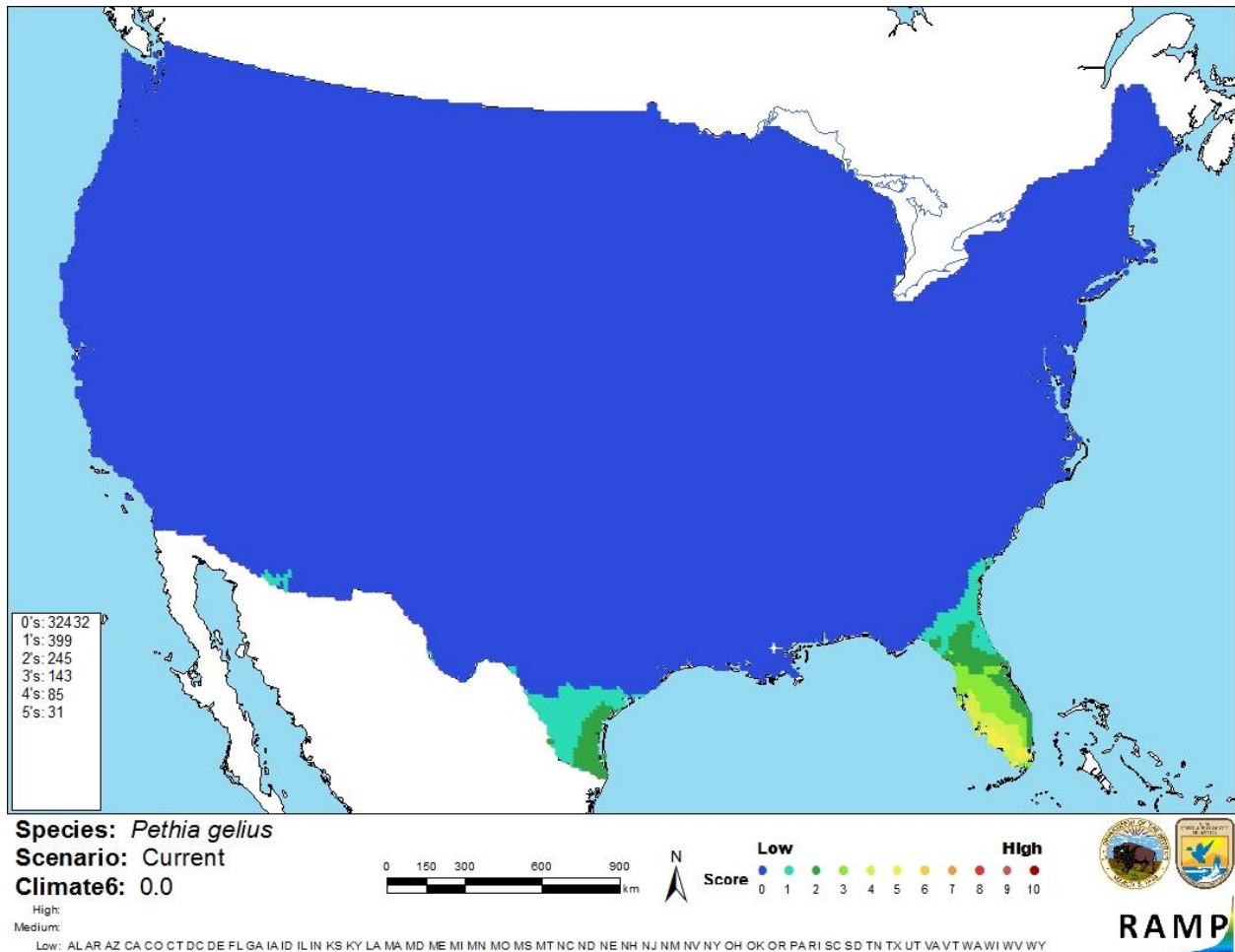
## 6 Climate Matching

### 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 a low climate match. (Scores between 0.000 and 0.005, inclusive, are classified as low.) The climate score was low in all States. Southern Florida had a medium climate match. The rest of peninsular Florida and southern Texas had a low climate match that was slightly higher than the rest of the contiguous United States, where the climate match was very low.



**Figure 3.** RAMP (Sanders et al. 2014) source map showing weather stations in South Asia selected as source locations (red; India, Bangladesh, Nepal, China; Bhutan) and non-source locations (gray) for *Pethia gelius* climate matching. Source locations from GBIF Secretariat (2018). 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. 2014) climate matches for *Pethia gelius* 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
$0.000 \leq X < 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 7 Certainty of Assessment

There is adequate, albeit limited, information available on the biology and ecology of *Pethia gelius*. This species has been documented as introduced outside of its native range, but no impacts of these introductions have been documented. Because more information on impacts of introductions of this species is needed to adequately assess the risk this species poses to the contiguous United States, the certainty of this assessment is low.



## 8 Risk Assessment

---

### Summary of Risk to the Contiguous United States

*Pethia gelius*, the Dwarf Barb, is a small fish native to India and Bangladesh. It is used in the aquarium trade. It has been reported as introduced to Florida; the populations in Florida failed. It has been introduced to Colombia and to lakes outside its native range in India; it is reported as established in the former location only. No information is available to determine whether this species has had any negative impacts where introduced. History of invasiveness is “none documented.” *P. gelius* has a low climate match with the contiguous United States, with a medium match only in southwest Florida. Because further information is needed to adequately assess the risk this species poses, the certainty of this 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**
- **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.**

Bluegrass Aquatics. 2018. DWARF GOLDEN BARB regular. Available:

<https://bluegrassaquatics.com/dwarf-golden-barb-regular.html>. (July 2018).

Dahanukar, N. 2015. *Pethia gelius*. The IUCN Red List of Threatened Species 2015:

e.T166577A70088575. Available: <http://www.iucnredlist.org/details/166577/0>. (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).

FAO (Fisheries and Agriculture Organization of the United Nations). 2018. Database on introductions of aquatic species. FAO, Rome. Available:

<http://www.fao.org/fishery/introsp/search/en>. (July 2018).

Froese, R., and D. Pauly, editors. 2019. *Pethia gelius* (Hamilton, 1822). FishBase. Available:

<https://www.fishbase.de/summary/Pethia-gelius.html>. (August 2019).

- GBIF Secretariat. 2018. GBIF backbone taxonomy: *Pethia gelius*, Hamilton, 1822. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2364175>. (July 2018).
- ITIS (Integrated Taxonomic Information System). 2018. *Puntius gelius* (Hamilton, 1822). Integrated Taxonomic Information System, Reston, Virginia. Available: [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=163711#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=163711#null). (July 2018).
- Nico, L., and M. Neilson. 2018. *Pethia gelius* (Hamilton, 1822). U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, Florida. Available: <https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=632>. (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: <http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/>. (August 2019).
- Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.
- Sandilyan, S. 2016. Occurrence of ornamental fishes: a looming danger for inland fish diversity of India. *Current Science* 110(11):2099-2104.
- Sandilyan, S., B. Meenakumari, A. Biju Kumar, and Rupam Mandal. 2018. A review on impacts of invasive alien species on Indian inland aquatic ecosystems. National Biodiversity Authority, Chennai.
- Seriously Fish. 2018. *Pethia gelius*— Golden Dwarf Barb. Available: <https://www.seriouslyfish.com/species/pethia-gelius/>. (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.**

- Daniels, R. J. R., and B. Rajagopal. 2004. Fishes of Chembarampakkam Lake – a wetland in the outskirts of Chennai. *Zoos' Print Journal* 19(5):1481-1483.
- Knight, J. D. M. 2013. *Pethia aurea* (Teleostei: Cyprinidae), a new species of barb from West Bengal, India, with redescription of *P. gelius* and *P. canius*. *Zootaxa* 3700(1):173-184.
- Knight, J. D. M., and S. Balasubramanian. 2015. On a record of two alien fish species (Teleostei: Osphronemidae) from the natural waters of Chennai, Tamil Nadu, India. *Journal of Threatened Taxa* 7(3):7044-7046.

- Menon, A. G. K. 1999. Check list - fresh water fishes of India. Records of the Zoological Survey of India, Miscellaneous Publications, Occasional Paper 175.
- Mills, D., and G. Vevers. 1989. The Tetra encyclopedia of freshwater tropical aquarium fishes. Tetra Press, New Jersey.
- Rahman, A. K. A. 1989. Freshwater fishes of Bangladesh. Zoological Society of Bangladesh. Department of Zoology, University of Dhaka, Dhaka, Bangladesh.
- Riehl, R., and H. A. Baensch. 1991. Aquarien atlas. Volume 1. Mergus, Verlag für Natur-und Heimtierkunde, Melle, Germany.
- Talwar, P. K., and A. G. Jhingran. 1991. Inland Fishes of India and adjacent countries. Oxford-IBH Publishing Company Private Limited, New Delhi, India.