

***Puntius mahecola* (a fish, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, November 2013

Revised, July 2018

Web Version, 6/27/2019



Photo: Zoo Praha (Prague Zoo). Licensed under CC BY-SA 3.0. Available: https://commons.wikimedia.org/wiki/File:Parmi%C4%8Dka_%C4%8Dernoskvrnn%C3%A1_8639.jpg. (July 2018).

1 Native Range and Status in the United States

Native Range

From Abraham (2013):

“*Puntius mahecola* is widely distributed in Kerala [India], and appears to be restricted to the coastal plain and also the foothills. It is not a common species. There are no records of this species from outside Kerala. Pethiyagoda describes the records he made of the distribution of the species, respectively; Mahe, Chalakudy River at Parambikulam, Veliyandi near Alleppey, Vembanad Lake at Kumarakom (near Kottayam), Thrissur on road to Peechi Dam, Koodel

between Punalur and Pattanampuram, Kaidhapol east of Calicut on road to Vyrthry, river 5 km south of Pathanamthitta, Minmutti, a waterfall on Kallar River, Periyar River at Ranni, Kallada River near Pattanampuram (Pethiyagoda & Kottelat 2005). The species has also been recorded in the Kallada and Itthikkara rivers in Kollam district and the Vamanpuram, Karamana and Neyyar rivers of Thiruvananthapuram district (R. K. Abraham et al. 2011).”

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.

From Denaro (2015):

“*Dawkinsia assimilis* is frequently imported and sold [in the United States] as *Puntius mahecola*, but that is a smaller and not closely related species.”

Means of Introductions in the United States

This species has not been reported as introduced or established in the United States.

Remarks

From Abraham (2013):

“*Puntius mahecola* has been constantly confused with *P. melanostigma*, *P. filamentosus* and *P. amphibius*. Its distribution range is not properly delineated making the taxon assessment currently imprecise [...]”

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 mahecola* (Valenciennes in Cuvier and Valenciennes, 1844)”

From Eschmeyer et al. (2018):

“Current status: Valid as *Puntius mahecola* (Valenciennes 1844). Cyprinidae: Smiliogastrinae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 8.9 cm SL male/unsexed; [Pethiyagoda and Kottelat 2005]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic.”

Climate/Range

From Froese and Pauly (2018):

“Tropical”

Distribution Outside the United States

Native

From Abraham (2013):

“*Puntius mahecola* is widely distributed in Kerala [India], and appears to be restricted to the coastal plain and also the foothills. It is not a common species. There are no records of this species from outside Kerala. Pethiyagoda describes the records he made of the distribution of the species, respectively; Mahe, Chalakudy River at Parambikulam, Veliyandi near Alleppey, Vembanad Lake at Kumarakom (near Kottayam), Thrissur on road to Peechi Dam, Koodel between Punalur and Pattanampuram, Kaidhapoil east of Calicut on road to Vyrthry, river 5 km south of Pathanamthitta, Minmutti, a waterfall on Kallar River, Periyar River at Ranni, Kallada River near Pattanampuram (Pethiyagoda & Kottelat 2005). The species has also been recorded in the Kallada and Itthikkara rivers in Kollam district and the Vamanpuram, Karamana and Neyyar rivers of Thiruvananthapuram district (R. K. Abraham et al. 2011).”

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 Pethiyagoda and Kottelat (2005):

“*Puntius mahecola* is distinguished from all other *Puntius* recorded from southern India and Sri Lanka by the following combination of characters: last simple dorsal ray smooth; body depth 27.2–32.0% SL; a single pair of (maxillary) barbels, about $\frac{1}{2}$ eye diameter long; 22–23 +1–3 lateral-line scales; $\frac{1}{2}4+1+3\frac{1}{2}$ transverse rows of scales; a horizontally-elongate black blotch about $1\frac{1}{2}$ times as wide as it is high across $3\frac{1}{2}$ scales of lateral line immediately behind anal-fin base. Furthermore, *P. mahecola* differs from the lectotype of *P. amphibius* in having a snout length of 7.2–9.7% SL (vs. 10.7% SL). It differs from *P. filamentosus* by not having the dorsal-fin branched rays elongated into filament-like extensions; by having a body depth of 27.2–32.0% SL (vs. 32.6–39.9); and by having the caudal blotch entirely posterior to the anal-fin origin (vs. above anal-fin origin).”

“Adult specimens in life [...] olive dorsally, silvery on sides, white below. A black, horizontally-elongate blotch about $1\frac{1}{2}$ times as wide as high across $3\frac{1}{2}$ scales on caudal peduncle, bisected symmetrically by lateral-line scales 20–22, immediately behind anal-fin base, sometimes extending to first scale on caudal-fin base. Dorsal, caudal and anal fins yellowish in females, reddish in males. Pectoral and pelvic fins hyaline. Sides suffused with pink; a diffuse pink spot present on opercle in mature males.”

Biology

From Pethiyagoda and Kottelat (2005):

“It was found in the slow-flowing sand-mud substrate parts of rivers, in water up to about 2 m deep.”

Human Uses

From Pethiyagoda and Kottelat (2005):

“[...] occasional specimens were seen together with *P. filamentosus* in fish markets.”

From Abraham (2013):

“It is also collected for the aquarium trade.”

From Denaro (2015):

“*Dawkinsia assimilis* is frequently imported and sold [in the United States] as *Puntius mahecola*, but that is a smaller and not closely related species.”

Diseases

No information available. 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

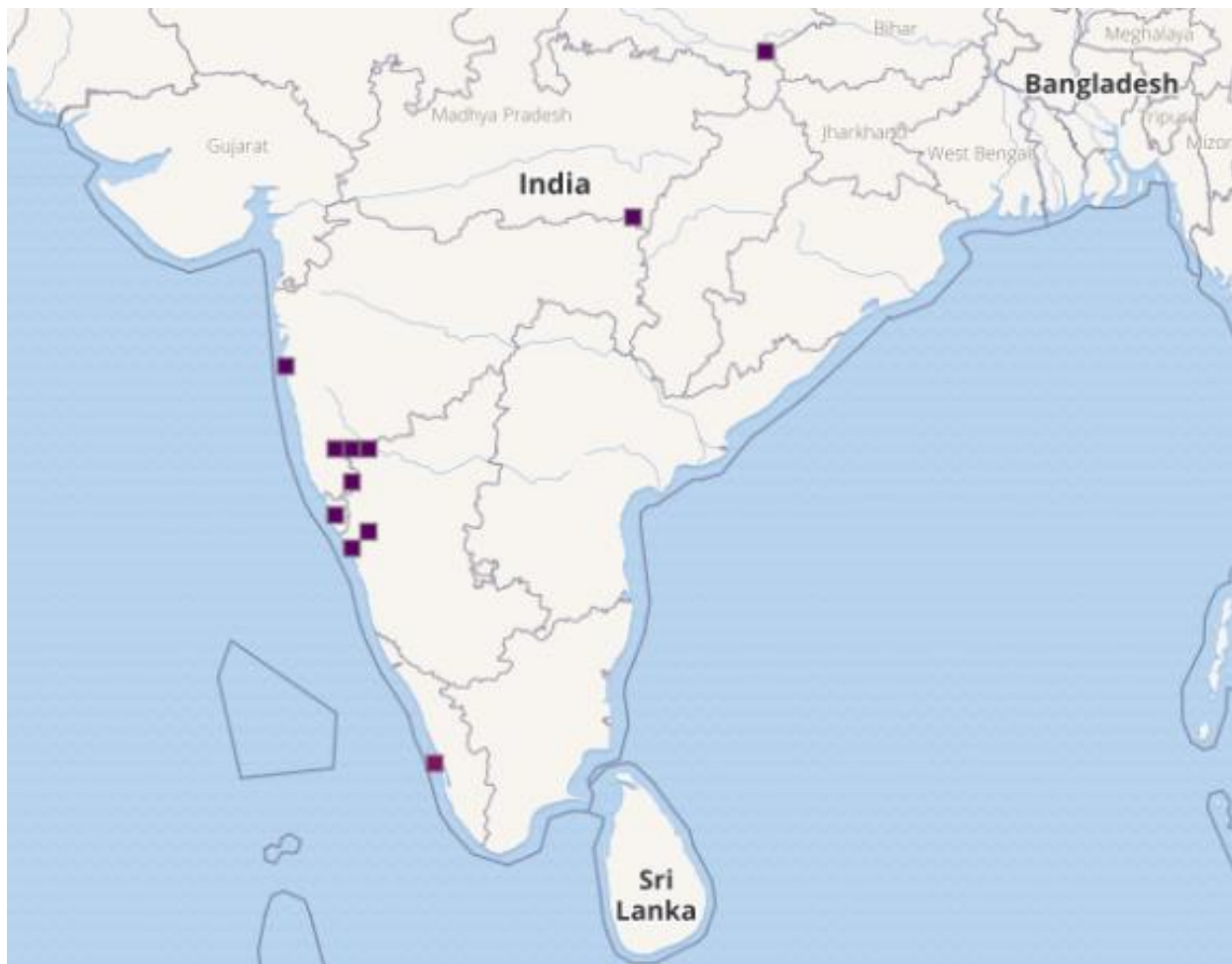


Figure 1. Known global distribution of *P. mahecola*, reported throughout India. Map from GBIF Secretariat (2019). Only the southernmost occurrence, located in the state of Kerala, represents an established population. It was the only occurrence from GBIF Secretariat (2019) used in climate matching.

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 0.0, which is a low climate match. Scores between 0.000 and 0.005, inclusive, are classified as low. The climate match was very low across most of the contiguous United States. There were small areas of medium to medium-low climate match in southern peninsular Florida and far southern Texas. All states had a low climate score.

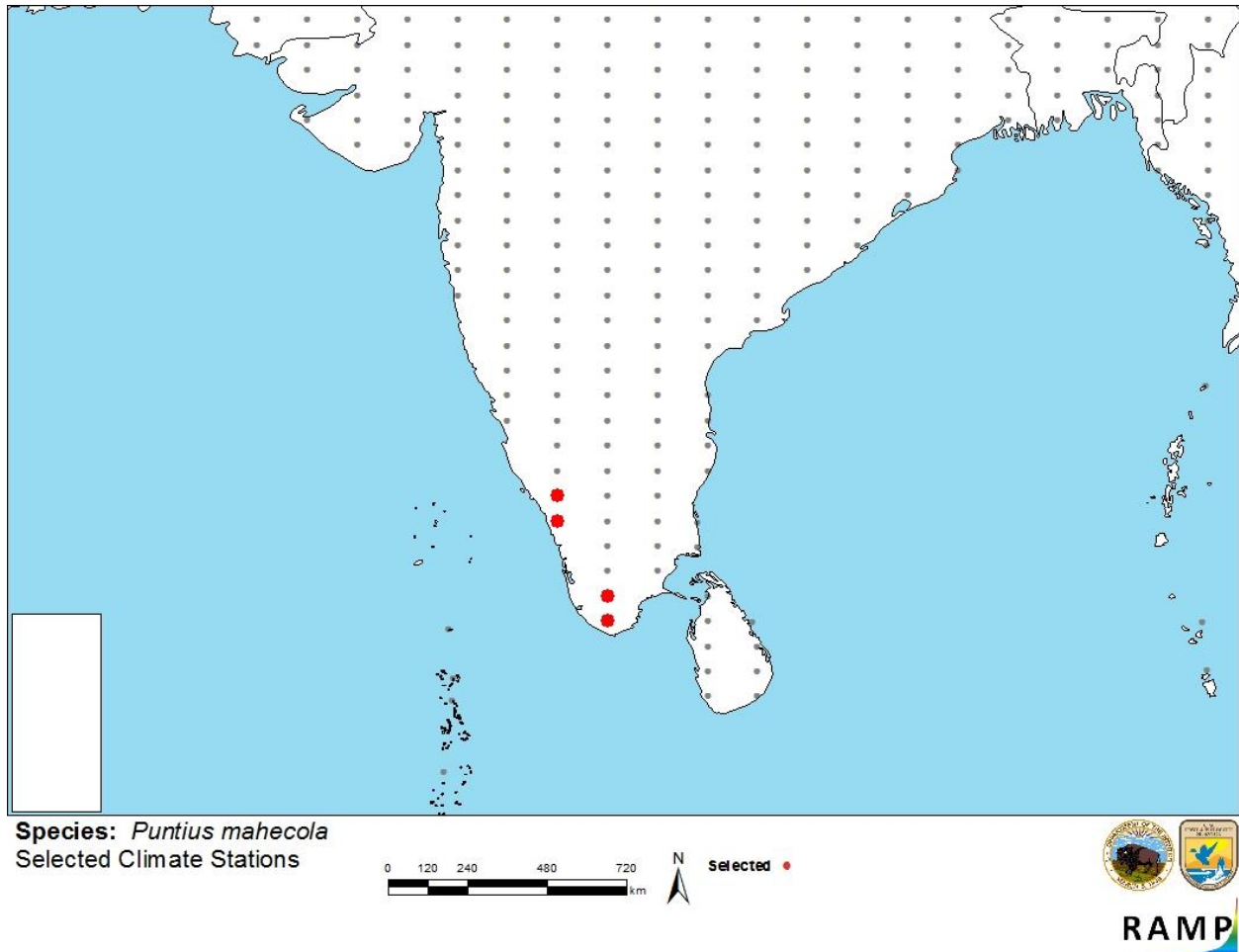


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; India) and non-source locations (gray) for *Puntius mahecola* climate matching. Source locations from Pethiyagoda and Kottelat (2005) and GBIF Secretariat (2019).

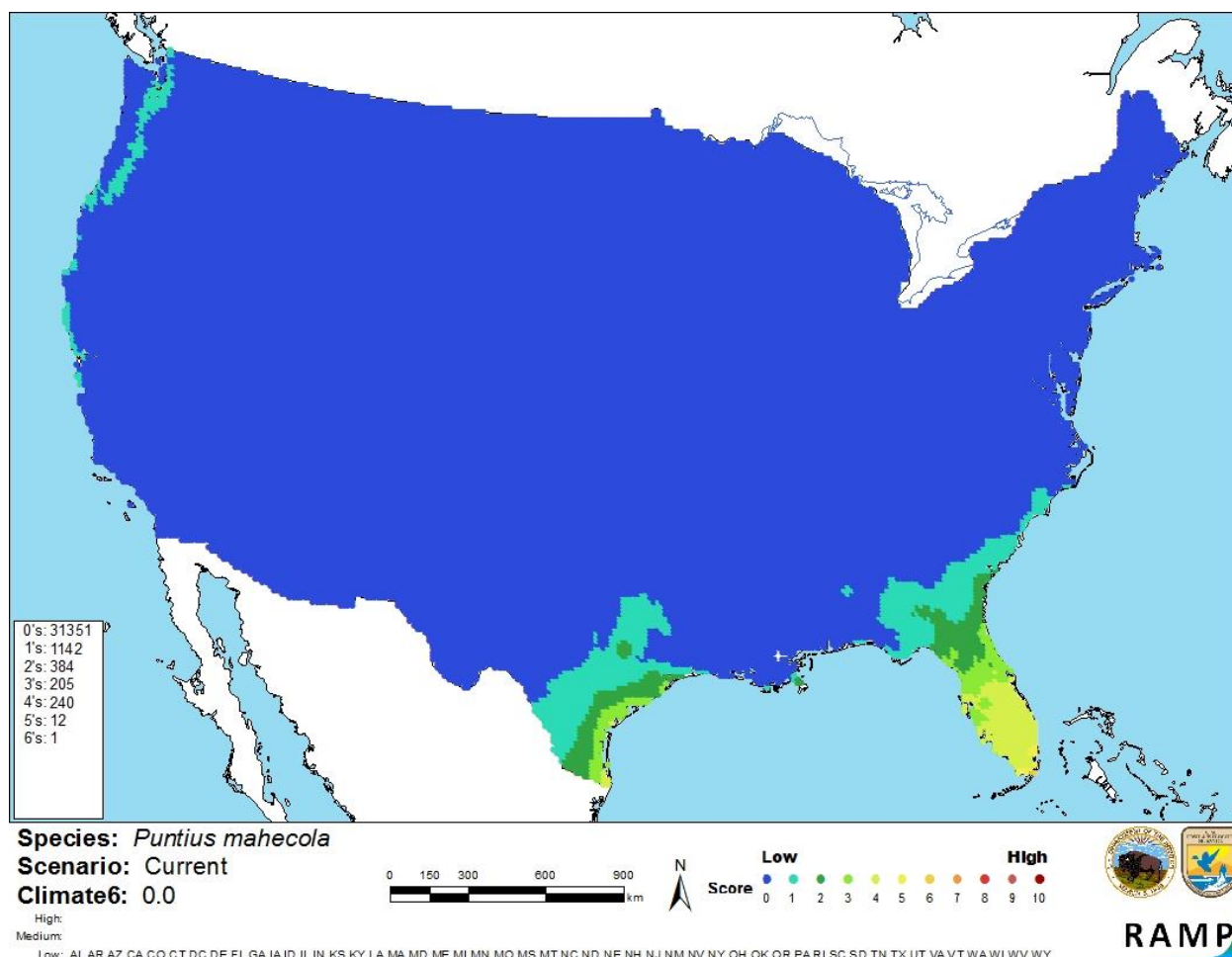


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Puntius mahecola* in the contiguous United States based on source locations from Pethiyagoda and Kottelat (2005) and GBIF Secretariat (2019). 0= Lowest match, 10=Highest match.

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
≥ 0.103	High

7 Certainty of Assessment

There is little information available about the biology, ecology, or distribution of *Puntius mahecola*. No introductions of this species have been reported, so impacts of introduction are unknown. Further information on the biology and distribution of this species is needed to adequately assess the risk it poses to the contiguous United States. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Puntius mahecola is a small freshwater fish native to and widespread in Kerala State, India. It is collected for the aquarium trade and found in fish markets locally. No evidence of trade in the United States was found. However, another species (*Dawkinsia assimilis*) with a similar appearance is often marketed in the United States under the scientific name of *P. mahecola*. This species has never been documented as introduced or established outside of its native range, so history of invasiveness is uncertain. Overall, *P. mahecola* has a low climate match with the contiguous United States, but there were small areas of medium-low to medium climate match in Florida and southern Texas. Because of a lack of information concerning the invasive potential of this species, the certainty of this assessment is low. 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.

- Abraham, R. 2013. *Puntius mahecola*. The IUCN Red List of Threatened Species 2013: e.T172365A6876934. Available: <http://dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T172365A6876934.en>. (July 2018).
- Denaro, M. 2015. 10 big, beautiful barbs for larger aquariums. Tropical Fish Hobbyist Magazine (March). Available: <http://www.tfhmagazine.com/details/articles/10-big-beautiful-barbs-for-larger-aquariums-full-article.htm>. (June 2019).
- 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. *Puntius mahecola* (Valenciennes, 1844). FishBase. Available: <https://www.fishbase.de/summary/Puntius-mahecola.html>. (July 2018).
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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/>.

Pethiyagoda, R., and M. Kottelat. 2005. The identity of the south Indian barb *Puntius mahecola* (Teleostei: Cyprinidae). The Raffles Bulletin of Zoology 12:145-152.

Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

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.

Abraham, R. K., N. Kelkar, and A. B. Kumar. 2011. Freshwater fish fauna of the Ashambu Hills landscape, southern Western Ghats, India, with notes on some range extensions. Journal of Threatened Taxa 3(30):1585-1593.