

Putitor Mahseer (*Tor putitora*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, November 2014
Revised, December 2015, May 2017, August 2017
Web Version, 6/25/2018



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2014):

“Asia: Afghanistan, Pakistan, India, Nepal, Bangladesh [Talwar and Jhingran 1991], Bhutan [Rajbanshi and Csavas 1982] and Myanmar [Oo 2002].”

Status in the United States

No records of *Tor putitora* introductions in the United States were found.

Means of Introductions in the United States

No records of *Tor putitora* introductions in the United States were found.

Remarks

From Froese and Pauly (2014):

“Threatened due to over harvesting and habitat loss [Stone 2007].”

From Jha and Rayamajhi (2010):

“Endangered A4acde ver 3.1”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2014):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysi
Order Cypriniformes
Superfamily Cyprinoidea
Family Cyprinidae
Genus *Tor*
Species *Tor putitora* (Hamilton, 1822)”

According to Eschmeyer et al. (2017), *Tor putitora* (Hamilton 1822) is the valid name for this species. It was originally described as *Cyprinus putitora* Hamilton 1822.

Size, Weight, and Age Range

From Froese and Pauly (2014):

“Maturity: Lm ?, range 33 - ? cm

Max length: 275 cm TL male/unsexed; [Banarescu and Coad 1991]; common length: 183 cm TL male/unsexed; [Rainboth 1991]; max. published weight: 54.0 kg [Rahman 1989]”

“Specimens over 30 cm and 5 kg in weight are rarely caught in recent times [Menon 1999].”

Environment

From Froese and Pauly (2014):

“Freshwater; benthopelagic; pH range: 7.4 - 8.0; potamodromous [Riede 2004]; depth range 0 - ?m [Sunder and Joshi 1977], usually 0 - 1 m [Sunder and Joshi 1977].”

“Inhabit streams, riverine pools and lakes. Found in rapid streams with rocky bottom [Menon 1999].”

From Jha and Rayamajhi (2010):

“Inhabits the montane and submontane regions, in streams and rivers. *T. putitora* is a major tor [common name for this group of fish] distributed in mid hills stretches of Himalayan region. It inhabits rapid streams with rocky bottom, riverine pools and lakes. It seems that Sahar neither inhabits the warm terai climate [hot and humid] nor streams of very cold climate; but in natural conditions it inhabits moderately cold and climate regions of tropical highlands.”

Climate/Range

From Froese and Pauly (2014):

“Subtropical; 13°C - 30°C [Shrestha 1999]; 34°N - 20°N”

From Jha and Rayamajhi (2010):

“The fish is a column feeder in freshwater found in pH ranges 7.4 - 7.9 and in subtropical condition 13°C-30°C.”

Distribution Outside the United States

Native

From Froese and Pauly (2014):

“Asia: Afghanistan, Pakistan, India, Nepal, Bangladesh [Talwar and Jhingran 1991], Bhutan [Rajbanshi and Csavas 1982] and Mynmar [Oo 2002].”

Introduced

According to From Froese and Pauly (2014), *Tor putitora* was introduced to and became established in Bangladesh from Nepal from 1975–1999. It was introduced to Bhutan from India in 1969 and to Papua New Guinea from India in 1995; the status of both those introductions is unknown.

From Dudgeon and Smith (2006):

“There is evidence (Smith, 2003) that two of the introduced species, *B. hexagonolepis* and *T. putitora*, have become established in tributaries and the main stem of the Ramu River to altitudes below 300 m. [...] *T. putitora* was not recorded downstream of Yonki Dam until November 2002

(Smith, 2003).”

Means of Introduction Outside the United States

FAO (2013) lists ornamental trade, fisheries, and angling/sport for reasons of *Tor putitora* introductions.

From Dudgeon and Smith (2006):

“Fish to be introduced to the Sepik were imported as eggs or fry and quarantined prior to introduction (Kolkolo, 1996, 2003); choice of species was based on their potential to fill vacant niches so that they would have minimal impact on native fish. [...] and *Tor putitora* (Hamilton) (all Cyprinidae) were stocked in fast-flowing stony tributaries at various altitudes.”

Short Description

From Froese and Pauly (2014):

“Dorsal spines (total): 4; Dorsal soft rays (total): 8; Anal spines: 2; Anal soft rays: 5”

Biology

From Froese and Pauly (2014):

“Omnivorous, feeding on fish, zooplankton, dipteran larvae and plant matter [Shrestha 1999]. Juveniles subsist on plankton while fingerlings feed mainly on algae [Shrestha 1999]. Ascend streams to breed over gravel and stones and returns to perennial ponds after breeding.”

“Migrate from the lower to the middle reaches of streams or rivers to spawn [Sehgal 1999]. Spawning takes place during low phase of flood [Sunder and Joshi 1977]. Fry are found among stones in marginal areas of the stream [Sunder and Joshi 1977].”

“Feeding [sic] intensity differs with the length of the fish, fishes ranging from 4-9 cm possess higher feeding intensity. Feeding intensity fell when the fish attains the length >19 cm [Nautiyal and Lal 1984]. Depleting of food resources and water temperature in the Ganga River trigger the ascending trend of migration of *T putitora* [Nautiyal et al. 1997].”

From Jha and Rayamajhi (2010):

“It is omnivorous in nature during their adult stage and feed on periphytic algae and diatoms in juvenile stage. The feeding and breeding habitats are lost almost throughout their distributional range.”

Human Uses

From Froese and Pauly (2014):

“The most common Himalayan mahseer and a very attractive sport fish, with excellent food value.”

“Fisheries: commercial; aquaculture: commercial; gamefish: yes; aquarium: public aquariums”

From Jha and Rayamajhi (2010):

“The commercial fishery of Putitor mahseer in Jammu, Himachal Pradesh and Uttar Pradesh consists largely of individuals either ascending streams for breeding or the spent ones returning to perennial ponds in plains. In Assam the population of *Tor* are fast depleting and at present are chiefly localised to certain major river systems only. This most attractive sport-fish with excellent food value, is fast approaching extinction in the streams and lakes of northern India. Large fishes are only found in some of the perennial pools.”

“In the early sixties, the species constituted one of the major species for commercial fisheries in lakes of the Pokhara Valley, Nepal. But presently this species is a negligible part of the total catch. Recent observation on growth of the species in the tropical climate of the terai showed that the growth is more rapid in warm water region than in colder waters. Traditional people have been using the blood of cut fish in foot and mouth disease; it is also applied on sore wounds in legs too. The species constitutes one of the important fish species in capture fishery in Nepal, India and several other trans-Himalayan countries.”

Diseases

No records of OIE reportable diseases were found.

From Froese and Pauly (2014):

“Aphanomyces Infestation, Fungal diseases
Saprolegnia Infestation, Fungal diseases
Achlya Infestation 2, Fungal diseases
Achlya Infestation 3, Fungal diseases”

Threat to Humans

From Froese and Pauly (2014):

“Harmless”

3 Impacts of Introductions

From FAO (2014):

“Unknown”

From Dudgeon and Smith (2006):

“While initially stocked into an upland region with few native fish species, the presence of *T. putitora* in the Ramu River drainage at low altitudes (4300 m) is a matter for some concern. It attains a very large size (up to 2.5m in length and 80 kg in weight) and is predatory as an adult. Its importance in catches from one tributary stream within a year of becoming established

suggests that *T. putitora* may have negative effects on native fish, and impacts will become particularly severe once the invaders have grown to a size where their primary food is other fish.”

“Fish are unlikely to remain in the localities where they have been introduced, and the spread of *B. hexagonolepis*, *T. putitora* and *S. richardsonii* from stocked sites in the Yonki Dam and other sites in the upper Ramu to lowland areas, where they have largely displaced the native fauna, indicates the unplanned consequences of exotic introduction in an interconnected system.”

4 Global Distribution

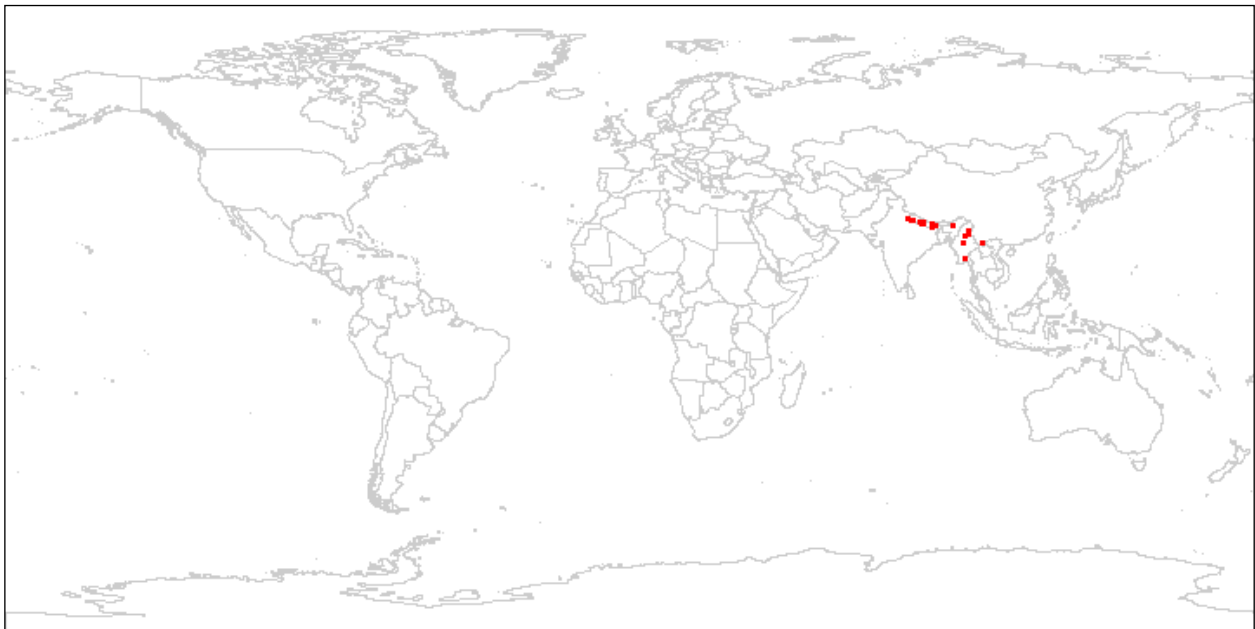


Figure 1. Known global distribution of *Tor putitora* in southern Asia. Map from Froese and Pauly (2014).



Figure 2. Known global distribution of *Tor putitora* in southern Asia. Map from GBIF Secretariat (2014).

5 Distribution Within the United States

No records of *Tor putitora* introductions in the United States were found.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *tor putitora* was low across the entire country. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low, and no states had an individually high climate match.

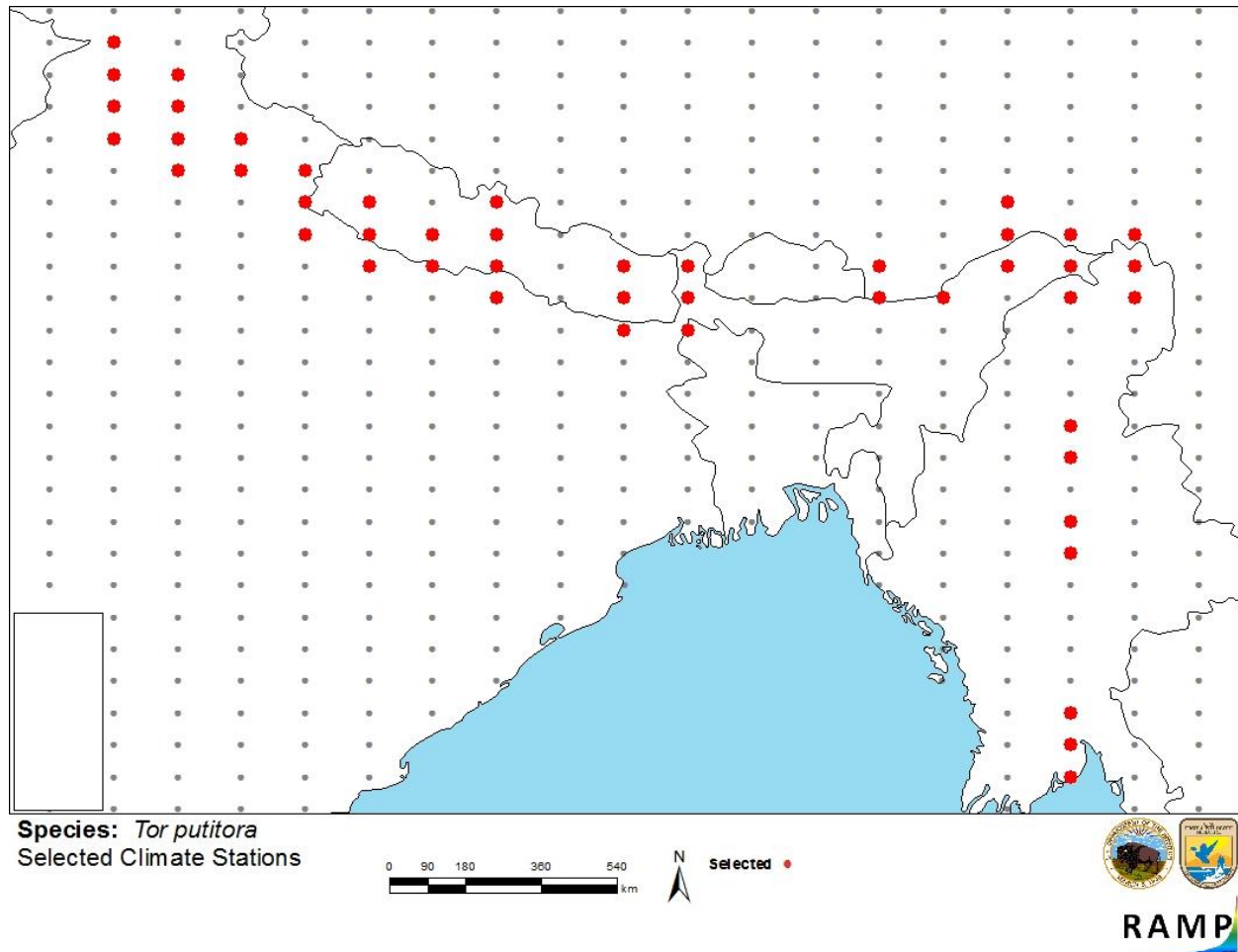


Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations selected in southern Asia as source locations (red) and non-source locations (grey) for *Tor putitora* climate matching. Source locations from Froese and Pauly (2014) and GBIF Secretariat (2014).

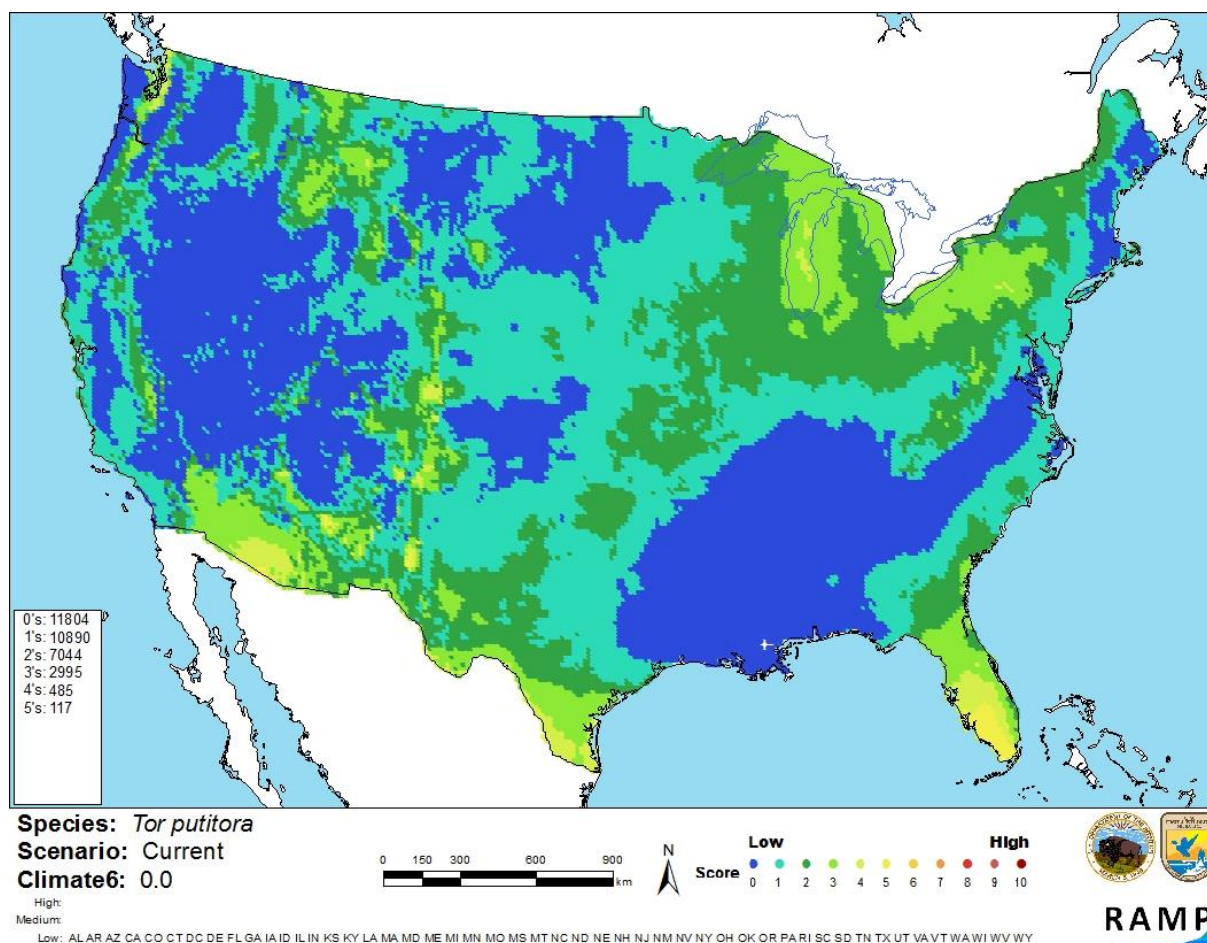


Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *Tor putitora* in the contiguous United States based on source locations reported by Froese and Pauly (2014) and GBIF Secretariat (2014). 0 = Lowest match, 10 = Highest match.

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

The certainty of this assessment is medium. There was an adequate amount of ecological information available for *Tor putitora*. Some records of introductions were found along with possible impacts. No definitive impacts from *Tor putitora* introductions were found. However *T. putitora* has been established in Bangladesh for a substantial amount of time with no demonstrated impacts but the assessor could not be sure that any impacts have been scientifically studied, precluding a high certainty of assessment.

8 Risk Assessment

Summary of Risk to the Contiguous United States

The history of invasiveness is not documented. *Tor putitora* does have a history of introductions. Most were purposeful introductions for commercial reasons. There was minimal information available about the possible ecological impacts of those introductions. The information that was available was speculative and not concrete evidence of negative impacts. The climate match was low. The certainty is medium. The overall risk assessment is uncertain.

Assessment Elements

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