

Bata (*Labeo bata*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, April 2011

Revised, May 2018

Web Version, May 2018



Photo: P. Chakraborty. Licensed under Creative Commons Attribution-Share Alike 4.0 International. Available: [https://commons.wikimedia.org/wiki/File:Black_Line_Shark_\(Labeo_bata\).JPG](https://commons.wikimedia.org/wiki/File:Black_Line_Shark_(Labeo_bata).JPG). (May 2018).

1 Native Range and Status in the United States

Native Range

From Hossen et al. (2015):

“*L. bata* is distributed throughout Indian subcontinent including Bangladesh, India, Nepal, Myanmar and also Pakistan (Talwar and Jhingran, 1991; Rema Devi and Ali, 2013).”

Status in the United States

Labeo bata has not been reported in the United States. No records of *L. bata* in trade in the United States were found.

Means of Introductions in the United States

Labeo bata has not been reported in the United States.

Remarks

From Rema Devi and Ali (2011):

“*Labeo bata* is assessed as Least Concern [IUCN Assessment] due to its wide distribution and lack of major widespread threats.”

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 *Labeo* Cuvier, 1816
Species *Labeo bata* (Hamilton, 1822)”

According to Eschmeyer et al. (2018), *Labeo bata* (Hamilton 1822) is the current valid name for this species. *L. bata* was originally described a *Cyprinus bata* Hamilton 1822.

Size, Weight, and Age Range

From Naeem et al. (2012):

“In the present work, *L. bata* ranged from from 8.20 to 16.00 cm in total length.”

From Froese and Pauly (2018):

“Max length : 61.0 cm TL male/unsexed; [Talwar and Jhingran 1991]”

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 Hossen et al. (2015):

“*L. bata* is distributed throughout Indian subcontinent including Bangladesh, India, Nepal, Myanmar and also Pakistan (Talwar and Jhingran, 1991; Rema Devi and Ali, 2013).”

Introduced

Rema Devi and Ali (2011) lists *L. bata* as introduced to Nepal.

Means of Introduction Outside the United States

From Rema Devi and Ali (2011):

“This species has also been introduced into reservoirs where the species is cultivated.”

Short Description

From Hossen et al. (2015):

“Body is elongated and dorsal profile more convex than the ventral. Snout slightly projecting beyond mouth. A pair of minute maxillary barbels present and not easily perceptible. Dorsal fin inserted nearer to snout tip. Pelvic and anal fins dark with orange red tips; other fins with fine black dots (Talwar and Jhingran, 1991). Fin formula: D.11 (2/9); P1 . 16 -17; P2 . 9 (1/8); A.7 (2/5) (Rahman, 2005). Scales moderate, lateral line with 37 to 40 scales. Lateral transverse scale-rows 5 or 5.5 between lateral line and pelvic fin base; predorsal scales 10 to 13 (Talwar and Jhingran, 1991).”

Biology

From Hossen et al. (2015):

“*L. bata* is a freshwater fish in Bangladesh. It lives in small rivers, canals, haors, baors, ponds and ditches. This species is known as the mid-feeder with a habit of a benthopelagic and potamodromous fish. Also, it is a herbivorous column feeder (Rema Devi and Ali, 2013).”

“Size at first sexual maturity is 14.12 and 14.60 cm in total length for male and female *L. bata*, respectively (Hossen et al., 2014). Spawning season varies from June to October (Rahman, 2005). In an earlier study, spawning season ranged from July to August and average fecundity was 192785 (Siddique et al., 1976).”

From Froese and Pauly (2018):

“Adults inhabit rivers [Talwar and Jhingran 1991].”

Human Uses

From Hossen et al. (2015):

“Minor carp *Labeo bata* [...] is a freshwater subtropical species which is commonly known as ‘Bangon Bata’. This fish is commercially important and target species for commercial small- and large-scale fishers in Bangladesh, India and Pakistan. It is also used by both culture and capture fisheries nowadays. *L. bata* is in great demand in the market because of its high nutritional value and good taste (Bhuiyan, 1964). This fish contains about 15.42% of protein and 3.73% of lipid (Ahmed et al., 2012).”

From Rema Devi and Ali (2011):

“This species has low resilience to fishing pressures (Froese and Pauly 2006), but as it is an important species in aquaculture, harvesting may not pose a major threat to wild populations. However, further research into harvesting levels is recommended.”

“*L. bata* is an important commercial species for aquaculture. It is a much sought-after fish with a high value in the market, however fishing is not considered to be a great threat to the species due to the extent of aquaculture.”

Diseases

No records of OIE-reportable diseases were found.

From Panda et al. (2013):

“In this study, a total number of fifteen moribund *Labeo bata* were collected from Hooghly, Purba Medinipur, and South 24 Parganas districts of West Bengal, India. The lesions and hemorrhages were recorded at the base of the fins or on the skin due to bacterial infection. [...] Based on the biochemical properties, 16S rRNA gene sequence analysis and fatty acid methyl ester (FAME) analysis, the causative bacteria were identified as *Pseudomonas aeruginosa*.”

Poelen et al. (2014) lists *Dactylogyrus lohanii*, *Thaparogyrus lucknowius*, *Acanthogyrus acanthogyrus*, *Dactylogyrus batae*, *Haplorchis yokogawai*, *Centrocestus formosanus*, *Haplorchis taichui*, and *Opisthorchis noverca* as parasites of *Labeo bata*.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No records of impacts of introductions from *Labeo bata* have been found.

4 Global Distribution



Figure 1. Known global distribution of *Labeo bata*. Locations are in India, Nepal, and Bangladesh. Map from GBIF Secretariat (2018).

Hossen et al. (2015) lists *L. bata* as also present in Myanmar and Pakistan but no georeferenced locations were found in these countries.

5 Distribution Within the United States

Labeo bata has not been reported in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Labeo bata* was low for most of contiguous United States. The southern tip of Texas and Florida, as well as a few scattered locations in the west, had a medium match. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low. All states had low climate matches.

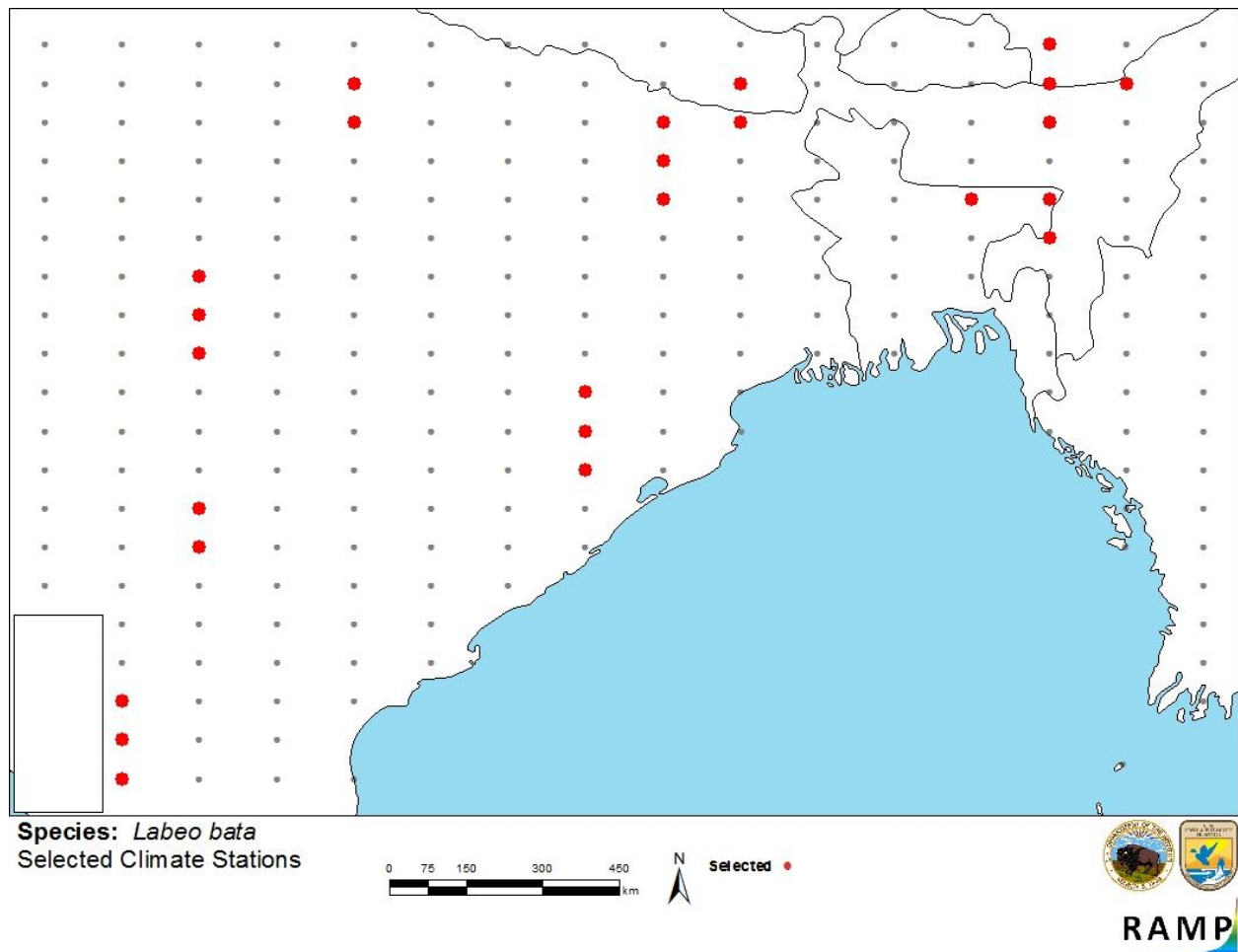


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in southern Asia selected as source locations (red: India, Nepal, Bangladesh, and China) and non-source locations (gray) for *Labeo bata* climate matching. Source locations from GBIF Secretariat (2018).

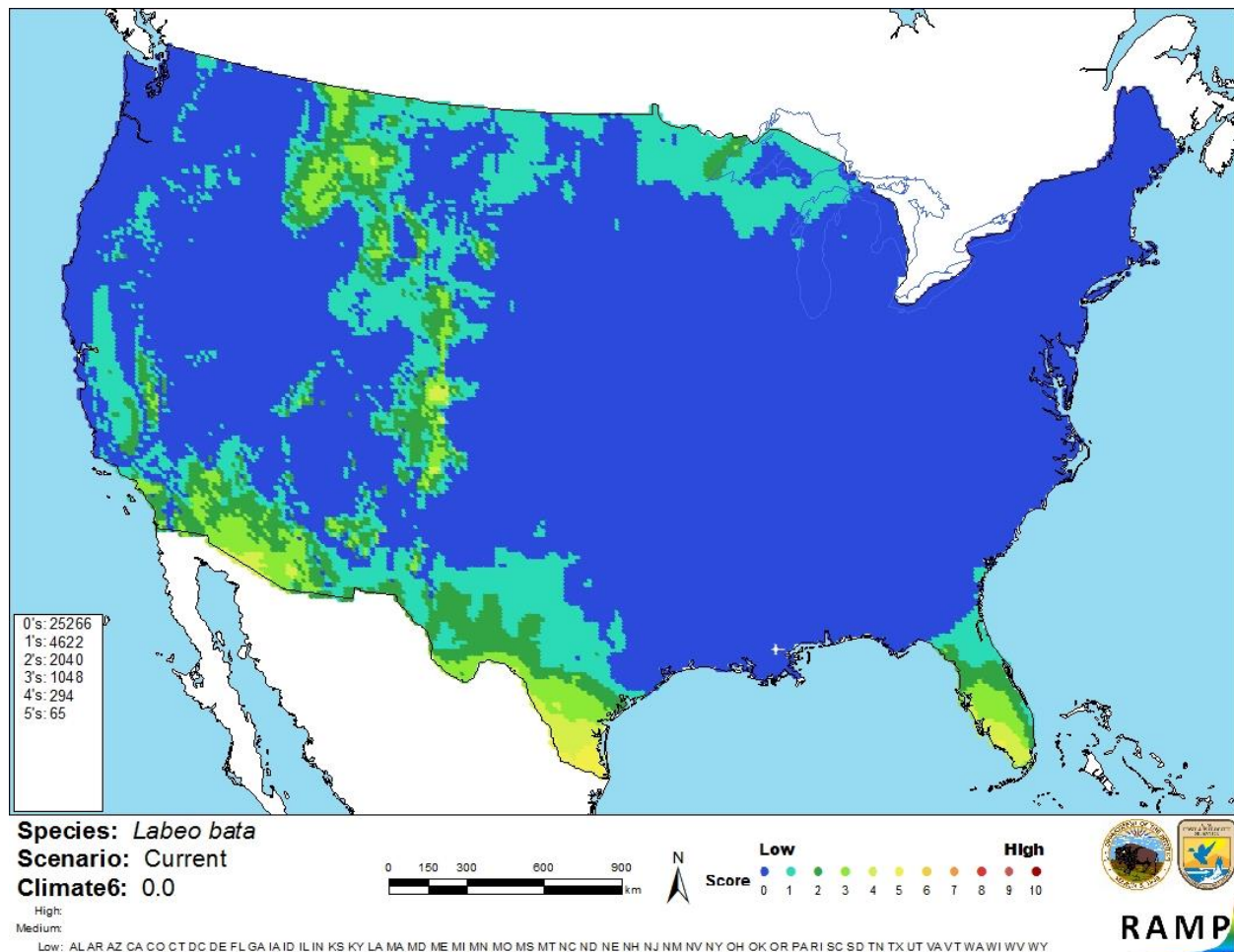


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Labeo bata* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match.

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 was limited information available on *Labeo bata*. This species was reported outside of its native range, however, no records were found on the impacts of this introduction. With such little information known on this species, the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Labeo bata is a freshwater subtropical carp found in southern Asia. It is a food fish with a commercial fishery and aquaculture. *L. bata* has been introduced to reservoirs for aquaculture within its native range. *L. bata* is susceptible to a number of parasites and bacterial diseases. *L. bata* has been reported outside of its native range in Nepal, however, no peer-reviewed literature was found on the impacts of this introduction making the history of invasiveness uncertain. In addition, information about *L. bata* was limited making the certainty of the assessment low. The climate match for this species to the contiguous United States was low. Due to its low Climate 6 score and absence of introduction history, the overall risk for this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **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.

- 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>. (May 2018).
- Froese, R., and D. Pauly, editors. 2018. *Labeo bata* Hamilton, 1822. FishBase. Available: <https://www.fishbase.de/summary/Labeo-bata.html>. (May 2018).
- GBIF Secretariat. 2018. GBIF backbone taxonomy: *Labeo bata* (Hamilton, 1822). Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/5206125>. (May 2018).
- Poelen, J. H., J. D. Simons, and C. J. Mungall. 2014. Global Biotic Interactions: an open infrastructure to share and analyze species-interaction datasets. *Ecological Informatics* 24:148–159.
- Hossen, M. A., M. Y. Hossain, K. Yahya, and M. N. U. Pramanik. 2015. Threatened fishes of the world: *Labeo bata* (Hamilton, 1822) (Cypriniformes: Cyprinidae). *Croatian Journal of Fisheries* 73:89–91.

- ITIS (Integrated Taxonomic Information System). 2018. *Labeo bata* (Hamilton, 1822). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=163687. (May 2018).
- Naeem, M., A. Zuberi, N. A. Khan, S. A. Rasool, H. F. Ismail, and A. Qamar. 2012. Some morphometric relationship traits of *Labeo bata* (Hamilton, 1822) from Hear Panjnad, Pakistan. *African Journal of Biotechnology* 11(88):15465–15468.
- Panda, S., P. K. Bandyopadhyay, and S. N. Chatterjee. 2013. Characterization of *Pseudomonas aeruginosa* PB112 (JN996498) isolated from infected *Labeo bata* (Hamilton) by 16S rRNA gene sequence analysis and fatty acid methyl ester (FAME) analysis. *African Journal of Biotechnology* 12(4):400–405.
- Rema D., K. R., and A. Ali. 2011. *Labeo bata*. The IUCN Red List of Threatened Species 2011: e.T166595A6243968. Available: <http://www.iucnredlist.org/details/summary/166595/0>. (May 2018).
- Sanders, S., C. Castiglione, and M. 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.

- Ahmed, S., A. F. M. A. Rahman, M. G. Mustafa, M. B. Hossain, and N. Nahar. 2012. Nutrient composition of indigenous and exotic fishes of rainfed waterlogged paddy fields in Lakshmipur, Bangladesh. *World Journal of Zoology* 7:135–140.
- Bhuiyan, A. L. 1964. *Fishes of Dacca*. Asiatic Society of Pakistan, Dacca.
- Froese and Pauly. 2006. [Source material did not give full citation for this reference.]
- Hamilton, F. 1822. *An account of the fishes found in the river Ganges and its branches*. Edinburgh & London, UK.
- Hossen, M. A., M. Y. Hossain, M. M. Rahman, M. N. U. Pramanik, R. Islam, and S. M. A. Naser. 2014. Life history traits of the endangered carp *Labeo bata* (Cyprinidae) in the Padma River, northwestern Bangladesh. In M. A. R. Khan, editor. *The Festschrift on the 50th anniversary of the IUCN Red List of Threatened Species: compilation of papers and abstracts*. IUCN, Bangladesh.
- Rahman, A. K. A. 2005. *Freshwater fishes of Bangladesh*, 2nd edition. Zoological Society of Bangladesh, University of Dhaka.

- Riede, K. 2004. Global register of migratory species - from global to regional scales. Final Report of the R&D-Projekt 808 05 081. Federal Agency for Nature Conservation, Bonn.
- Siddique, A. Q., A. Chatterjee, and A. A. Khan. 1976. Reproductive biology of the carp, *Labeo bata* (Ham.) from the River Kali, India. *Aquaculture* 7:181–191.
- Talwar, P. K., and A. G. Jhingran. 1991. Inland fishes of India and adjacent countries. A. A. Balkema, Rotterdam.
- Riede, K. 2004. Global register of migratory species - from global to regional scales. Final Report of the R&D-Projekt 808 05 081. Federal Agency for Nature Conservation, Bonn