Boggut Labeo (*Labeo boggut*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, May 2012
Revised, March 2018
Web Version, 6/5/2018

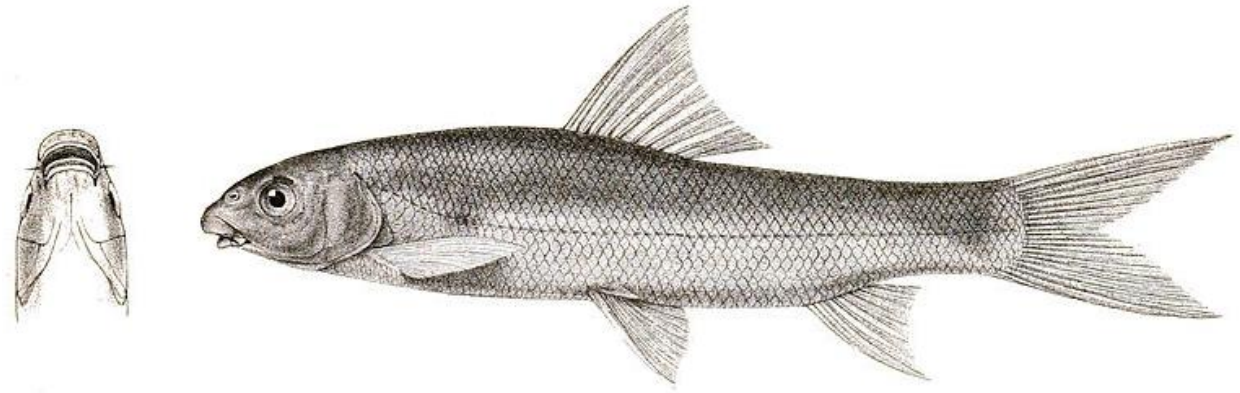

Photo: C. L. Griesbach. Public domain. Available: https://commons.wikimedia.org/wiki/File:Labeo_boggut_Griesbach_128.jpg. (March 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

"Asia: Pakistan, India and Bangladesh."

Status in the United States

This species has not been reported as introduced or established in the U.S.

Means of Introductions in the United States

This species has not been reported as introduced or established in the U.S.

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*
Species *Labeo boggut* (Sykes, 1839)"

From Eschmeyer et al. (2018):

"Current status: Valid as *Labeo boggut* (Sykes 1839). Cyprinidae: Labeoninae."

Size, Weight, and Age Range

From Froese and Pauly (2017):

"Max length : 29.0 cm TL male/unsexed; [Menon 1999]"

Environment

From Froese and Pauly (2017):

"Freshwater; benthopelagic."

Climate/Range

From Froese and Pauly (2017):

"Tropical"

Distribution Outside the United States

Native

From Dahanukar (2011):

"*Labeo boggut* is found in India except Kerala, Bangladesh and Pakistan (Jayaram and Dhas 2000). The species is perhaps absent in the extreme north India and north-east India as currently no records are available."

"In India it is known from Maharashtra (Hora and Misra 1937, Fraser 1942, Setna and Kulkarni 1946, Kalawar and Kelkar 1956, Tonapi and Mulherkar 1963, Yazdani and Singh 1990, Kharat et al. 2003, Wagh and Ghate 2003, Hiware 2006, Chandanshive et al. 2007), Karnataka (Rao and Seshachar 1927, David 1956), Andhra Pradesh (Jayaram and Dhas 2000, Chandrasekhar 2004),

Gujrat (Acharya 1939, Ranade 1953), Madhya Pradesh (Sarkar and Lakra 2007), Uttar Pradesh (Sarkar et al. 2010). It is also suspected to be present in other states including Goa, Tamil Nadu, Bihar, Rajastan, Chhattisgarh, Orissa, Jharkhand and West Bangal. It is also known from Pakistan (Mirza and Alam 2002) 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

No information available.

Biology

From Froese and Pauly (2017):

"Inhabits upper reaches of rivers [Menon 1999]."

From Dahanukar (2011):

"*Labeo boggut* is found in rivers and reservoirs (Menon 1999, Yazdani and Singh 1990)."

From Sarkar et al. (2011):

"The change in GSI [gonadosomatic index] and magnitude of adult specimens with ripe ovaries indicates that the spawning season of *L. boggut* is June to September. Selvaraj et al. (1972) reported a similar spawning period trend for *L. boggut* in Panna, India. The values of GSI presented herein are in agreement with those of *L. boggut* and other minor carps reported by Selvaraj et al. (1972) and Siddiqui et al. (1976). Current results on age at first sexual maturity shows that the *L. boggut* attains maturity in the first year of life, just like other carps reported by Alikunhi (1950); Alikunhi and Rao (1951); Selvaraj et al. (1972). Difference in the length at first maturity arises because the sexual maturity is a function of the size and may be influenced by the abundance and seasonal availability of food, temperature, photoperiod and other environmental factors in various localities (King, 1995)."

Human Uses

From Froese and Pauly (2017):

"A popular species for stocking ponds [Talwar and Jhingran 1991]."

"Fisheries: commercial; aquaculture: commercial"

From Dahanukar (2011):

"*Labeo boggut* is considered as a minor carp and has good fishery value (Talwar and Jhingran 1991)."

Diseases

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

Threat to Humans

From Froese and Pauly (2017):

"Harmless"

3 Impacts of Introductions

This species has not been reported as introduced or established outside of its native range.

4 Global Distribution

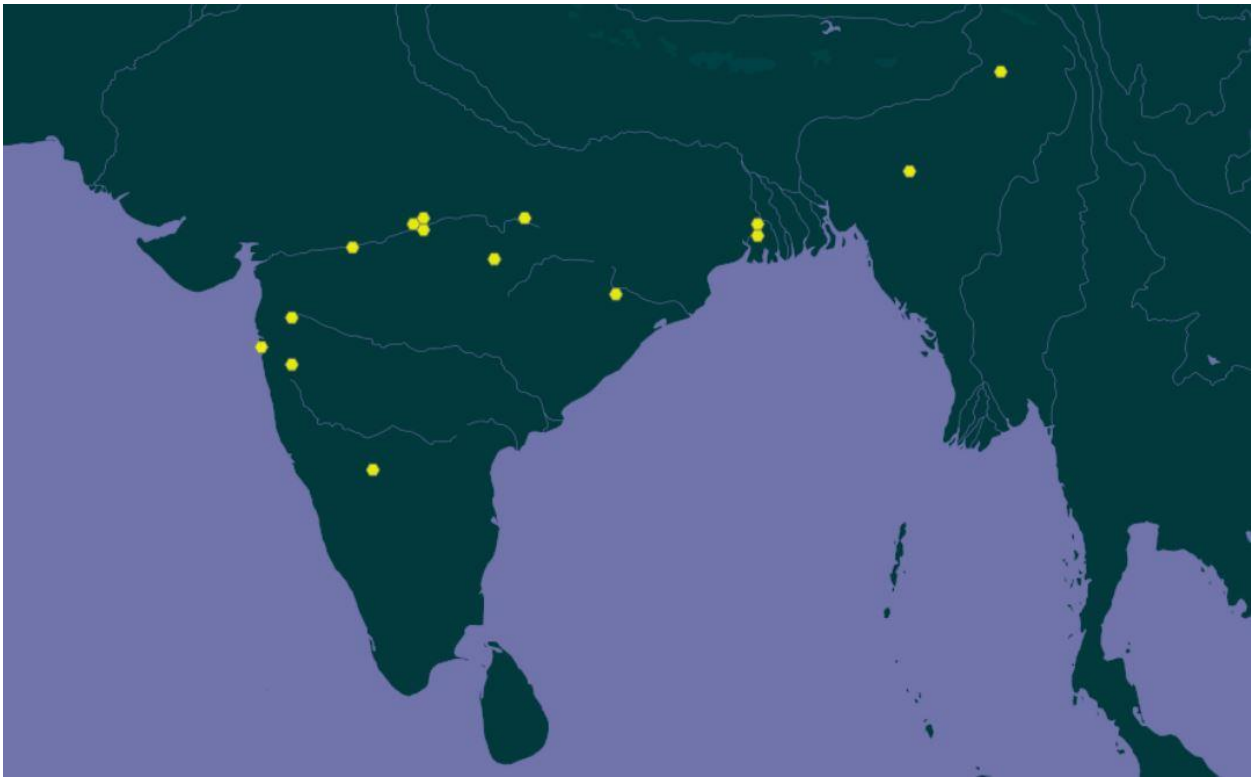

Figure 1. Known global distribution of *Labeo boggut*. Map from GBIF Secretariat (2018). No georeferenced occurrences were available for *L. boggut* in Pakistan.

5 Distribution Within the United States

This species has not been reported as introduced or established in the U.S.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous U.S. was 0.0, which is a low climate match. All states had a low climate match overall. The southern portions of Florida, Texas, Arizona, and New Mexico had a medium climate match.

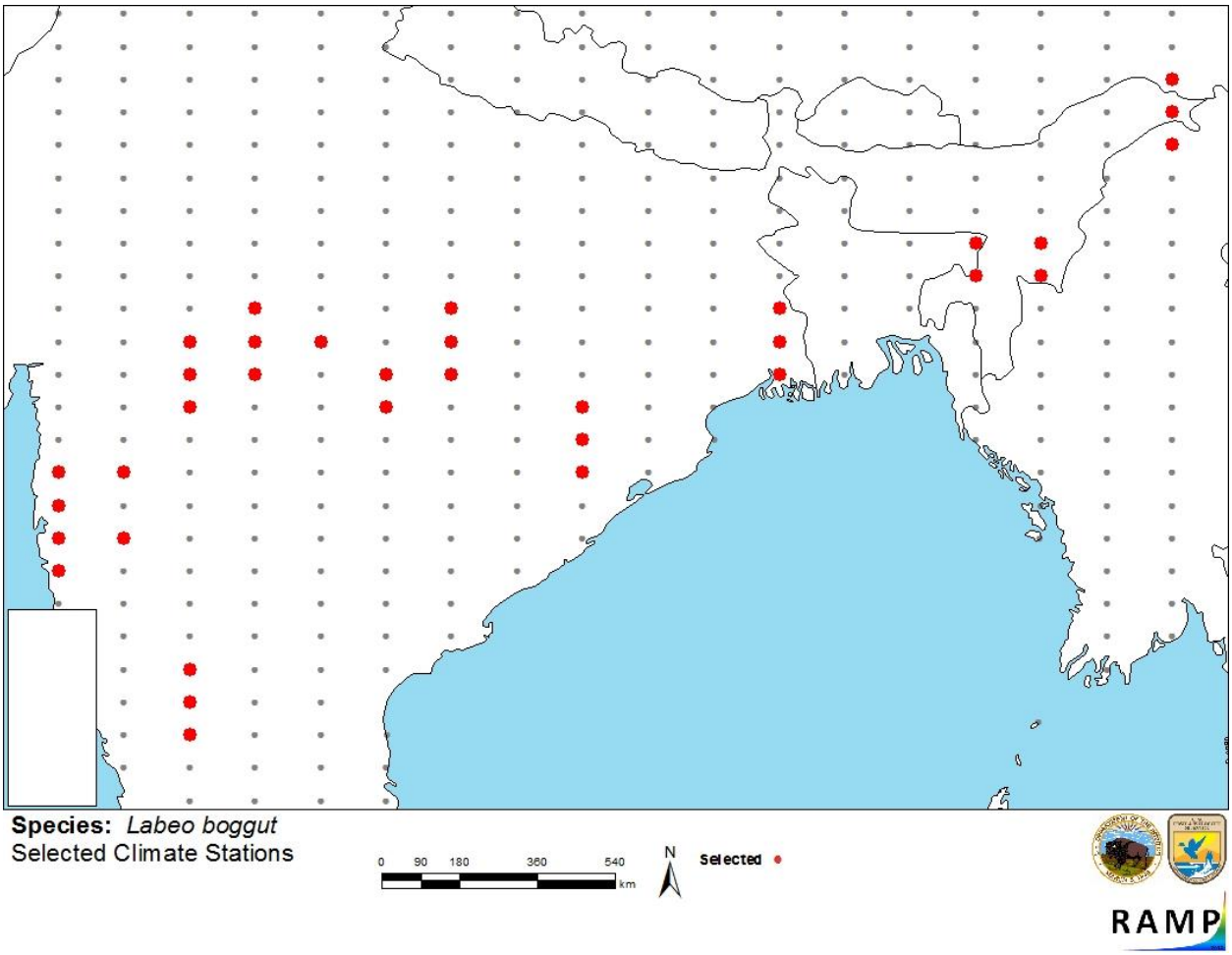

Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; India and near India's eastern border) and non-source locations (gray) for *Labeo boggut* climate matching. Source locations from GBIF Secretariat (2018).

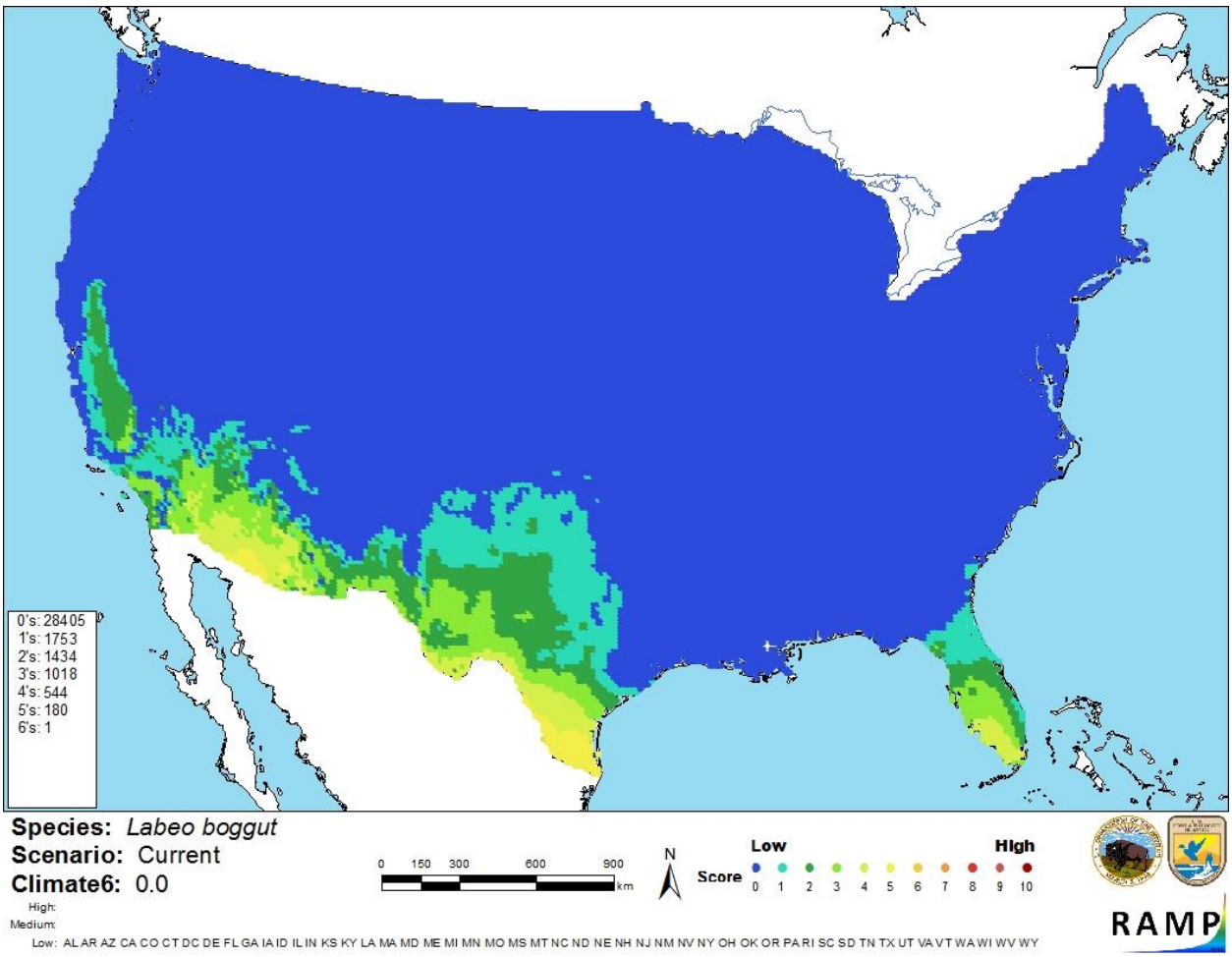

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Labeo boggut* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0= Lowest match, 10=Highest match.

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 some information available on the biology and distribution of *Labeo boggut*. No introductions of this species outside of its native range have been documented. Because of this, no impacts of introductions have been documented, so the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Labeo boggut is a carp native to the Indian Subcontinent. This species is stocked in ponds and used in commercial aquaculture, but it has never been reported as introduced outside of its native range. *L. boggut* has a low climate match with the contiguous United States. Because of a lack of information from which to base an assessment of invasive potential, 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.

Dahanukar, N. 2011. Labeo boggut. The IUCN Red List of Threatened Species 2011: e.T172409A6886439. Available: http://www.iucnredlist.org/details/172409/0. (March 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. (March 2018).

Froese, R., and D. Pauly, editors. 2017. *Labeo boggut* (Sykes, 1839). FishBase. Available: http://www.fishbase.se/summary/Labeo-boggut.html. (March 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Labeo boggut*, Sykes, 1839. Global Biodiversity Information Facility, Copenhagen. Available: https://www.gbif.org/species/5206214. (March 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Labeo boggut* (Sykes, 1839). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=689270#null. (March 2018).

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

Sarkar, U. K., R. S. Kumar, V. K. Dubey, A. Pandey, and W. S. Lakra. 2012. Population structure and reproductive biology of a freshwater fish, *Labeo boggut* (Sykes, 1839), from two perennial rivers of Yamuna basin. Journal of Applied Ichthyology 28(1):107-115.

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.

Acharya, H. G. 1939. Fresh water fishes of north Gujrat. Journal of Bombay Natural History Society 40(4):772-773.

Alikunhi, K. H. 1950. Observation on some larval and post larval stromatopods. Journal of Bombay Natural History Society 49(1):101-107.

Alikunhi, K. H., and S. N. Rao. 1951. Notes on the metamorphosis of *Elops saurus* Linn. and *Megalops cyprinoides* (Broussonet) with observations on their growth. Journal of the Zoological Society of India 3:99-109.

Chandanshive, E. N., S. M. Kamble, and B. E. Yadav. 2007. Fish fauna of Pavana River of Pune, Maharashtra. Zoos' Print Journal 22(5):2693-2694.

Chandrasekhar, S. V. A. 2004. Fish fauna of Hydrabad and its environs. Zoos' Print Journal 19(7):1530-1533.

David, A. 1956. Studies on pollution of Bhadra river fisheries at Bhadravti (Mysore state) with industrial effluents. Proceedings of the National Institute of Science, India 22:132-160.

Fraser, A. G. L. 1942. Fish of Poona. Part I. Journal of Bombay Natural History Society 43(1):79-91.

Hiware, C. J. 2006. Ichthyofauna from four districts of Marathwada region, Maharashtra, India. Zoos' Print Journal 21(1):2137-2139.

Hora, S. L., and K. S. Misra. 1937. Fish of Deolali. Part I. Journal of Bombay Natural History Society 39(3):502-519.

Jayaram, K. C., and J. J. Dhas. 2000. Revision of the genus *Labeo* from Indian region with a discussion on its phylogeny and zoogeography. Zoological Survey of India, Occasional Paper No. 183.

Kalawar, A. G., and C. N. Kelkar. 1956. Fishes of Kolhapur. Journal of Bombay Natural History Society 53(4):669-679.

Kharat, S., N. Dahanukar, R. Raut, and M. Mahabaleshwarkar. 2003. Long-term changes in freshwater fish species composition in Northern Western Ghats, Pune District. Current Science 84(6):816-820.

King, M. 1995: Fisheries biology, assessment and management. Fishing News Books, Blackwell Scientific Publications, Oxford, U.K.

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

Mirza, M. R. and M. K. Alam. 2002. A checklist of the fishes of the Punjab, Pakistan. Records of the Zoological Survey of Pakistan 14:31-35.

Ranade, M. R. 1953. A checklist of fishes occurring in the fresh waters of Baroda. Journal of Bombay Natural History Society 51(2):472-474.

Rao, N. C. R., and B. R. Seshachar. 1927. Notes on the fresh water fish of Mysore. Half Yearly Journal of Mysore University 1:115-143.

Sarkar, U. K., and W. S. Lakra. 2007. An overview of the diversity and conservation status of freshwater fishes of central India. Pages 7-18 *in* W. S. Lakra and U. K. Sarkar, editors. Freshwater fish diversity of central India. National Bureau of Fish Genetic Resources, Lucknow, India.

Sarkar, U. K., B. K. Gupta, and W. S. Lakra. 2010. Biodiversity, ecohydrology, threat status and conservation priority of the freshwater fishes of river Gomti, a tributary of river Ganga (India). The Environmentalist 30(1):3-17.

Selvaraj, C., S. Radhakrishnan, and S. Parameswaran. 1972. Notes on the breeding season, fecundity and life-history of a minor carp, *Labeo boggut* (Sykes). Journal of the Inland Fisheries Society of India IV:87–97.

Setna, S. B., and C. V. Kulkarni. 1946. The fresh water fish and fisheries of Ahmedabad. Journal of Bombay Natural History Society 46(1):126-132.

Siddiqui, A. Q., A. Chatterjee, and A. A. Khan. 1976: Reproductive biology of the carp, *Labeo bata* (Ham.) from River Kali, India. Aquaculture 2(2):181-191.

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

Tonapi, G. T., and L. Mulherkar. 1963. Notes on the freshwater fauna of Poona, part1: Fishes. Proceedings of the Indian Academy of Sciences 58:187-197.

Wagh, G. K, and H. V. Ghate. 2003. Freshwater fish fauna of the rivers Mula and Mutha, Pune, Maharashtra. Zoos' Print Journal 18(1):977-981.

Yazdani, G. M., and D. F. Singh. 1990. On the fish resources of Ujani wetland, Pune, (Mah.). Journal of Bombay Natural History Society 87:157-160.