



Research Paper

ORNAMENTAL FISH DIVERSITY FROM THE STREAMS OF DOON VALLEY, DEHRADUN, UTTARAKHAND

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Abstract

Fish diversity of DoonValley was recorded during March, 2010 to February, 2012. During the survey period, out of a total 56 species recorded from Doon Valley streams, a total number of 25 ornamental fish species were identified belonging to genera, families and orders. Cyprinidae family represented maximum number of fish species (10) followed by the family Channidae (4 species) and Osphronemidae (3 species each). The IUCN (2015 - 4) status outlines that 21 species are Least Concern, 1 Near Threatened, and 3 Not Assessed.

Key words: Ornamental fishes, Doon Valley, Fishery wealth, new records.

INTRODUCTION

Ornamental fishes are attractive colourful fishes of various characteristics, which are kept as pets in confined space of an aquarium or a garden pool for fun and fancy. Ornamental fish is one of the important items among the various types of commercially important fishes marketed nationally and internationally and are popularly known as "Aquarium Fishes" as they are usually kept in glass aquarium. Ornamental fishes are characterized by a wide diversity of colours and colour patterns (Ramamoorthy *et al.*, 2010). 400 species of ornamental fishes belonging to 175 genera and 50 families are reported in Indian waters (Satheesh, 2002). These living jewels need not always have bright colours, sometimes their peculiar characteristics such as body colour, morphology and mode of taking food (Chakravartty, 2012). These fish are exported to 27 countries, which amounted to 2568 Mt (0.86% of the total marine export) in terms of quantity and US\$14 million (0.50% of total marine export) in terms of value (MPEDA, 2007). The entire supply of Indian ornamental fish is primarily dependent on wildcatch (85%) and a few artificially bred varieties (15%) of exotic fish (Mahapatra, 2006).

Hence, in the present communication an attempt has been made to highlight the ornamental fish diversity of Doon Valley for the first time.

MATERIAL AND METHODS

Doon Valley, part of district Dehradun (latitude - 29°58' and 30°32' N and longitude - 77°35' and 78°20'E) comprises of 2 main river basins, namely, the Ganga and the Yamuna river basin. The present study was carried out on these two river systems comprising of five main rivers *i.e.*, Baldi, Song, Suswa, Tons and Asan. The climate of the area varies from humid, moist sub-tropical in the southern part to temperate in the northern mountainous region with wide temperature range varying from 4.40 - 35.10°C during the study period. Sampling was periodically done for a period of 24 months (March, 2010 - February, 2012) at the 20 sampled stations established along the rivers mentioned above. Fish samples were collected by employing standard gears, using variety of fishing nets of varying mesh sizes – gill nets, cast nets, drag nets with the help of trained fishermen on the sampling in the Eastern and Western part of Doon Valley, respectively. Fish samples were preserved in 4% formalin and brought to the laboratory for routine identification, meristic and morphometric analyses under the light of available standard literature and revisionary works (Day, 1878; Jayaram, 1981, 1999; Talwar and Jhingran, 1991; Nelson, 2006; Vishawanath *et al.*, 2007). An attempt has also been made to adjudge the fishes on the basis of IUCN (2015 - 4) categorization.

RESULTS

Out of the total of 56 species, belonging to 5 Orders, 13 Families and 30 Genera, as many as 25 (size range of 2.0 – 9.5 cms), including youngs of some species, were found to be aquarium compatible owing to their hardy nature and brilliant colourations [Table 1]. Of them, youngs of as many as 6 species such as *Puntius sarana* (Hamilton), *Macrognathus pancalus* Hamilton, *Mastacembelus armatus* (Lacepede), *Channa punctatus* (Blotch), *Channa gachua* (Hamilton), *Channa marulius* (Hamilton) *etc.*, were quite compatible with the aquarium conditions. In order of abundance and frequency at almost all the habitats, the fishes like *Puntius conchoni* (Hamilton), *Puntius ticto* (Hamilton), *Danio rerio* (Hamilton), *Devario devario* (Hamilton), *Esomus danricus* (Hamilton), *Rasbora daniconius* (Hamilton), *Lepidocephalichthys guntea* (Hamilton), *Acanthocobitis botia* (Hamilton), *Badis badis* (Hamilton), *etc.*, are found to be the most suitable for aquarium conditions. Though rest others are also frequent but are confined to specific niches along the rivers, *viz.*, *Puntiusterio* (Hamilton), *Colisa fasciatus* (Blotch and Schneider), *Colisa labiosus* (Day), *Colisa lalia* (Hamilton), at Suswa river (Khandgaon Pump House and BEG Camp, Raiwala), *Mystus tengara* (Hamilton) at Song river (Raiwala). Though, *Barilius* sp. also has ornamental value but their survival in the aquarium depends on the careful monitoring with particular reference to the temperature (18 – 25 °C) and brisk agitation of water. About 10 stretches (mainly the swampy and marshy - weedy niches, shallow rheophilic sections *etc.*) falling on the 5 streams (Baldi, Song, Suswa, Tons and Asan) have been highlighted owing to the abundance of such fishes. However, certain pockets with feeble flow and marshy conditions of river Song, Tons and Asan are also the frequenting grounds of colourful fishes.

Table 1: List of Ornamental fishes recorded from Doon Valley and their status as per IUCN(2015-4).

S. No.	Classified List (Nelson, 2006)	Baldi	Song	Suswa	Tons	Asan	Local Name	†IUCN (2015-4) Status
	Phylum :Chordata Subphylum :Craniata Superclass : Gnathostomata Class : Actinopterygii Subclass : Neopterygii Division : Teleostei Subdivision : Ostarioclupeomorpha Superorder : Ostariophysii Order: Cypriniformes Superfamily : Cyprinoidea Family: Cyprinidae							
	Subfamily : Barbinae							
1.	<i>Puntius chola</i> (Hamilton)	-	+	+	+	+	Katcha, Puti	LC
2.	<i>Puntius conchoni</i> (Hamilton)	+	+	+	+	+	Puti	LC
3.	<i>Puntius sarana</i> (Hamilton)	-	+	+	-	+	Puti	LC
4.	<i>Puntius sophore</i> (Hamilton)	+	+	+	-	+	Puti	LC
5.	<i>Puntius ticto</i> (Hamilton)	+	+	+	+	+	Bhuri, Puti	LC
6.	<i>Puntius terio</i> (Hamilton)	-	-	+	-	-	Putiyah	LC
	Subfamily : Rasborinae							
7.	<i>Danio rerio</i> (Hamilton)	+	+	+	+	+	Dharidar , Salari	LC
8.	<i>Devario devario</i> (Hamilton)	+	+	+	+	+	Chand	LC
9.	<i>Esomus danricus</i> (Hamilton)	+	+	+	+	+	Chal	LC
10.	<i>Rasbora daniconius</i> (Hamilton)	+	+	+	+	+	Bhuri	LC
	Superfamily : Cobitoidea Family: Cobitidae Subfamily : Cobitinae							
11.	<i>Lepidocephalichthys guntea</i> (Hamilton)	+	+	+	+	+	Ghiwa, Nauni	LC
12.	<i>Lepidocephalichthys annandalei</i> (Chaudhuri)	-	-	+	-	-	Gadera, Ghiwa	LC
	Family : Balitoridae Subfamily : Nemacheilinae							
13.	<i>Acanthocobitis botia</i> (Hamilton)	+	+	+	+	+	Baktia, Gadera, Ghiwa, Nauni	LC
	Family : Bagridae							

14.	<i>Mystus tengara</i> (Hamilton)	-	+	+	-	-	Kater	LC
15.	<i>Mystus bleekeri</i> (Day)	-	+	+	-	+	Kater	LC
	Series : Percomorpha Order : Synbranchiformes Suborder : Mastacembeloidei Family: Mastacembelidae							
16.	<i>Macrognathus pancalus</i> Hamilton	+	+	+	+	+	Baam	LC
17.	<i>Mastacembelus armatus</i> (Lacepede)	+	+	+	+	+	Baam	LC
	Order : Perciformes Family : Nandidae Subfamily : Badinae							
18.	<i>Badis badis</i> (Hamilton)	-	+	+	+	+	Chiri	LC
	Suborder : Anabantoidae Family : Osphronemidae Subfamily : Luciocephalinae							
19.	<i>Colisa fasciatus</i> (Bloch and Schneider)	-	-	+	-	+	Sunera	NA
20.	<i>Colisa lalius</i> (Hamilton)	-	-	+	-	-	-	NA
21.	<i>Colisa labiosus</i> (Day)	-	-	+	-	-	-	NA
	Suborder: Channoidei Family: Channidae							
22.	<i>Channa punctatus</i> (Bloch)	+	+	+	+	+	Sauli, Sewal	LC
23.	<i>Channa gachua</i> (Hamilton)	-	+	+	+	+	Sowan, Dawla	LC
24.	<i>Channa marulius</i> (Hamilton)	-	-	+	-	-	Saur	LC
25.	<i>Channa harcourtbutleri</i>	-	-	+	-	-	-	NT

'+' = Presence, '-' = Absence

DISCUSSION

In our present study, family Cyprinidae was found to be the most dominant family among all families which is in accordance with many earlier findings (Hora and Mukherjee, 1936; Uniyal and Kumar, 2006; Uniyal and Mehta, 2007) as has also been reflected in earlier observations from Himalayas and Doon Valley (Grover *et al.*, 1994; Uniyal, 2002; Johal, 2002; Nautiyal, 2005; Pathani and Upadhyay, 2006; Negi and Negi, 2010b) or other parts of the country (Bhat, 2003, 2004; Lakra *et al.*, 2010; Shahnawaz *et al.*, 2010) and abroad (Jayaratne and Surasinghe, 2010; Sumith *et al.*, 2011). This fact lends support to the widely acclaimed fact that Cyprinidae tops the list of 9 largest (most species - rich) families viz., Cyprinidae, Gobiidae, Cichlidae, Characidae, Loricariidae, Balitoridae, Serranidae, Labridae and Scorpaenidae (Nelson, 2006).

Species like *Macrognathus pancalus*, *Mastacembelus armatus*, *Channa punctatus*, *Channa gachua*, *Channa marulius*, *Colisa fasciatus*, *Colisa labiosus*, *Colisa lalia*, *Mystus tengara* towards the changed ecological conditions, more particularly with reference to the organic enrichment.

Most of the fish species recorded here have moderate economic food value. It has also been observed the the fish diversity was found to be maximum during the post monsoon and winter months as also reported by Das and Bordoloi (2012).

CONCLUSION

From the present findings it has also become abundantly clear that these fishes have learnt to adapt themselves towards the changed ecological conditions, more particularly with reference to the organic enrichment. Measures are suggested to propagate these species for commercial purpose along the riverine banks in tanks having natural flow of water from the river concerned.

ACNOWLEDGEMENT

The study was funded by Uttarakhand State Council for Science and Technology (UCOST), Dehradun. Authors gratefully acknowledge the support and encouragement received from the Zoological Survey of India (NRS), Dehradun, Uttarakhand, India for fish faunal identification and library facility during the study in Doon valley.

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