



Ichthyofaunal diversity of Tumaria reservoir, Kashipur, U.S. Nagar (Uttarakhand)

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Abstract

Present study was carried out to examine the diversity of fish fauna in Tumaria reservoir, Kashipur, U.S. Nagar, Uttarakhand, India. The water of reservoir is mainly used for irrigation and fish culture. Tumaria reservoir gathers huge variety of fish fauna. Present study was conducted for the period of one year that is January 2017 to December 2017. During the study a total of 10 families and 46 species are identified belonging to Cyprinidae (21), Cobitidae (10), Ophiocephalidae (4), Centropomidae (3), Mastacembelidae (3) and 1 species each from Notopteridae, belonidae, Nandidae, Anabantidae and Gobiidae. The detailed taxonomic account of these fish species is documented in this research paper.

Key Words: *Ichthyofauna, Tumaria reservoir, Kashipur, Udham Singh Nagar, Uttarakhand.*

Introduction

Uttarakhand is the place of origin for holy Rivers Ganga and Yamuna together with a large number of tributaries. There are various ponds and lakes also found in Uttarakhand. All of these water resources are rich in fish fauna. Badola and Singh (1977), Dobriyal and Singh (1988), Khanna (1993) and Kumar (2009) etc. reported fish fauna of different water bodies in Uttarakhand. The Kumaon region of Uttarakhand has rich and varied water potential. The principal river systems are the Ganga river system tributaries, The Kali, Eastern and Western Ramganga, Kosi and their tributaries. This area also has a number of lakes such as Nainital, Bhimtal, Naukhuhiatal, Sat tal, Khurpatal, etc. In addition there is a chain of man-made irrigation reservoirs viz., Sharda Sagar, Nanak Sagar, Baigul, Dhaura, Baur, Haripura and Tumaria in the Tarai region. A reservoir is a storage space of fluids. A reservoir usually means an enlarged artificial lake; storage pond formed using a dam or lock to store water. Various physico-chemical studies on rivers and reservoirs has been done so far (Khanna *et al.* (2008); Khanna *et al.* (20011), Bhutiani *et al.* 2017). The number of reservoirs is increasing all

over the world. There are 19,370 reservoirs are present in Indian soil with a surface area of 3.15 million hectares and they are expected to increase due to proposal of various hydroelectric and irrigation project in the country (Vass *et al.* 2009). Ichthyofaunal diversity of a reservoir states about its fish faunal diversity and composition of fish species. Biodiversity is also essential for stabilization of ecosystems, protection of overall environmental quality, for understanding intrinsic worth of all species on the earth (Ehrlich and Wilson, 1991). Reservoirs conserve a variety of native riverine fish species as well as introduced species which leads and supports commercial fisheries. Tumaria reservoir is situated in Udham Singh Nagar at the distance of about 20.00 Km. from Kashipur. Total length of this reservoir is 20.40 km. It gets water from Dhela and Phika rivers.

Materials and Method

Fish specimens collected from Tumaria reservoir were immediately preserved in formalin solution in glass jars and brought to laboratory. Identification and Taxonomic investigations of fishes were carried out in laboratory with the help of standard literature Hamilton (1822), Day F. (1878), Khanna and Bhutiani (2007), Khanna and Bhutiani (2008), Jayaram (2011), Talwar and Jhingran (1998).

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Results and Discussion

There are 2,500 species of freshwater fishes that have been recognized in the Indian subcontinent out of which 930 are categorized as freshwater species (Gayaram, 1999) and 1570 are marine (Kar, 2003).

A large variety of fishes in Tumaria reservoir was reported by (Rawat 1991). During the study of fish biodiversity of Tumaria reservoir, a total of 46 fish species were identified from 6 orders, 10 families and 25 genera from all sites.

Table 1: Fish fauna in Tumaria reservoir

SN	Order	Family	Genus	Species
1.	Clupeiformes	1-Notopteridae	1-Notopterus	<i>N.notopterus</i>
2.	Cypriniformes	1-Cyprinidae	2-Amblypharyngoden	<i>A.mola</i>
			3-Barilius	<i>B.bola</i>
			4-Catla	<i>C.catla</i>
			5-Cirrhinus	<i>C.mrigala</i>
				<i>C.reba</i>
			6-Labeo	<i>L.bata</i>
				<i>L.dero</i>
				<i>L.dyocheilus(McClell)*</i>
				<i>L.gonius</i>
				<i>L.rohita</i>
				<i>L. calbasu</i>
			7-Osteobrama	<i>O.cotio</i>
			8-Oxygaster	<i>O.bacaila</i>
				<i>O.gora</i>
			9-Puntius	<i>P.chola</i>
				<i>P.conchoniuis</i>
				<i>P.sarana</i>
				<i>P.sophore</i>
				<i>P.ticto</i>
			10-Rasbora	<i>R.daniconius</i>
			11-Botia	<i>B.dario</i>
		2-Cobitidae	12-Lepidocephalichthys	<i>L.gantea</i>
			13-Ompok	<i>O.bimaculatus(Bleeker)</i>
			14-Wallago	<i>W.attu(Bl.&sch)</i>
			15-Mystus	<i>M.cavasius</i>
				<i>M.seenghala(sykes)</i>
				<i>M.tengara</i>
				<i>M.vittatus</i>
			16-Bagarius	<i>B.bagarius</i>
			17-Heteropneustes	<i>H.fossilis(Bloch)</i>
			18-Clarias	<i>C.batrachuis(linn)</i>
3.	Beloniformes	1-Belonidae	19-Xenentodon	<i>X.cancila</i>
4.	Ophiocephaliformes	1-Ophiocephalidae	20-Channa	<i>C.gachua</i>
				<i>C.marulius</i>
				<i>C.Punctatus(Bleeker)</i>
				<i>C.straitus(Bleeker)</i>
5.	Perciformes	1-Centropomidae	21-Chanada	<i>C.baculis</i>
				<i>C.nama Ham.</i>
				<i>C.ranga Ham.</i>
		2-Nandidae	22-Nandus	<i>N.nandus</i>
		3-Anabantidae	23-Colisa	<i>C.fasciatus(Bloch&sch)</i>
		4-Gobiidae	24-Glossogobius	<i>G.giuris</i>
6.	Mastacembeliformes	1-Mastacembelidae	25-Macrognaathus	<i>M.aculeatus(Bl.)</i>
				<i>M.armatus(lacepede)</i>
				<i>M.pancalus(Ham)</i>



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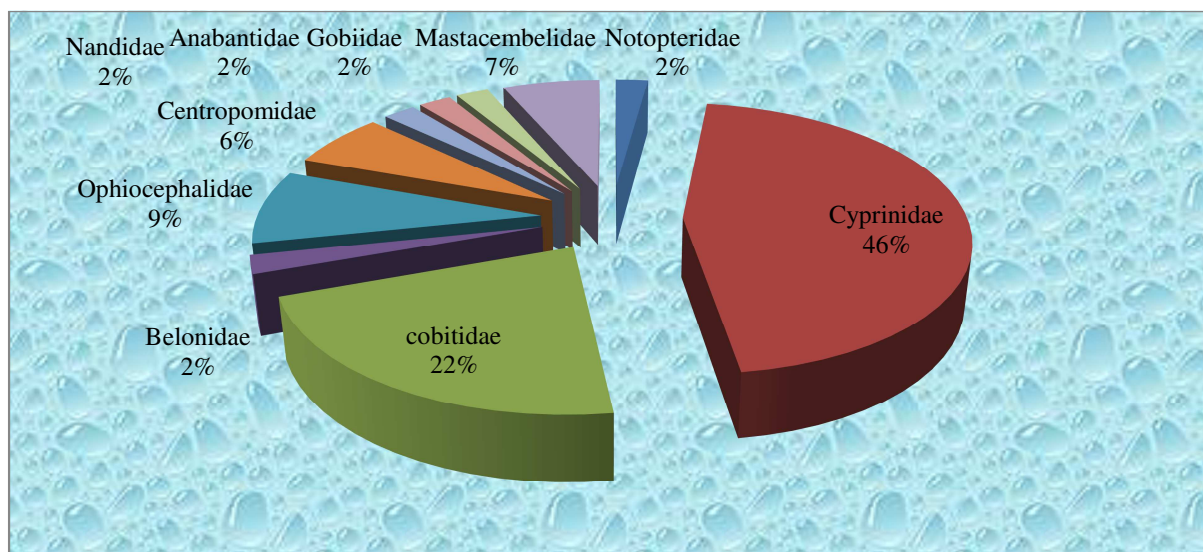


Figure1. Fish Diversity in Tumaria Reservoir

31 species of Cypriniformes, 4 species of Ophiocephaliformes, 6 species of Perciformes, 3 species of Mastacembeliformes, 1 species of Beloniformes and 1 species of Clupeiformes have been identified. The Cyprinidae family is dominated and sub dominated family is Cobitidae. The members of family Cyprinidae 21 species, Cobitidae 10 species, Ophiocephalidae 4 species, Centropomidae 3 species, Mastacembelidae 3 species, Notopteridae, Belonidae, Nandidae, Anabantidae, Gobiidae, one species each family. Family Cyrinidae was represented by the *Amblypharyngoden mola*, *Barilius bola*, *Catla catla*, *Cirrhinus mrigala*, *Cirrhinus reba*, *Labeo rohita*, *Labeo calbasu*, *Labeo bata*, *Labeo dero*, *Labeo dyocheilus*, *Labeo goniuis*, *Osteobrama cotio*, *Osteobrama gora*, *Puntius chola*, *Puntius conchoniuis*, *Puntius sarana*, *Puntius sophore*, *Puntius ticto*, *Rasbora daniconius*, and *Botia dario* were represented. Family Cobitidae represented by the *Lepidocephalichthys gantea*, *Ompaklacepede bimaculatus*, *Wallago attu*, *Mystus cavasius*, *Mystus seenghala*, *Mystus tengara*, *Mystus vittatus*, *Bagarius bagarius*, *Heteropneustes fossilis*, *Clarius batrachuis*. Family Ophiocephalidae was rerepresented by the *Channa gachua*, *Channa marulius*, *Channa punctatus*, *Channa straitus*. Family Centropomidae was represented by the *Chanda baculis*, *Chanda nama*, *Chanda ranga*. Families Notopteridae by *Notopterus notopterus*,

Belonidae by *Xenentodon cancila*, Nandidae by *Nandus nandus*, Gobiidae by *Glossogobius giuris*, Mastacembelidae by *Macrognathus aculeatus*, *Macrognathus armatus*, *Macrognathus pancalus*. From all the sampling sites Cyprinidae formed the largest dominated family contributing the 21 species; Cobitidae formed the sub dominated family contributing 10 species and remaining families followed the order of abundance. During the studies fish individuals were collected from four sites. Collected fishes were from 6 Orders, 10 families, 24 genera and 46 species. Out of all these *Labeo*, *Notopterus* *Cirrhinus* *Catla* *Wallago* *Mystus*, and *Puntius* were dominating genus observed during study period.

Conclusion

The conservation of Ichthyofaunal biodiversity is one of the major environmental challenges. The present work provides latest database for reservoir authorities and fisheries department to help them for conservation of Ichthyofauna ldiversity of Tumaria reservoir. Fishing should be done by only legal and scientific measures. Non scientific fishing should be prohibited. Over growth of *Salvinia* and other aquatic plants is adversely affecting fish fauna in Tumaria reservoir. Control and eradication of unnecessary aquatic weeds, silt, predatory birds and fishes should be done. Fishing of threatened species should also restrict for fishermen. Fishing should be



banned during the breeding season. Water level is reduced very much during summers. Anthropogenic stress also impacts a negative impression on fish production as well as on entire reservoir ecology. Reservoir authorities should maintain water level particularly during summers and also take necessary steps to minimize the human activities in and around the reservoir and they have to regularly check the physico-chemical and biological parameters to prevent any depletion of reservoir ecology.

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