

Study of Fish Biodiversity from Lower Dudhana Project at Parbhani District, India

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Abstract: Ecological diversity of aquatic system is affected due to different environmental factors and manmade activities, it is necessary to record the diversity of system. Biodiversity of fishes from Lower Dudhana Project reservoir 43 species of 28 genera belonging to 14 families and 8 orders of fish has been observed. Amongst the orders of fishes Cypriniformes were most dominant (51%) in lower Dudhana project at Parbhani district.

Key words: Ecology • Diversity • Fish • Order

INTRODUCTION

The aquatic biodiversity of the world is getting depleted faster every day due to habit loss, pollution, introduction of exotic species, over exploitation, agricultural runoff and other anthropogenic activities [1]. There are positive correlations between biomass production and species abundance in ecosystems [2]. To know such faster depletion of biodiversity loss, it is necessary to catalogue it.

The fishes are one of the most important organisms in aquatic ecosystems as those occupy primary and secondary consumer levels. Though the freshwater bodies contribute only 0.1% of the total water of the planet, it harbours 40% of fish species [3]. Fishes have high nutritive value, especially omega 3 fatty acids, because of which they are heart-friendly and improve reproductive and nervous system development. FAO [4] predicted that in 2010 approximately 82% of fishes will be used as food world over.

Total length of all rivers of India is approximately 29000 km and all most 13000 km land irrigate due to this [5]. Godavari is counted the second largest riverine system in India after the Gangase riverine system. Due to globalisation and industrialisation of world the aquatic ecosystem will get heavily contaminated with

different organic, inorganic matters. Presence of Hexachlorobenzene and Dichloro-diphenyl-trichloroethane (DDT), Aldrin, Endosulfan and Heptachlor were also detected in some samples of water bodies from Parbhani district [6]. The study was undertaken to catalogue the fish diversity from the project.

MATERIALS AND METHODS

Fish diversity undertaken during period of January-2009 to December 2011. The fishes were collected from the river Dudhana at Lower Dudhana River Project District Parbhani with the help of local fishermen using different kinds of nets which include gill net (of various mesh size), cast net, dragnet. The fishes were immediately photographed with their maximum taxonomic characters getting exposed helpful for taxonomic identification. Attempt was made to classify the fishes at the collection site and release those back in to the water body but few fishes which were severely damaged by netting operation or which were hard to classify were preserved in 10% formalin. The fishes with larger air bladder were given an incision in their abdomen and preserved.

The collected fishes were then classified using available taxonomic identification keys [7-9].

RESULTS

Amongst the orders of fishes Cypriniformes were most dominant with 22 species(51%), followed by Siluriformes with 9 species (21%), Perciformes with 5 species (12%), Osteoglossiformes with 2 species (5%), Synbranchiformes with 2 species (5%), Mugiliformes with one species(2%), Belioniformes with one species (2%), Anguilliformes with one species (2%) as shown in Fig. 1.

The fishes in the present study belonged to 14 different families (described in Table 1) of which Cyprinidae family contributed 20 species which included most abundant fishes: *Rasbora daniconius*, *Puntius ticto*, *Puntius sophore*, *Catlacatla*, *Osteobrama cotio cotio*. The abundant Cyprinidae members were: *Puntius amphibious*, *Puntius chola*, *Garra mullya*, *Thynnichthys sandkhol*, *Salmophasia novacula*, *Cyprinus carpio carpio*, *Labeorohita*. The less abundant were:

Table 1: The fish biodiversity and ecosystem trophic level of fishes of Lower Dudhana Project Reservoir

Order	Family	Scientific name	Common name	Economic value	Status
Cypriniformes	Cyprinidae	<i>Rasbora daniconius</i>	Rasbora	WF	+++
		<i>Puntius ticto</i>	Dhebari	WF	+++
		<i>Puntius amphibious</i>	Tepali	WF	++
		<i>Puntius sophore</i>	Tepali	WF	+++
		<i>Puntius conchonius</i>	Tepali	WF	+
		<i>Puntius fraseri</i>		WF	+
		<i>Puntius chola</i>		WF	++
		<i>Hypophthalmichthys molitrix</i>	Silver carp	FD	+
		<i>Ctenopharyngodon idella</i>	Grass carp	FD	-
		<i>Garra mullya</i>	Mullya	WF	++
		<i>Thynnichthys sandkhol</i>	Sandkhol	FD	++
		<i>Chela laubuca</i>	Bhatka	WF	+
		<i>Salmophasia novacula</i>	Palai	WF	++
		<i>Cyprinus carpio carpio</i>	Cyprinus	FD	++
		<i>Cirrhina mrigala</i>	Mrigal	FD	+
		<i>Cirrhina reba</i>		FD	+
		<i>Labeo rohita</i>	Rohu	FD	++
		<i>Labeo calbasu</i>	Kaloshi	FD	+
		<i>Catla catla</i>	Catla	FD	+++
				<i>Osteobrama cotio cotio</i>	
	Balitoridae	<i>Nemacheilus botia</i>	Murhi	WF	+
	Cobitidae	<i>Lepidocephalichthys guntea</i>	Murhi	WF	+
Osteoglossiformes	Notopteridae	<i>Notopterus notopterus</i>	Patola	WF	++
		<i>Notopterus chitala</i>	Chitala	WF	-
Siluriformes	Bagridae	<i>Aorichthys aor</i>	Mishalu	PF	+
		<i>Mystus bleekeri</i>	-	PF	+
		<i>Mystus cavasius</i>	-	PF	+
		<i>Mystus tengara</i>	Tengra	PF	+
		<i>Mystus seenghala</i>	Shingada	PF	+
	Siluridae	<i>Ompok pabda</i>	Pabda	PF	++
		<i>Ompok bimaculatus</i>	Pabda	PF	+
		<i>Wallago attu</i>	Balu	PF	+
	Clariidae	<i>Clarias batrachus</i>	Magur	PF	+
Mugiliformes	Mugilidae	<i>Rhinomugil corsula</i>	Vardoli	PF	-
Beloniformes	Belonidae	<i>Xenentodon cancila</i>	Choch	PF	++
Synbranchiformes	Mastacembelidae	<i>Mastacembelus armatus</i>	JapaniVam	PF	++
		<i>Mastacembelus pancalus</i>	GavranVam	PF	+
Perciformes	Cichlidae	<i>Oreochromis mossambica</i>	Tilapi	PF	++
		<i>Glossogobius giuris giuris</i>	Malaga	PF	+++
	Channidae	<i>Channa striatus</i>	-	PF	+++
		<i>Channa punctatus</i>	-	PF	++
		<i>Channa oreintalis</i>	Dhok	PF	++
Anguilliformes	Anguillidae	<i>Anguilla bengalensis bengalensis</i>	Aher	PF	-

+++ Most abundant, ++ abundant, + less abundant- rare.

WF- Weed fish, FD- Food fish, Predatory fish

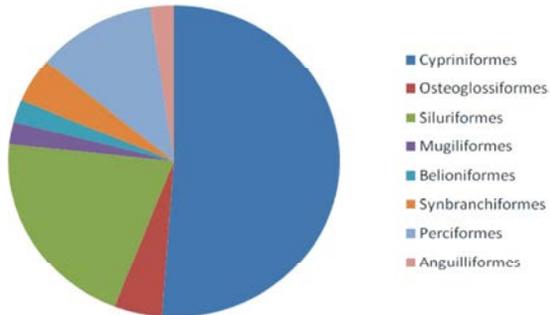


Fig. 1: Order wise fish composition at Lower Dudhana Project Reservoir

Puntius conchonius, *Puntius fraserii*, *Hypophthalmichthys molitrix*, *Chala laubuca*, *Cirrhina mrigala*, *Cirrhina reba*, *Labeo calbasu*. And the rare was only one species *Ctenopharyngodon idella*. The family Bagridae contributed five species of fishes all of which were less abundant: *Aorichthys aor*, *Mystus bleekeri*, *Mystus cavasius*, *Mystus tengara*, *Mystus seenghala*. The family Channidae contributed three species in the fish diversity which includes: Abundant *Channa punctatus*, *Channa orientalis* and less abundant *Channa striatus*. The family Siluridae contributed three fish species which include: Abundant *Ompok pabda*, less abundant *Ompok bimaculatus* and *Wallago attu*. The family Mastacembelidae contributed two fish species which include: Abundant *Mastacembellus armatus* and less abundant *Mastacembellus pancalus*. The family Notopteridae contributed two fish species which include: Abundant *Notopterus notopterus*, rare *Notopterus chitala*. The family Anguillidae contributed only fish which was rare: *Anguilla bengalensis bengalensis*. The family Balitoridae contributed only one fish species which was less abundant: *Nemacheilus botia*. The family Belonidae contributed only one fish species which was abundant: *Xenentodon cancila*. The family Cichlidae contributed only one fish species which was abundant in occurrence: *Oreochromis mossambica*. The family Clariidae contributed only one fish species which was less abundant in occurrence: *Clarias batrachus*. The family Cobitidae contributed only one fish species which was less abundant in occurrence: *Lepidocephalichthys guntea*. The family Gobiidae contributed only one fish species which was most abundant in occurrence: *Glossogobius giuris giuris*. The family Mugilidae contributed only one fish species which was rare in occurrence: *Rhinomugil corsula*.

The netting operations were carried out throughout the year and it was found that the fish diversity was more in monsoon than the summer and winter seasons.

DISCUSSION

This is the first attempt of indexing the fish biodiversity in the Lower Dudhana Project reservoir. The present study includes more number of species than the previous studies done on one of the reservoirs of Parbhani district [10]. The percentage of fishes occupying each tropic level is balanced implying the balanced ecosystem of the reservoir. The fish *Anguilla bengalensis bengalensis* which is endangered in Western Ghats of India [11] is also recorded in the present study at endangered status in the study area chosen; suggesting a dire need of its conservation and public awareness.

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