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# **Biodiversity of Fishes of Parvati River, Baran District, Rajasthan**

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**ABSTRACT:** Rivers are the major source of freshwater which is used for drinking, agriculture and fisheries development purposes. Fish biodiversity of Parvati River, Baran was studied monthly from July 2017 to June 2019 at three sampling stations which were upstream, midstream and downstream. The present study has shown that 34 fish species belonging to 12 families, 7 orders and 22 genera have been recorded in Parvati River, Baran. Among recorded fishes Cyprinidae family fishes were dominant with 16 species. *Labeo gonius* and *L. rohita* were maximum followed by *Wallago attu*, *Catla catla*, *Labeo calbasu*, *Rita rita* and *L. bata*. *Hilsa ilisha*, *Clarius batrachus* and *Mastacambalus armatus* were least in number. Maximum number of fishes was recorded at Station S2 followed by S3 and S1. Water quality of river affects the fish diversity. Objective of this investigation was to collect qualitative and quantitative record of fish fauna of Parvati River, Baran. Proper management and sustainable steps are needed for the conservation of fish fauna of Parvati River.

**KEY WORDS:** Fish diversity, Parvati River, Fish fauna, Water quality.

## **I. INTRODUCTION**

Diversity of ichthyofauna depends on the ecological conditions of any aquatic ecosystem. The geographical position of any river influences the physico-chemical factors which directly show their effects on fish diversity. Fish diversity is also the indicator which shows the distribution of food chain members i.e. other aquatic organisms present in the river. Biodiversity of ichthyofauna is key indicator which indicates the water quality of river and reflexes the health conditions of aquatic body (Sarkar, et.al.2011). Due to various anthropogenic activities the changes in the environmental factors of river water creates sensitivity for fishes. Number of fishes help in biological and ecological assessment to evaluate the status of any water bodies (Wagh et al.2003). River water is the basic need for human as it is utilized for drinking purpose, irrigation, industrialization and fisheries. Biodiversity of fishes is essential for the good health and stabilization of river and protection of environmental conditions of river water if needed by proper management. Fish diversity and their abundance, protection suggests appropriate conservation and management strategies. The main objective of present investigation was to know the biological diversity especially fishes of Parvati River as till today diversity of fishes have not been reported by any researcher. This study has social, economical, cultural benefits and fisheries development as it is related to the financial and economical status of residents of Baran. .

## **II. SIGNIFICANCE OF THE SYSTEM**

The present study mainly focus on the data of fish diversity of Parvati River, Baran. Information of biodiversity of ichthyofauna of this water body can be used as a tool for better conservation of fishes and management planning of river. The study of literature survey is presented in section III, Methodology is explained in section IV, Results and discussions in section V and section VI discusses the conclusion and scope of future study .

## **III. LITERATURE SURVEY**

Now a day's rivers are facing tremendous pressure of human activities. The assessment of river eco system has been dependent on the physical, chemical and biological factors. In a particular biological assessment which depend on the diversity and production of fishes and other aquatic fauna. Several studies have been done on fish diversity on various aquatic bodies but it has not been done on Parvati River. In Testa River at Jalpaiguri 31 species out of fifty five were reported of Cypriniformes order (Patra, A K et al.2011). Uchchariya, et al.2012 studied fish biodiversity of Tighra



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Reservoir of Gwalior, MP and have reported fourty species. Maximum 52.50% contribution of species belonged to Cyprinidae family. Similar results have been reported also by Mohit. et al.2012 in Sakhya Sagar Lake, Shivpuri. 47.37% of Cyprinidae species were present and least 5.26% belonged to Mastacembelidae.

Chandanshiv (2013) has studied ichthyofauna diversity in Mula Mutha River of Puna and has reported 17 family fishes in the river and has observed declined number of fishes in the upstream and downstream of the river. Basvaraja et al.2014 has studied biodiversity of fishes in the Anjanapura Reservoir which belonged to four order, nine families and eighteen genera. Cypriniformes was the dominant group. The ecological conditions of river effects the fisheries potential has been reported by Samal et al.2016. Impact of human activities affects the river water condions which directly influence the fish diversity (Myeong et al.2017).

## IV. METHODOLOGY

**Study Area:** Parvati River is the main river of Baran Distric which passes mainly through Baran city. Catchment area of this river comprises of approximately 7951.26 sq. Km. Parvati River lies on 75°22' to 77°12' longitude and 24°19' to 25°51' latitude. Three study stations were selected for investigation which were Amlawada (S1), Kishanganj (S2) and Digodpar (S3).

**Collection of fishes:** Fishes were collected at all these three study stations in between 7am to 10am in the last week of each month. Fish samples were collected with the help of local fishermen by using various nets (gill net, ghagaria net and dip net). Study was conducted for two years from July 2017 to June 2019. As soon as fishes were caught, taken out of net, photography was done. Number of species in each catch was counted and recorded. Each sample was preserved in 4% formalin. Identification of fishes was done by using standard taxonomic key (Day 1889, Srivastava 1980, Talwar & Jhingran 1991, Jayaram 1999).

## V. EXPERIMENTAL RESULTS

Results of present investigation reveal that fish fauna in Parvati River are widely distributed. Overall 34 species of fishes belonging to 12 families, 7 orders, 22 genera were identified during the study period from Parvati River. There were 16 species of Cyprinidae family, four species of Bagridae, three of Siluridae, two of Schilbeidae, 2 of Ophiocephalidae, 1 Sisoridae, 1 Notopteridae, 1 Clupeidae and 1 Anguillidae. (Table 1). The percentage of fish population showed that order Cypriniformes was 47.05% followed by Siluriformes 32.35%, Ophiocephaliformes and Clupeiformes 5.89% each whereas Beloniformes, Mastacembeliformes and Anguilliformes were 2.94% each. Similarly overall percentage of families recorded were 47.06% of Cyprinidae, 11.76% Bagridae, 8.82% Siluridae, 5.88% Schilbeidae and Ophiocephalidae each and the remaining Sisoridae, Claridae, Belonidae, Mastacembelidae, Notopteridae, Clupeidae, Anguillidae were 2.94% each recorded. (Table 2)

Economically important and cultivable fishes are present in the river. *Labeo gonius*, *Labeo rohita*, *Wallago attu*, *Catla catla*, *Labeo calbasu*, *Labeo bata*, *Rita rita* were maximum in abundance whereas *Hilsa ilisha*, *Clarius batrachus*, *Mastacembalus armatus*, *Anguilla bengalensis* and *Notopterus notopterus* were least. Remaining *Labeo fimbriatus*, *L. Angra*, *Puntius sophore*, *P. sarana*, *Tor tor*, *T. putitora*, *Oxygaster bacaila*, *Cirrhinus mrigala*, *C. reba*, *Osteobrama cotio*, *Garra lamta*, *Ompak pabda*, *O. bimaculatus*, *Mystus tengara*, *M. cavacius*, *M. seeghala*, *Bagarius bagarius*, *Clupisoma garua*, *Eutropiichthys vacha*, *Xenotodon cancila*, *Channa stratus*, *C. punctatus* are in good number in Parvati River. Cyprinidae fishes were higher and present result was supported by Sarkar et al. 2011 in Ganga River and Vijayaxmi et al. 2010 in Mullameri River. Thus the result of ichthyofauna diversity indicate that the Parvati River is rich with commercial and ornamental species.



**Table 1: Biodiversity of fishes of Parvati River [July 2017 to June2019]**

Order	Family	Genus	Species	Local name	Species Author
Cypriniformes	Cyprinidae (16 species)	Labeo	rohita	Rohu	Hamilton, 1822
			calbasu	Kaloti, Karunchar	-do-
			bata	Bata	-do-
			gonius	Goria, Sarsi, Kursi	-do-
			fimbricatus	Kudsa,Mamola, Beljii	Bloch,1795
			angra	Chugna, Rava, Karsa	Hamilton, 1822
		Puntius	sophore	Pothi,Fodra, Sidhari	-do-
			sarana	Puthi,Olive barb, Kharata	-do-
		Catla	catla	Katla	-do-
		Tor	tor	Mahasheer	-do-
			putitotora	Bindas, Golden mahasheer	-do-
		Oxygaster	bacaila	Chal, Chalhawa	-do-
		Cirrhinus	mrigala	Naren, Mrigal	-do-
			reba	Bhagna,Raia	-do-
		Osteobrama	cotio	Gurda,Busi	-do-
		Garra	lamta	Pathor chata	-do-
Siluriformes	Siluridae (3 Species)	Ompak	pabda	Pabda	-do-
			bimaculatus	Puffta, Jalkapoor	Bloch,1794
		Wallago	attu	Laachi,Lasi, Padhani	Bloch & Schneider, 1801
	Bagridae (4 Species)	Mystus	tengara	Tengana	Hamilton, 1822
			cavasius	Katar,Katwa ,Sutahawa	-do-
			seenghala	Seenghala, Singhada	Sykes,1839
		Rita	rita	Ritha,Gagada, Chora	Hamilton, 1822



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	Silsoridae (1)	Bagarius	bagarius	Gonch	-do-
	Schilbeidae (2)	Culpisoma	garua	Karahi	-do-
		Eutropiichthys	vacha	Vacha,Banjhoo	-do-
	Clariidae (1)	Clarias	batrachus	Mangur	Linn,1758
Beloniformes	Belonidae (1)	Xenetodon	cancila	Suja,Suiya	Hamilton 1822
Ophiocephaliformes	Ophiocephalidae(2)	Channa	straitus	Sauri,Morrul	Bloch,1785
			punctatus	Girhi, Dhok	-do-
Mastacembeleformes	Mastacembelidae (1)	Mastacembelus	armatus	Baam	Lacepede
Clupieformes	Notopteridae(1)	Notopterus	notopterus	Patola	Pallas,1767
	Clupeidae(1)	Hilsa	ilisha	Hilsa	Hamilton, 1822
Angulliformes	Anguillidae (1)	Anguilla	bengalensis	Baobaim, Vam, Angulla	Gray,1831
Order7	12 families	22 genus	34 species		

Photographs of fishes of Parvati River



**Labeo rohita**



**Labeo calbasu**



**Labeo bata**



**Labeo gonius**



**Labeo fimbriatus**



**Labeo angra**





**Puntius sophore**



**Puntius sarana**



**Catla catla**



**Tor tor**



**Tor putitora**



**Oxygaster bacalia**



**Cirrhinus mrigala**



**Cirrhinus reba**



**Osteobramma cotio**



**Garra lamta**



**Ompak pabda**



**Ompak bimaculatus**





**Wallago attu**



**Mystus tengara**



**Mystus cavasius**



**Mystus seenghala**



**Rita rita**



**Bagarius bagarius**





**Clupisoma garua**



**Eutropiichthys vacha**



**Clarius batrachus**



**Xenetodon cancila**



**Channa straitius**



**Channa punctatus**



**Mastacembelus armatus**



**Notopterus notopterus**



**Hilsa ilisha**



**Anguilla bengalensis**

**Table 2: Overall Percentage of Family and order of Fishes from Parvati River ( July 2017 to June 2019)**

Family	%(Percentage)	Order	% (Percentage)
Cyprinidae	47.06	Cypriniformes	47.05
Siluridae	8.82	Siluriformes	32.35
Bagridae	11.76		
Sisoridae	2.94		
Schilbeidae	5.89		
Clariidae	2.94		
Belonidae	2.94	Beloniformes	2.94
Ophiocephalidae	5.89	Ophiocephaliformes	5.89
Mastacembelidae	2.94	Mastacembeleformes	2.94
Notopteridae	2.94	Clupeiformes	5.89
Clupeidae	2.94		
Anguilidae	2.94	Angulliformes	2.94

## VI. CONCLUSION AND FUTURE WORK

The Population of Cyprinids , Bagrids and Silurids have significant contribution to overall production of fishes i Parvati River Baran as the environment for the development is suitable these fishes. Most of these fishes have commercial importance. The least group fish species need conservation. Seeds of these fishes should be transplanted. Rules be framed by government should be implemented strictly with the involvement of local people. Regular assessment of the biodiversity is needed for the development and conservation.

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