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Fish Species Diversity of Benisagar Dam, Turki, Satna (M.P.) India

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Abstract: ***The study was conducted during 2013 to 2014. The study revealed that different regions of the dam receive variable precipitation and hence meteorological factors governing the physico-chemical properties of the dam which in turn influence planktonic diversity and so that all the physico-chemical and biological factors have direct influence on the fish production. From the present study, it observed that all the physico-chemical parameters are at nearly permissible limit at all the 5 identified stations. It is estimated that the fish fauna of Benisagar dam consists of 31 species belonging to 11 families. Among the collections 4 species of Clupeiformes, order Cypriniformes consists of 20 species, order Beloniformes consists of 3 species, Perciformes consists of 03 species and order Mugilidae consists of one species. Therefore, it is suggested that the immediate measures may be taken to avoid further contamination of this dam which has been started contaminated due to anthropological activities. Finally it may be concluded that the Benisagar dam is rich in fish diversity and is still in a position to set a good example of conservation of native fish fauna by the sustainable management practices.***
Keywords- Physico-Chemical Characters, Fish Diversity and Production, Significance and Conservation.

I. INTRODUCTION

Adverse effect of environment, climatic changes, increasing water temperature (Parihar and Dubey, 1995), declining water level (Dubey *et al*., 2011), tremendous use of pesticide and xenobiotic compound (Dubey,1995), routines dumping of city garbage and garlanding in the aquatic bodies affected the fisheries productivity hence decreasing the number of aquatic organism specially fish species in the aquatic ecosystem.

Aquaculture has occupied a special status not only because of its contribution to food resources but also in view of its contribution to quality diet. Fish is one of the most important sources of animal diet. Fish is a valuable source of protein and occupied a significant position in the socio-economical fabric of South Asian countries. India has rich biological heritage that qualifies it as one of the twelve-mega diversity nations of the world (Gadgil, 1996). There are 24,600 species of known fishes, which comprises almost half the number of total vertebrates. In which only 400 species are commercially important. Among the available fish species of the world at least 20% of freshwater fish species are already extinct and in serious decline owing to the ecological degradation and mismanagement of natural resources and overexploitation. The district has rich fish fauna and there is a need to contemplate measures to protect the genetic resources. The recent study henceforth has been contemplated to verify the fish germplasm resources in the freshwater bodies in the district. This study has given a vivid picture on the status of both torrential and plain water farms of Icthyofauna and its biodiversity.

Studies have been made on Ichthyofaunal diversity of various freshwater bodies in India during the last few decades (Jayaram 1981, Jhingran 1983, Dutta *et al*., 2001, Mishra *et al*., 2003). However, scanty information is available from this region of India (Murthy 2002). Chandrashekhar *et al*., (2004) enumerated limnological studies with respect to pisciculture in Saroornagar Lake. Pawar *et al*., (2006) studied fish fauna of Pethwadaj dam, Nanded. Kulkarni *et al*., (2008) studied fish and fisheries of Derala Tank, Dist. Nanded, Maharashtra. Rohankar (2009) studied biodiversity of fishes in Aheri lake of Maharashtra.

The various scientists have been reported 23,000 fish species in the world out of these 2546 species are dwell in India Chakraborty (2004). The studies carried out by various researchers in concern of fish community Hora and Nair (1941), Vyas *et al.* (2007), Desai (1992), Singh (1995), Dubey (1994), Anon (1971), Bakawale and Kanhere (2006), and Shrivastava *et al.* (1970) given an account about fish fauna of Ken River. Therefore, in the present investigation preliminary observations of the fishes were carried out in the Benisagar Dam, Turki, Satna District (M.P.).

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II. MATERIAL AND METHODS

Geographical distribution of plankton plays an important role in the aquatic ecosystem. For the convenience of the description of the dam, the planktonological biomass with special reference to zooplankton, it is essential to give the geographical status of Benisagar dam, Turki, Satna (M.P.). The district Satna of M.P. is located on the South West part of Madhya Pradesh. It is an important district of ex-Vindhya Pradesh state and part of Baghelkhand rule of second century A.D. Satna district is a pilgrim and an industrial place and area rich in Limestone, Bauxite, White clay, Geru, Ramraj and Flagstones. It is also famous for its religious places of Distt. The district Satna is the central part of Vindhya region which is situated at 18^0 9' N latitude and 24^0 4' E longitude. It is 365.7 above the mean sea level.

Fishes were collected personally by using nets and the help was also taken from the local fishermen. The fish were collected from the landing sites along the dam soon after they were caught. They were brought to the laboratory for the identification and they were then preserved in 10% formalin for further observation. The fishes were identified up to species level following the standard procedures lain in the literature, (Day 1875 & 1878; Mishra 1962; Srivastava 1985; Jayaram 1981; Dutta and Srivastava 1988; Talwar and Jhingran 1991 and Murthy, 2002). The checklist of identified fish fauna was prepared and presented in the (Tables – 1 & 2).

III. RESULT AND DISCUSSION

Inland fisheries in India have great potential of contributing to the food security of the country. Reservoirs and lakes are the main resources exploited for inland fisheries and understanding of fish faunal diversity is a major aspect for its development and the sustainability management. The change in the composition of fish assemblage indicates variation in the water (Jhingran 1983, Vijay Kumar and Paul 1990). Fishes constitute nearly half of the number of vertebrate fauna found in the world. Total 39,900 vertebrate species are recognized all over the world; over 21,723 are living species of fishes of which 8,411 are of fresh water and 11,650 marine species. In India total fishes recorded are 2500, out of which 930 are fresh water and 1570 are marine fishes (Jayaram, 1999). Fresh water total lakes and ponds will probably contribute a major role to fulfill the additional requirement of fish and to improve the socio-economic status of the rural areas of a particular region (Jayabhaye *et al.*, 2006). In the present investigation, 31 species were recorded belonging to 5 Orders among which order Cypriniformes were dominant by contributing 20 species. The fish fauna of 31 species belonging to 11 families. Among which 4 species are Clupeiformes viz. *Hilsha hilsha, Hilsha motius, Notopterus notopterus and Notoptera chitala* belonging to family Cyprinidae and Notopteridae. Each Two species belongs to family Clupeidae and Notopteridae. Order Cypriniformes consists of 20 species belonging to five families, *Oxygaster bacaila, Oxygaster gora, Rasbora daniconius, Rasbora elonga, Puntius chola, Puntius sarana, Puntius sophore, Ambylopharyngodon mola, Catla catla, Cirrhinus mrigala, Cirrhinus reba, Labeo calbasu, Labeo rohita, Labeo gonius, Labeo boga and Labeo pungusia*. Sixteen species belongs to Cyprinidae, each one species belongs to family Siluridae, Saccobranchidae, Clariidae and Bagridae respectively. Order Beloniformes consists of three species *Channa marulius, Channa punctatus* and *Channa striatus* belongs to family Ophiocephalidae. Order Perciformes consists of three species *Nandus nandus, Badis badis and Anabas testudineus,* belongs to family Nandidae two species and one species belongs to family Anabantidae and order Mugilidae consists of one species *Rhinomugil corsula* belongs to family Mugilidae (Table-1 and Fig-1).

Table 1: Order wise Icthyofauna Diversity of Benisagar dam, Turki, Satna District

Sl.No.	Order	Number of species available
1	Clupeiformes	4
2	Cypriniformes	20
3	Beloniformes	3
4	Perciformes	3
5	Mugilidae	1
Total		31

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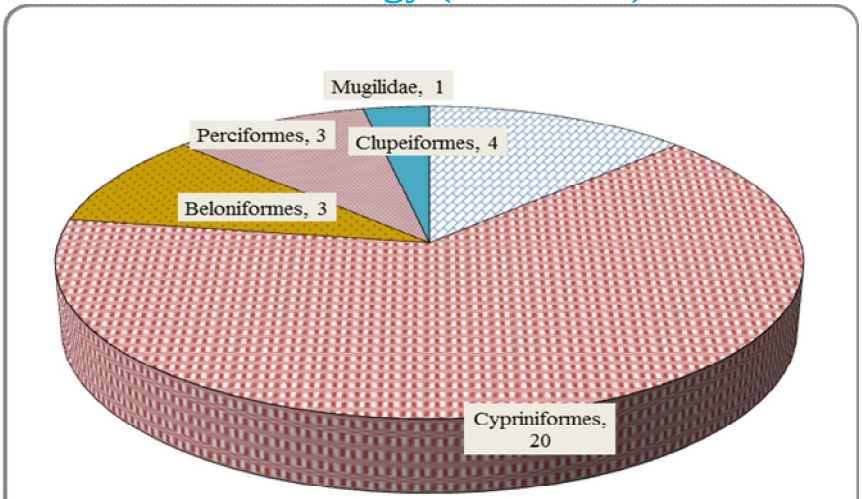

Graph 1 : Order wise composition of in the stretch of study

Table 2 : Showing The Diversity of Fishes in Benisagar dam, Turki, Satna District (2013-14)

S.No.	Order	Family	Fish Species of Dam
1.	Clupeiformes	Clupeidae	*Hilsha hilsha* (Ham.)
2.			*Hilsha motius* (Ham.)
3.		Notopteridae	*Notopterus notopterus* (Pallas)
4.			*Notoptera chitala* (Ham.)
5.	Cypriniformes	Cyprinidae	*Oxygaster bacaila* (Ham.)
6.			*Oxygaster gora* (Ham.)
7.			*Rasbora daniconius* (Ham.)
8.			*Rasbora elonga* (Ham.)
9.			*Puntius chola* (Ham.)
10.			*Puntius sarana* (Ham.)
11.			*Puntius sophore* (Ham.)
12.			*Ambylopharyngodon mola*
13.			*Catla catla* (Ham.)
14.			*Cirrhinus mrigala* (Ham.)
15.			*Cirrhinus reba* (Ham.)
16.			*Labeo calbasu* (Ham.)
17.			*Labeo rohita* (Ham.)
18.			*Labeo gonius* (Ham.)
19.			*Labeo boga*
20.			*Labeo pungusia*
21.		Siluridae	*Wallago attu*
22.		Saccobranchidae	*Heteropneustes fossilis*
23.		Clariidae	*Clarius batrachus* (Linn.)

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24.		Bagridae	*Mystus bleekeri* (Day)
25.	Beloniformes	Ophiocephalidae	*Channa marulius* (Ham. & Buch.)
26.			*Channa punctatus* (Bloch.)
27.			*Channa striatus* (Bloch.)
28.	Perciformes	Nandidae	*Nandus nandus* (Ham.)
29.			*Badis badis* (Ham.)
30.		Anabantidae	*Anabas testudineus* (Bloch)
31.	Mugilidae	Mugilidae	*Rhinomugil corsula* (Ham.)

The studies on Ichthyofaunal diversity from different fresh water bodies of India have been carried out during the last few decades (Talwar and Jhingran 1991; Mishra *et al.*, 2003; Sharma *et al.*, 2004 and Pathak and Mudgal 2005). Sharma *et al.*, (2007) reported 29 species of fishes belonging to six orders from Krishnapura lake, Indore and stated that Cypriniformes was dominant with 15 species followed by Siluriformes with 6 species. Due to more fecundity of major carps and suitable environmental condition relatively higher population density of Cypriniformes was evident in the tank. Kulkarni *et al.*, (2008) studied fish and fisheries and recorded the annual total production of fish was about 150 tonnes/year in Derala tank, Dist. Nanded, Maharashtra. Dhankand *et al.*, (2008) also reported 29 fish species from Sagar reservoir, Jhabua district of Madhya Pradesh which includes 21 species from order Cypriniformes, 2 species from order Perciformes, and 2 species from order Mastacembliformes. Vyas *et al.*, (2009) observed fish diversity and habitats of fishes in Narmada river. Pawar and Pandarkar (2011) studied on water quality in relation to pisciculture of Kelewadi lake, Maharashtra. With recent scientific advances and new strategies we can conserve aquatic resources and ensure its genetic diversity. We being the fishery scientist, have to promote fishery and endeavour to enhance the fish production to improve the socio-economic conditions of traditional fish farmers. According to vision 2020 document even after 50 years of independence still there is a lot to be done in fishery sector and what has been done so far in this sector is only a drop in the ocean. Therefore there is a need to take measures, which have to be initiated to protect and preserve the fish genetic resource and few of them or also at the verge of extinction in this region. The fish germplasm resource of this region exhibits a combination of both torrential and plain water forms. They occupy diverse ecological regime in their distribution. In this context the present study has been undertaken which is a bid to demonstrate the need of this agro-industry to improve the living standards of fishery folk, to enhance food security and also to promote the fishery sector in Satna district of Madhya Pradesh. The present study elucidates the ecological significance of water bodies to increase fish growth and production. Because the physico-chemical parameters, Primary productivity of the dam directly influence the fish growth and production, the diversity and distribution of zooplankton also might have influence on fish fauna found in these waters. Therefore keeping this vital ecological factor in view, major water body has been choosen and an attempt has been made to study the physico-chemical, biological status and also the fish fauna diversity of the dam which is one of the major fish producing dam in this area.

IV. CONCLUSION

The fish production plays a significant role in the human economy. India has vast potential for development of inland fisheries. In the present study an attempt has been made to evaluate the physico-chemical characteristic features and fish fauna diversity of Benisagar dam. It proposed to enhancement of fish production in a sub urban perennial water body in Benisagar dam, Satna district of Madhya Pradesh.

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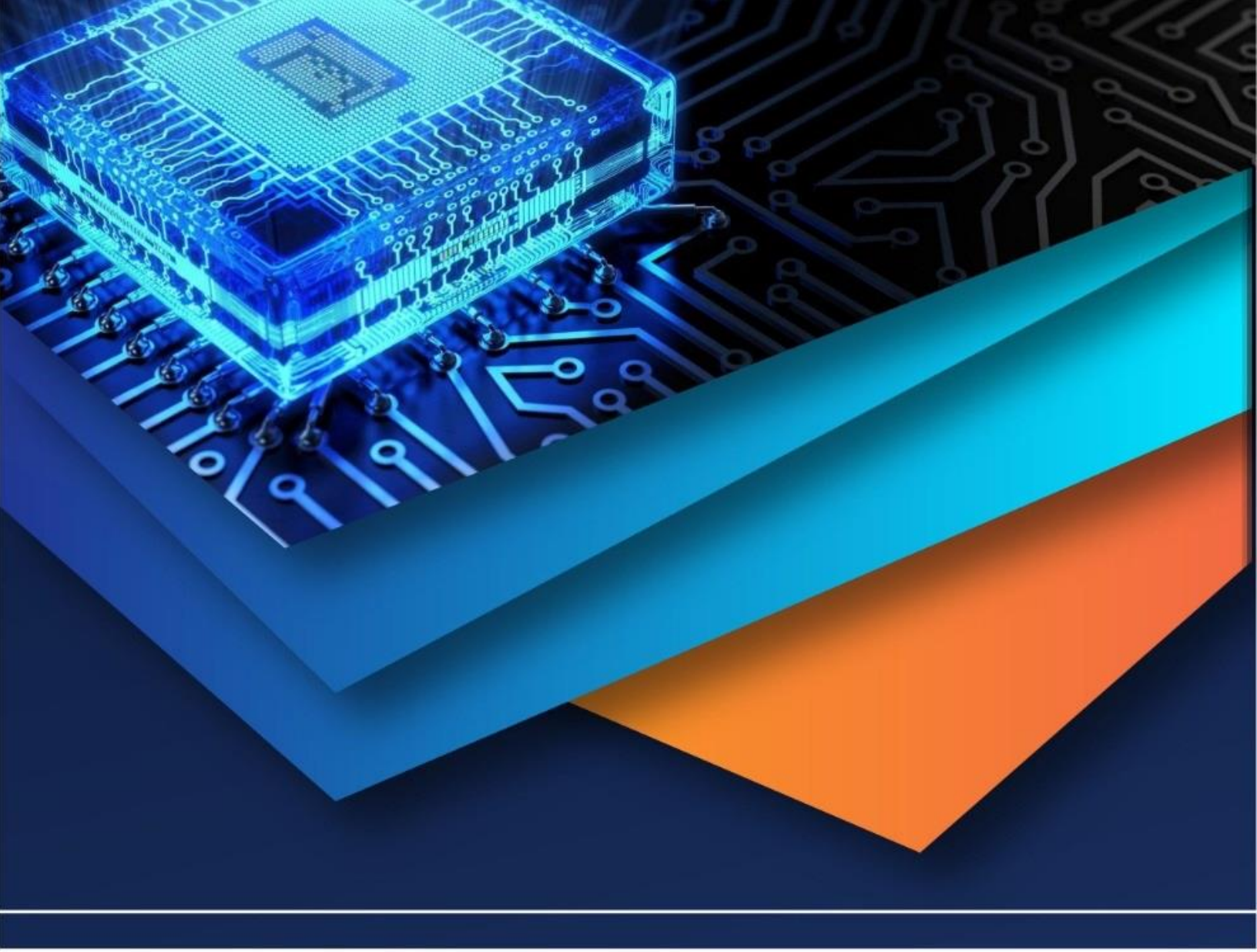

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