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

Smt. Nisha Shukla<sup>1</sup>, Dr. N.P. Tripathi<sup>2</sup> and Dr. A.K. Tiwari<sup>3</sup>

<sup>1</sup>Research Scholar, Zoology Deptt., Govt. S.G.S. P.G. College, Sidhi (M.P.), A.P.S. University, Rewa (M.P.)

<sup>2</sup>Retd. Principal, Govt. New Science College, Rewa (M.P.)

<sup>3</sup>Prof. & Head Deptt. of Zoology – Govt. S.G.S. P.G. College, Sidhi (M.P.).

**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 Ichthyofauna 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° 9' N latitude and 24° 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 laid 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*, *Amblylopharyngodon mola*, *Catla catla*, *Cirrhinus mrigala*, *Cirrhinus reba*, *Labeo calbasu*, *Labeo rohita*, *Labeo gonius*, *Labeo boga* and *Labeo pungsia*. 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 Ichthyofauna 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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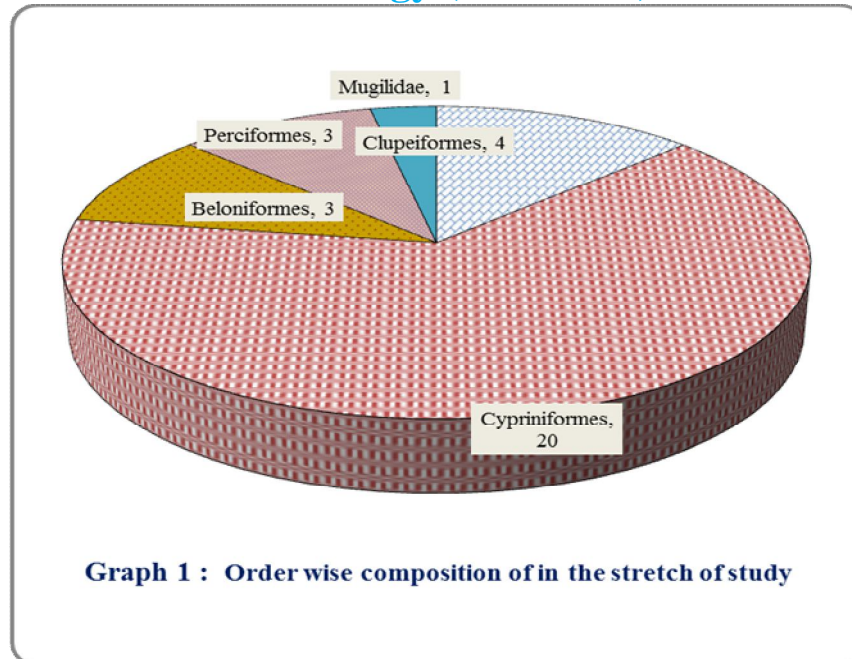


Table 2 : Showing The Diversity of Fishes in Benisagar dam, Turki, Satna District (2013-14)

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



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

- [1] Anon (1971) Fisheries Department, MP Fisheries Survey in Narmada River. 1967-1971.
- [2] Bakawale S and Kanhere R R (2006). Fish fauna of River Narmada in West Nimar MP. Res. Hunt., 1; 46-51.
- [3] Chakraborty S (2004) Biodiversity, The Diamond Printing Press, Jaipur, India;136.
- [4] Chandrashekar, S.V.A., Nalini C. and Kodarkar M.S. (2004). "Limnological studies with reference to pisciculture, case study of Saroornagar Lake, Hyderabad (AP). J. Aqua. Biol, 19 (1): 197-200.
- [5] Day, F. (1875): The fishes of India, being a natural history of the fishes known to inhabit the seas and freshwaters of India, Burma and Ceylon., Test and atlas, 4 parts London.
- [6] Day, F. (1878): The fishes of India being a natural history of fishes known to inhabit the seas and fresh waters of India, Barma and Ceylon. Text and Arlas in 4 parts, London.

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

- [7] Desai V R (1992) Endangered, vulnerable and rare fish species of West Coast riversystem in Madhya Pradesh. Proc. National Seminar on Endangered fishes of India, N B F G R Allahabad; 22.
- [8] Dhankad, N.K., Deepak Shindey and Preethi Chandhery (2008). Fish fauna of Mod Sagar reservoir of Jhabue district. Nature, Environmental and Pollution Technology, Vol. 7, No.1. Pp.159-161.
- [9] Dubey A K (1995) Responses of Antioxidants, Lipid-protein Interactions and Lipid Peroxidation in Heteropneustes fossilis to oxidative damage exposure. Ph.D.thesis, Vikram University,Ujjain, India.
- [10] Dubey A K, Singh G and Chauhan A (2011). Decline resource of water at Chhatarpur. M.P. Natl., Sem., Biores., Manag., India, Sagar.; 73.
- [11] Dubey G P (1994) Endangered vulnerable and rare Fishes of West Coast River System of India. Threatened fish of India , Netcon Publication, 4(1):11-20.
- [12] Dutta, M.J.S. and M.P. Srivastava. (1988). Natural history of fish and systematic of freshwater fishes of India. Narendra Publishing House, New Delhi, pp. 10-15.
- [13] Dutta, S.K., Z. Changsan, and M.K. Choudhary (2001). Application of biological monitoring in water quality assessment, bio-monitoring and zooplankton diversity. (Ed. B.K. Sharma) Department of Zoology. NEHU, Shillong. Pp.164-173.
- [14] Gadgil, M. (1996): Documenting diversity: an experiment Current Science. (70): 36-44.
- [15] Hora S L and Nair K K (1941) Fishes of Satpura Range, Hosangabad District and Central Province. Res., Indian, Mus., 43(3); 361-373.
- [16] Jayabhaye, U.M., Madlapure U.R. and Malviya M.K. (2006): Study of fish diversity in the Parola Dam near Hingoli, Hingoli district, Maharashtra, India. J. Aqua.Biol., 21(2): 65-66.
- [17] Jayaram K.C. (1981). "The Fresh water fishes of India". ZSI. 1-438.
- [18] Jayaram, K.C. (1999). The fresh water Fishes of the Indian Region. Narendra Publishing House, Delhi.: 551.
- [19] Jhingram, V.G. (1983). Fish and Fisheries of India, Hindustan Publisning Corporation(India), Delhi.
- [20] Kulkarni, M.Y., Kulkarni, A.N. and Somvamshi V.S (2008). A Study on some aspects of Reservoir Fisheries of Derala Tank, Dist. Nanded, Maharashtra. Proceedings of Taal 2007; The 12th World Lake Conference: 568-570.
- [21] Mishra, K.S. (1962). An aid to the identification of the common commercial fishes of India and Pakistan. Rec. Indian Mus.
- [22] Mishra, S., Pradham, P., Kar, S. and Chakraborty, S.K. (2003). Ichthyofauna diversity of Midnapore, Bankura and Hooghly districts of South West Bengal. Rec. Zool. Surv. India. Occ. Paper 2220 : 1-66.
- [23] Murthy, D.S. (2002). Highlights of fisheries development in Andhra Pradesh. Fishing Chimes. 22 (1): 64 - 70.
- [24] Parihar, M.S. and Dubey, A.K. (1995). Lipid peroxidation and ascorbic acid status in respiratory organs of male and female freshwater catfish Heteropneustes fossilis exposed to temperature increase. Comp. Biochem. Physiol.,11 2C(3); 309-313.
- [25] Pathak, S.K. and Mudgal L.K. (2005). Limnology and biodiversity of fish fauna in Viral reservoir, M.P.J. Comp Toxical physico-chemical. 2 (1 and II): 86-90.
- [26] Pawar, S.K., J.S. Pulle and K.M. Shendge (2006). The study on phytoplankton of Pethwadaj Dam, Taluka Kandhar, District – Nanded, Maharashtra. J. Aqua, Biol. 21. (1): 1-6.
- [27] Pawar, B.A and Pandarkar, A.K (2011). Studies on water quality of Kelewadi lake in relation to Pisciculture, Maharashtra, Uttar Pradesh. J. Zool. 31(1) : 35-41.
- [28] Rohankar, L.H. (2009). Study of some physico-chemical and biological parameter Rural lake Aheri, dist, Gadchiroli, Maharashtra, India. Ph.D. thesis, Nagpur University, Nagpur (Maharashtra).
- [29] Sharma, Archana, Mudgal, L.K.Sharma, Anjana and Sharma Shailendra(2004): Fish diversity of Yashwant Sagar reservoir, Indore, (M.P.). Him. J.Env. Zool., 18(2).
- [30] Sharma, K.K., Nitasha and Sarbiet Kour (2007). Some limnological investigations in Banganga stream Koba. Jammu and Kashmir State. J. Aqua. Biol. Vol. 22(1) : 105-109.
- [31] Shrivastava, G.B., Chandra, R. and Visharad, S.K. (1970) Record Zoological Survey of India. 64(1-4);131-134.
- [32] Singh, S.N. (1995). Studies on fish conservation in Narmada Sagar, Sardar Sarovar and its downstream. Narmada Control Authority, Indore, India; 85.
- [33] Srivastava, C.B.L. (1985). A text book of fisheries science and inland fisheries. Kitab Mahal, Allahabad.
- [34] Talwar, P.K. and A.G. Jhingran. (1991). Inland fishes of India and adjacent countries. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi, pp. 1-322.
- [35] Vijaykumar, K. and Paul, R. (1990). Physico-chemical studies of Bhogsa reservoir in Gulbarga, Karnataka. Eco. Biol. 2 (4): 332 - 335.
- [36] Vyas V, Parashar V, Bara S and Damde D (2007). Fish catch composition of river Narmada with reference to common fishing gears in Hoshangabad area. Life Sci. Bull., 4(1&2);1-6.
- [37] Vyas. Vipin, Vivek Parashar and Dinesh Damde (2009). Fish Biodiversity and Preferential Habitats of Fishes in selected stretch of Narmada River. Nat. Environ. and Pollu. Tech. Vol.8. No.1. 81-89.



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