

ICHTHIYO FAUNAL DIVERSITY OF BANSAGAR DAM, SHAHDOL (M.P.)

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ABSTRACT:-

The present study is aimed to investigate fish fauna of the Bansagar dam. There are several types of fresh water fishes present in the dam. In the present ichthyofaunal study, All together 23 species of fishes were recorded during study period belonging to 5 orders and 10 families. Order cypriniformes was represented by one family 8, genera and 11 species. Order Siluriformes was represented by 5 families, 5 genera and 7 species. Order Cyprinodontiformes and Clupeiformes were represented each by 1 family, 1 genus and 1 species while order perciformes was represented by 3 families, 3 genera and 3 species. The percentage contribution of five orders of fishes was recorded as 48%, 30.4%, 4.3%, 13.0% and 4.3% for Cypriniformes, Siluriformes, Cyprinodontiformes, Perciformes and Clupeiformes respectively. Among the different families of fishes, family Cyprinidae showed its dominance gaining 48% in the species structure. There is rich fish diversity in Shahdol region of Madhya Pradesh. Fishes maintain aquatic ecosystem hence there is need for conservation strategies.

KEYWORDS:-Ichthyofaunal, Richness, Cypriniformes, Bansagar dam

INTRODUCTION:-

Fish enjoys a very special consideration and place in human civilization from times immemorial. Its food value, gastronomic, culinary and nutritional values brings it to the fore. Many species of fish rank in the category of "Gourmet par excellence". Several others are sought as luxury food in expensive restaurants. Apart from this, a sizeable number of food-fishes, both freshwater and salt water, are put in the category of excellent, very good, good and fair, depending upon local, regional and national consideration of taste, preferences and eating habits. The growing realization of the importance of the fish as food and of the role this fact might play in meeting the ever increasing global food

problem in the context of the immense potential of resources for exploitation, has been instrumental in this initiation of development of fisheries in many countries where it never existed to any significance, as well as in encouraging expansion of fisheries where it already existed.

Fish culture on commercial scales is a recent innovation to fisheries but it has assumed great significance for the great prospects it holds; and it is therefore being adopted by countries one after the other. Fish culture too is practiced in both fresh water and salt water. With expanding fisheries the world over fish production started influencing the national economy of the countries to a large extent. Fisheries sprang up as an important industry in many parts of the earth. It also opened immense job potentials as a means of living and income. In India, a sizeable part of the population is engaged in the fish culture industry for their income and living. Trade in fish established itself at national and international markets. The fish trade center of West Bengal in India is worth mentioning. At international level, exports and imports of fish and fish products increased tremendously in recent years, influenced by the natural resources, feeding habits, needs and demands for fish, the current status of fishery of the land, the technology of utilization and preservation of fish as a commodity.

The word fish is concerned to a heterogeneous gathering of aquatic chordates animals comprised of hagfish and lampreys, sharks, rays and chimaeras, and the finned bony fishes. The latter is by far the main diverse group and is well shown in fresh water system, while the others are prevalently marine gatherings. Freshwater fishes have a tendency to be more-or-less confined drainage system, provide relatively a conservative system for examining patterns of distribution that may reflect the imprint of past continental and climate changes. The main role of fish in river food chain and food webs has been hotly debated.

Economically fishes are very important used as food. For successful fish farming in dams and reservoirs, it is essential to make a detailed hydrological study of the water body. Suitable species that are stocked in dams are the major carps. These are capable of adjusting successfully to ecological condition of the reservoir. The exotic carps also Thrives in manmade lakes or dam are suitable species for culture.

Distribution of Ichthyofaunal population in the ecosystem, their composition and seasonal variation are essential prerequisite for any successful resources management. Species diversity is a property of the population level while the functional diversity concept is more strongly related to ecosystem stability and stresses, physical and chemical factors for determining population dynamic in the lentic ecosystem (Kar and Barbhuiya, 2004). Fishes have a range of physiological tolerances that are dependent upon which species they belong to. They have different lethal temperature, dissolved oxygen requirements and spawning needs that are based on their activity levels and behaviors. Because fishes are highly mobile, they are able to deal with unsuitable abiotic factors in one zone by simply moving to another. Fishes exhibit enormous diversity in their morphology, in the habitats they occupy and in their biology. Unlike the other commonly recognized vertebrates, fishes are heterogeneous assemblage (Forese and Pauly, 1998). They can be used for ecological assessment (Harris, 1995). Besides, they are considered as important protein rich food source. Therefore, it is need of the hour to study fish diversity in order to conserve water bodies and increase our national economy by culturing them on scientific basis.

Many workers have studied Taxonomy, Biodiversity and Distribution of fishes found in freshwater bodies of various parts of India. David (1963) recorded fish fauna of Godavari and Krishna river. Very less information is available about fish fauna, present in lotic and lentic habitats.

Jha D. N., et. al., (2014), Due to regulation of natural flow of all major rivers for fulfilling water demand of agriculture and power sectors without giving any attention to fisheries sector, rivers have lost their character and fisheries have suffered huge losses.

A large number of dams and reservoir are constructing during the recent year to provide water for irrigation and power production. These bodies of water offer immense scope for fish culture for successful fish farming in dam and reservoir. Bansagar dam is very productive more work has been carried out of fish fauna. The distribution of fish species is quite variable because of geographical and geological condition.

Hence the present work is an attempt to accumulate information pertaining to various aspect of fish diversity of standing water bodies from this part of peninsular India. The present investigation has been carried out on Bansagar dam. The Bansagar Dam is a multipurpose river valley project on Sone river situated in Ganga Basin in Madhya Pradesh envisaging both irrigation and hydroelectric power generation. The Bansagar Dam across Sone river has been constructed at village, Deolond in Shahdol district on Rewa-Shahdol road, at a distance of 51.4 km from Rewa. Bansagar Dam is located at latitude 24°11'30"N and longitude 81°17'15"E.

MATERIAL AND METHODS:-

Different kind of fishes were collected from the selected sites with the help of fisherman of the work on the dam by using different types of craft, gears and nets and after noting down color and other external feature were preserved in 4% formalin, seasonal collection were made from November 2011 to December 2013.



Fig. 1. A View of Bansagar Dam

Standard identification key were used for identification of specimen up to species level, using standard key and literature (Day Francis. 1971; Agarwal SC. 1994 and Jhingran VG 1982). The classifications of fishes on

economic importance were done by following the proforma given by Jhingran, VG (1982) and Lagler, KF (1956).

RESULT AND DISCUSSION:-

Fish have great significance in the life of mankind, being an important natural source of protein and providing certain other useful products as well as economic sustenance to many nations. It is a well-known fact that the knowledge on fish biology particularly on morphometry, length – weight relationship, condition factor, reproduction, food and feeding habit, etc. is of utmost important not only to fill up the lacuna of our present day academic knowledge but also in the utility of the knowledge in increasing the technological efficiencies of the fishery entrepreneurs for evolving judicious pisciculture management. For developing fishery, it is necessary to understand their population dynamics how fast they grow and reproduce the size and

age at which they spawn their mortality rates and its causes, on what they prey upon along with other biological processes.

Fishes are the first vertebrates with jaws. They are cold-blooded animals that breath by means of gills, live in water and move with the help of fins. Fishes differ from each other in size, shape, habits and habitats. They are used as food throughout the world and the fish liver is the main source of liver oil containing vitamin A and D.

Detailed study on the fisheries of Bansagar dam have been conducted from November 2011 to October 2013. A total of 23 species of freshwater fishes belonging to different orders and families were recorded and are represented in Table below:

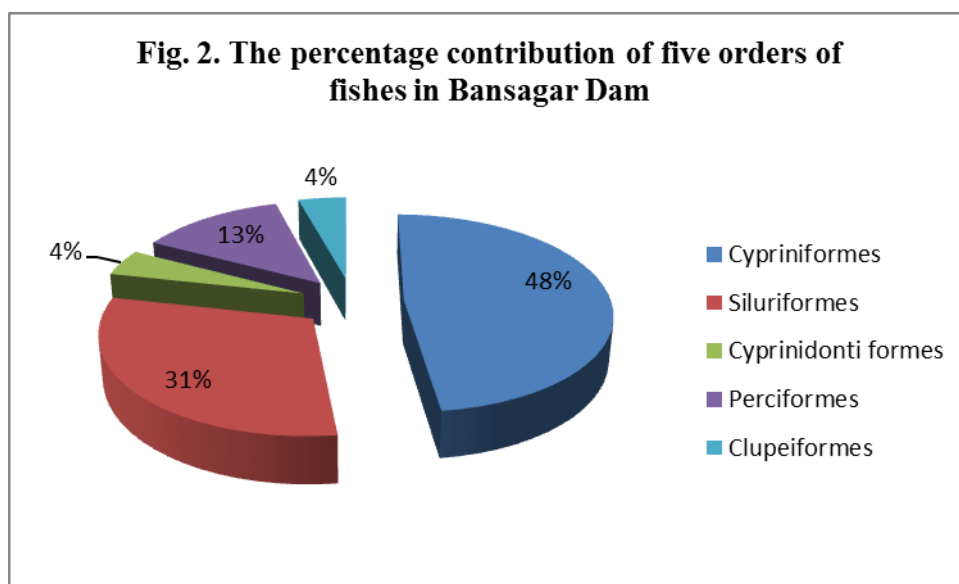
Table No. 1:- List of fish species identified from Bansagar dam during November 2011 to October 2013:

S. No.	Order	Family	Species
1.	Cypriniformes	1. Cyprinidae	<i>Amblypharyngodon mola</i> <i>Catla catla</i> <i>Cirrhinus mrigala</i> <i>Cirrhinus reba</i> <i>Oxygaster bacaila</i> <i>Labeo rohita</i> <i>Labeo calbasu</i> <i>Puntius sarana</i> <i>Puntius ticto</i> <i>Rasbora daniconius</i> <i>Tor tor</i>
2.	Siluriformes	1. Bagridae	<i>Mystus bleekeri</i> <i>Mystus aor</i> <i>Mystus cavasius</i>
		2. Clariidae	<i>Clarias batrachus</i>
		3. Sisoridae	<i>Wallago attu</i>
		4. Siluridae	<i>Bagarius bagarius</i>
		5. Heteropneustidae	<i>Heteropneustes fossilis</i>
3.	Cyprinodontiformes or Beloniformes	1. Belonidae	<i>Xenentodon cancila</i>
4.	Perciformes	1. Channidae or Ophiocephalidae	<i>Channa punctatus</i>
		2. Chandidae	<i>Chanda nama</i>
		3. Mastacembelidae	<i>Mastacembelus armatus</i>
5.	Clupeiformes	Notopteridae	<i>Notopterus notopterus</i>

Variation in species abundance of fishes

The variation in species abundance of fishes observed during study period is represented below:

S. No.	Name of order	No. of family	No. of genus	No. of species	Percentage
1.	Cypriniformes	1	8	11	48%
2.	Siluriformes	5	5	7	30.4%
3.	Cyprinidonti formes	1	1	1	4.3%
4.	Perciformes	3	3	3	13.0%
5.	Clupeiformes	1	1	1	4.3%
Total	5	10	17	23	100.0



The percentage contribution of five orders of fishes was recorded as 48%, 30.4%, 4.3%, 13.0% and 4.3% for Cypriniformes, Siluriformes, Cyprinidontiformes, Perciformes and Clupeiformes respectively. Among the different families of fishes, family Cyprinidae showed its dominance gaining 48% in the species structure.

The work will provide future strategies for development and fish fauna conservation Bansagar dam. To maintain Fish diversity has immense importance as it is not always possible to identify individual species critical to sustain aquatic ecosystem.

CONCLUSION:-

Improving management will require a better understanding of linkages between dam biota and temporal variability of flow and in stream habitat. Productivity of reservoir is depending on physicochemical parameters & biological aspect. Maintain socio-economic condition and Management of

reservoir etc. Fishes maintain aquatic ecosystem hence there is need for conservation strategies. Over fishing and immature fishing are main causes of loss of many fish species. Seasonal fluctuation, anthropogenic activities, climate change (extreme heat and cold), invasion of exotic species, dry drought, and water pollution are some causes for complete and partial loss of many fresh water fishes. Many fish species are already become extinct while some of them are endangered. To maintain fish diversity in Shahdol region there is need for conservation. Total number of fresh water fish species recorded during the present study indicates rich fish diversity in Bansagar dam. Fishing communities should be a part of impact assessments, public hearings and monitoring and compliance mechanisms.

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