

STUDY OF FISH DIVERSITY IN COKA DAM PAPARA SATNA (M.P.)

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ABSTRACT:- This paper describes the analysis of fish diversity in Coka Dam of Papara, Satna district in central India. Coka Dam is situated in municipal area of Satna town, located on south west part of Madhya Pradesh. The dam water use is domestic purposes, irrigation, aquaculture etc. Study on Pollution status of Coka Dam water was made to assess the fish diversity from January 2020 to December 2020. Human activities have resulted in drastic degradation of aquatic resources resulting in the alteration of structure and function. As fish constitute almost half of the total number of vertebrates it is very important that their diversity is preserved. Hence the present study was conducted to analyse the fish diversity in Coka Dam. A total of 30 fishes were identified. During the study period belonging to 5 orders and 10 families. Order cypriniformes was represented by one family 8 genera and 15 species. Order Siluriformes was represented by 5 families, 5 genera and 7 species. Order Cyprinodontiformes 1 and Clupeiformes were represented each by 1 family, 1 genus and 2 species while order perciformes was represented by 3 families, 3 genera and 5 species. The percentage contribution of five orders of fishes was recorded as 50%, 23.33%, 3.33%, 16.67% and 6.67% for Cypriniformes, Siluriformes, Cyprinodontiformes, Perciformes and Clupeiformes respectively. Among the different families of fishes, family Cyprinidae showed its dominance gaining 50% in the species structure. The unmanaged and unwanted activities of surrounding population of the area are deteriorating the dam water quality continuously.

KEYWORDS:- Fish diversity, fresh water, , Coka Dam

INTRODUCTION:-

Fish enjoys a very special consideration and place in human civilization from times immemorial. Its food value, gastronomic, culinary and nutritional, brings it to the fore; many species of fish rank in the category of

"gourmet par excellence". The big and medium dam are mainly managed as stocking-cum-capture fisheries resources, whereas, little reservoirs and aquaculture water bodies are usually managed through culture practices. Inland capture fisheries of India have an important place; it contributes to about 30% of the total fish production. The large network of inland water masses will continue to provide great potential of economic capture fisheries which consequently will compete well with fast growing fish culture practices.

Recent additions to the natural inland water bodies are man-made reservoirs. There are at present some 300 reservoirs which hold very good prospects, after restocking, both for capture as well as for culture fisheries. Some of these reservoirs have responded fairly well to attempts to restock them with indigenous as well as exotic species.

The inland capture fisheries, however, stands at a critical juncture, which draw a special attention at the national level. Rapid industrialization movements in the country have given a serious blow to the growth of the inland fisheries which was struggling to come out of old-fashioned style to a more rational and scientific style. Constructed of dams have been the cause of decline and damage to several regionally important fisheries. Discharge from industrial establishments, multiplying at mushroom growth, into inland water bodies is polluting the water in very serious proportions, and is damaging the fish populations tremendously. Great harm is also being done from agricultural wash coming to inland waters, which brings to fish a very toxic principal of numerous pesticides used in the agricultural practices.

It also has rich freshwater (rivers, irrigation canals, tanks, lakes, reservoirs) fish diversity. This diversity is

being eroded each day mainly because of unending anthropogenic stress. This diversity is not only the wealth of India and the world but it also has serious implications on fishery. The country is endowed with vast and varied resources possessing river ecological heritage and rich biodiversity. Freshwater fishery sites are varied like 45,000 Km. of rivers, 1,26,334 Km. of canals, ponds and tanks 2.36 million hectares and 2.05 million hectares of reservoirs (Ayappan and Birdar, 2004). According to Jenkins (2003) freshwater biodiversity has declined faster than marine or terrestrial diversity over the past 30 years. Human activities have resulted in drastic degradation of aquatic resources resulting in the alteration of structure and function. As fish constitute almost half of the total number of vertebrates it is very important that their diversity is preserved.

Coka Dam is situated in municipal area of Satna town, located on south west part of Madhya Pradesh. It is an important district of Ex- Vindhya Madhya Pradesh State and part of Baghelkhand region of Second century A.D. Satna district is a pilgrim and an industrial place, area rich in Limestone, Bauxite, White clay, Geru, Ramraj and Flagstones. It is also famous for its religious places of Chitrakoot. The district Satna is the central part of Vindhya region which is surrounded by the boundaries of Rewa and Satna on the North, Bilaspur district on the South and Jabalpur on the West side. The dam water use is domestic purposes, irrigation, aquaculture etc. Hence the present study was conducted to analyse the fish diversity in Coka Dam of Papara, Satna district in central India.

METHODS AND MATERIALS :-

Coka Dam of Papara, Satna district in central India. Coka Dam is situated in municipal area of Satna town, located on south west part of Madhya Pradesh. Besides being a source of water for irrigation.

Data Collection and Analysis:-

Fish sampling was performed in five sampling sites during the period from January 2020 to December 2020 with the help of local fishermen using different types on nets. Photographs were taken prior to preservation as

formalin decolorizes the fish. Fishes brought to the laboratory were fixed in this solution in separate jars according to the size of species. Smaller fishes were directly placed in the formalin solution while larger fishes were given an incision on the abdomen before they were fixed. The fishes were labeled giving serial numbers, exact collection site, date of the collection and the local name of fish used in this region. Identification of fishes was carried out by following Talwar and Jhingran (1991).

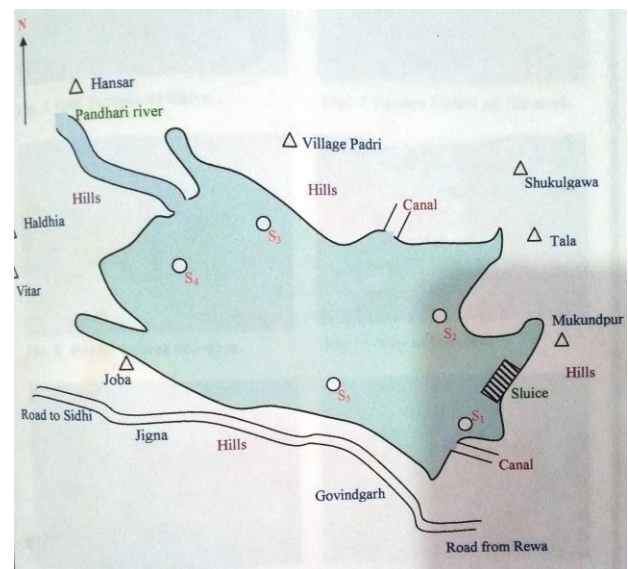


Fig. 1- Location Map of Coka Dam Papara Satna (M.P.)

RESULT AND DISCUSSION:-

The community composition of fishes studied during January 2020 to December 2020 are represented in table no. 1&2 and Graph 1. All together 30 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 15 species. Order Siluriformes was represented by 5 families, 5 genera and 7 species. Order Cyprinodontiformes 1 and Clupeiformes were represented each by 1 family, 1 genus and 2 species while order perciformes was represented by 3 families, 3 genera and 5 species.

The percentage contribution of five orders of fishes was recorded as 50%, 23.33%, 3.33%, 16.67% and 6.67% for Cypriniformes, Siluriformes, Cyprinodontiformes,

Perciformes and Clupeiformes respectively. Among the different families of fishes, family Cyprinidae showed its dominance gaining 50% in the species structure.

Table 1: Fish Diversity of Coka Dam during Jan. 2020 to Dec. 2020

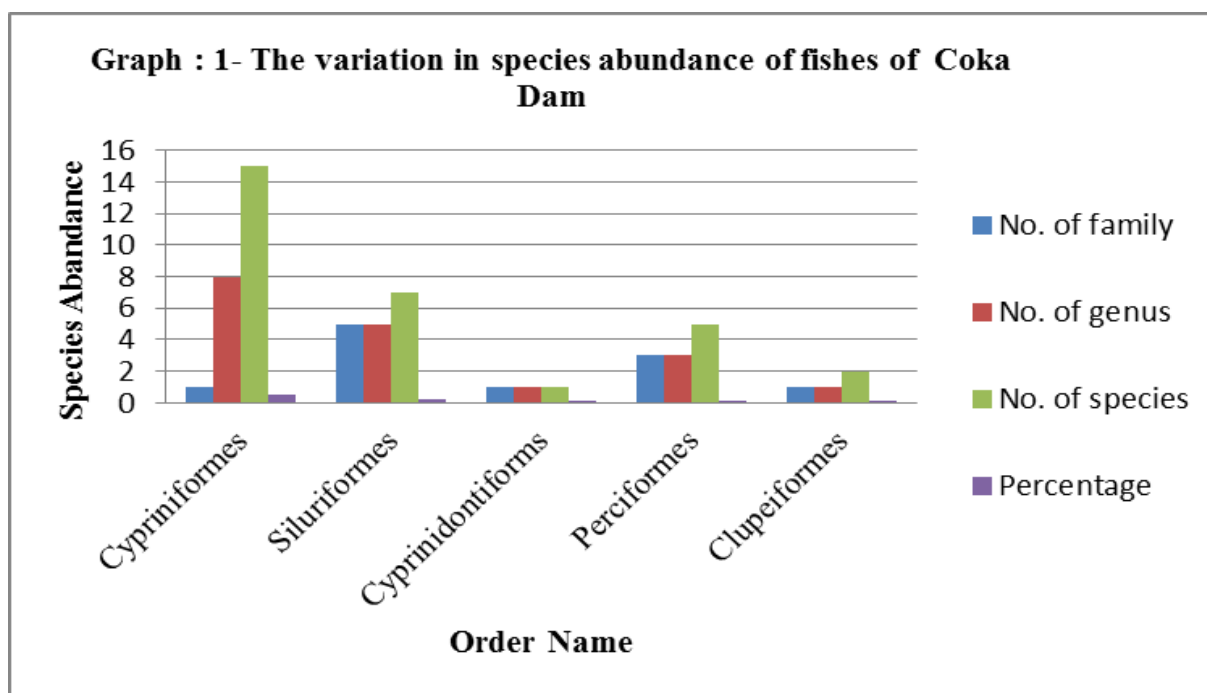
S.No.	Order	Family	Species
1.	Cypriniformes	1. Cyprinidae	<i>Amblypharyngodon mola</i> <i>Catla catla</i> <i>Cirrhinus mrigala</i> <i>Cirrhinus reba</i> <i>Oxygaster bacaila</i> <i>Labeo rohita</i> <i>Labeo calbasu</i> <i>Labeo gonius</i> <i>Labeo boga</i> <i>Labeo pungsia</i> <i>Puntius sarana</i> <i>Puntius ticto</i> <i>Puntius chola</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	1. Belontiidae	<i>Xenentodon cancila</i>
4.	Perciformes	1. Channidae or Ophiocephalidae	<i>Channa punctatus</i> <i>Channa marulius</i> <i>Channa striatus</i>
		2. Chandidae	<i>Chanda nama</i>
		3. Mastacembelidae	<i>Mastacembelus armatus</i>
5.	Clupeiformes	Notopteridae	<i>Notopterus notopterus</i> <i>Notopterus chitala</i>

The variation in species abundance of fishes in Coka Dam-

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

Table No. 2. The variation in species abundance of fishes of Coka Dam

S. No.	Name of order	No. of family	No. of genus	No. of species	Percentage
1.	Cypriniformes	1	8	15	50.00%
2.	Siluriformes	5	5	7	23.33%
3.	Cyprinodontiforms	1	1	1	3.33%
4.	Perciformes	3	3	5	16.67%
5.	Clupeiformes	1	1	2	6.67%
Total	5	10	17	30	100.0



Literature reveals that abiotic and biotic factors play an important role in fish diversity in freshwater ecosystems. Sivakami *et al.* (2014) reported that pH and dissolved oxygen are key habitat features which can be correlated to fish diversity, while Sharma and Gupta (1994) reported that the ideal temperature for growth of fishes was between 14.5 and 38.6 °C. In the present study, the water temperature was found to range between 22 and 30 °C which appears favourable for growth of fish.

Jhingran suggested that the ideal pH for fish growth was between 7 and 9 units. In the present study also, the pH averaged 7 to 8.8 °C units which is favourable for fish

growth. Welch (1952) reported that DO levels of less than 3 mg/l should be regarded as hazardous to lethal under average conditions and that 5 mg/l or more should be present in waters if conditions are to be favourable for fish culture. A perusal of the DO levels in the present study reveals that DO levels were always above 3 mg/l. Prasad *et al.* (2009) and Dhurvey and Kashyap (2019) suggested that increased BOD values can decrease DO levels and affect fish productivity.

A perusal of literature reveals that Shukla and Pandey (2019) while studying a lake in Rewa district recorded a maximum diversity of Cyprinidae followed by

Channidae, Anabantidae and Bagridae while Saket and Pandey (2019) while analyzing the fish diversity in Coka dam reported maximum diversity to occur in Cyprinidae. These results are in conformity with the present observations.

CONCLUSION :-

The present study indicates that the Coka dam is not good. The unmanaged and unwanted activities of surrounding population of the area are deteriorating the dam water quality continuously. Fish population and production in Bakiya dam is gradually decreasing due to the heavy pollution load in dam created by various human and agricultural activity around the dam. Heavy silt load and total solids are the effective agents to decrease the fish population and production.

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