

FISH DIVERSITY OF GHUNGHUTTA DAM AMBIKAPUR SURGUJA (C.G.)

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ABSTRACT :- Fish fauna of a dam basically represent the diversity and their abundance. Fishes play a very significant role in the human economy by providing nutritious food. India has got vast potential for development of inland fisheries. Present study was carried out to know fish fauna of Ghunghutta dam during the year 2020-21, where twenty one fish species of six orders and nine families were observed. Among them, Cyprinidae was the most dominant with 10 (47.61%), Bagridae 2 (9.52%), Channidae 2(9.52%), Siluridae 2 (9.52%), Nandidae 1 (4.76%), Clariidae 1 (4.76%), Heteropneustidae 1(4.76%), respectively. Cyprinidae was the most dominant species on study site of Ghunghutta Dam.

KEYWORDS: Ghunghutta dam, Fish diversity.

INTRODUCTION:-

Freshwater fishes tend to be more-or-less confined to drainage systems, provide relatively a conservative system for examining patterns of distribution that may reflect the imprint of past continental and climate changes. The role of fish in river food webs has been hotly debated.

The word fish is connected to a heterogeneous gathering of aquatic chordates comprised of hagfishes and lampreys, sharks, rays and chimaeras, and the finned bony fishes. The later is by far the most diverse group and is well shown in fresh water, 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.

Fishes are very rich in protein, carbohydrates, Vitamins (A, D & E), and other minerals. They are preserved by Salting, smoked or other ways. In one pound of fish the food value comes to be 300-600 calories, which is much higher in comparison to other food materials for human consumption. Fresh and preserved fishes are used as food; also protein, fat and other useful content in the body of fish are processed into a number of valuable products and by-product (B.N.Yadav) (1993).Fishes of the inland water bodies have been studied since last century , Day (1994) , Jayram (1991) , Talwar and Jhingram (1991), Rao et al (1999), Sakhare and Joshi (2002), Pawar et al (2006), Kamble (2007).

Rapid industrialization, urbanization, and population growth has led to the pollution of fresh water body as river, dam and degradation of ecosystems, especially in municipal rivers in developing countries. River water is easily polluted by domestic wastewater effluent, rainwater, agricultural run-off, and industrial wastewater, which result in severe degradation of water quality, the water becoming black and odorous, and loss of fish.

Study Area:-

Present study is going to centralize on Ghunghutta Dam Surguja. The Ghunghutta dam is located in Surguja district (22^o94N latitude & 83^o164E Longitude) of northern Chhattisgarh in India. Ghunghutta is a medium irrigation project which was constructed in 2002 across the river Ghunghutta which is a tributary of Rehar Sub basin Sone in the Ganga basin. The Dam is 14km. from the district head quarter Ambikapur. The Dam is 242.20 meter long and 31.50 meter high. The live storage capacity of the reservoir is 62.05 MCM. Mainly reservoir water is used for irrigation but it is also utilized for pisciculture practices. Their flows in township, industrial, domestic and municipal discharge merge into it at different points. The water of the reservoir is used

by urban and peripheral rural population directly at many stations for domestic and agriculture uses.

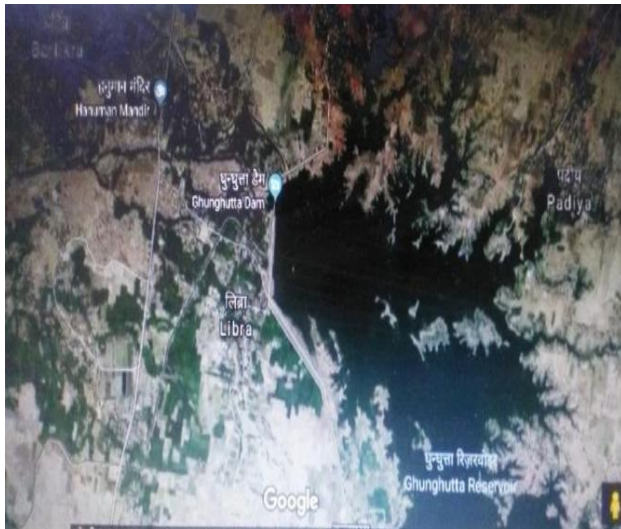


Fig. 1- Fig. 1 Satellite Map of Ghunghutta Dam

MATERIAL AND METHODS:-

The fishes were collected from the reservoir every month by repeated netting for the period of one year from June 2020- May 2021 and are preserved in 4% formalin. Fishes were identified with the help of Day (1889), Qureshi and Qureshi (1983), Talwar and Jhingran (1991), Jayram (1999).

RESULT AND DISCUSSION:-

During the Study June 2020 – May 2021, biodiversity of fishes at Ghunghutta dam sampling sites for a period of one year, a total of 21 species of fishes were recorded from 9 families, and 6 order as shown in table 1.

The catch structure of fish fauna throughout the sampling sites of Ghunghutta Dam showed a varied number of different families as shown in table no 2.

Among them, Cyprinidae was the most dominant with 10 (47.61%), Bagridae 2 (9.52%), Channidae 2(9.52%), Siluridae 2 (9.52%), Nandidae 1 (4.76%), Clariidae 1 (4.76%), Heteropneustidae 1(4.76%), respectively. Cyprinidae was the most dominant species on sampling site of Ghunghutta Dam. The distribution of family wise species composition is represented on a pie diagram as shown in Graph 1.

Month-wise catch structure of fish fauna throughout the sampling sites of Ghunghutta Dam is shown in Table No 3.

The maximum numbers of fish species was observed in the month of July with 15.78% and minimum number of fish species was observed in the month of April with 2.10%. it shows that the pollution is more predominant in summer season and less in rainy season.

Due to more fecundity of major carps and suitable environmental conditions, relatively higher population density of cypriniformes was evident in the dam similar observations were earlier made by Talwar and Jhinran (1991), Das and Chand (2003), Pathak and Mudgal (2005) Sharma (2003). In a study on similar lines, Valsangar (1993) recorded 17 indigenous and 5 introduced fish species from Shivaji Sagar reservoir a cross koyana river in Maharashtra. Sakhare and Joshi (2002) observed 28 fish species including a species of craps, 5 of cat fishes, 2 of Feather bace, 5 of Live Fishes in Hirakud reservoir. Hiware and Pawar (2006) recorded 43 fish species from Nath sagar dam paithan in Aurangabad district Krishna and Piska (2006) reported 31 Ichthyofauna insect lake, Durgamcheru, Rangareddy District. Jayabhaye.Khedkar (2008) recorded 25 fish species belonging to 14 genera, 8 families and 6 orders from Sawana dam.

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 0C. In the present study, the water temperature was found to range between 22 and 30 0C 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 0C 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 S. Krishna (2023); Saket and Pandey (2019) while analyzing the fish diversity in Ghunghutta dam reported maximum diversity to occur in Cyprinidae. These results are in conformity with the present observations

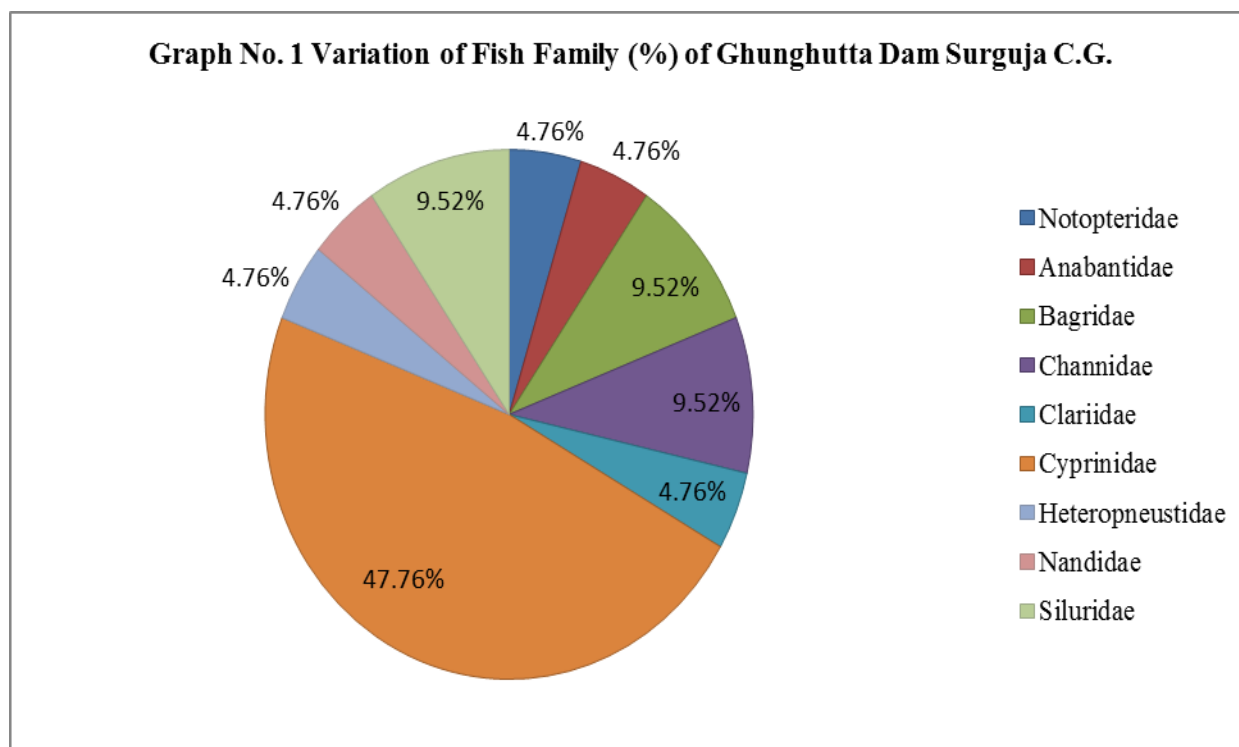
Table: 1. Fish Diversity of Ghunghutta Dam Ambikapur Surguja (C.G.)

Order	Family	Genus Species	Local name	IUCN Category	
				CAMP (1998)	CAMP (1998)
Osteoglosmes	Notopteridae	<i>Notopterus notopterus</i>	Patola	LR-nt	EN
Perciforme	Nandidae	<i>Nandus nandus</i>	Dhebari	LR-nt	LR-nt
Cypriniformes	Cyprinidae	<i>Catla catla</i>	Catla	VU	LR-nt
		<i>Cirrhinus mrigala</i>	Mrigal	LR-nt	LR-nt
		<i>C. reba</i>	Naren	VU	VU
		<i>Cyprinus carpio</i>	Common carp	LR-nt	LR-lc
		<i>Labeo rohita</i>	Rohu	LR-nt	LR-nt
		<i>L. calbasu</i>	Kriya	LR-nt	LR-nt
		<i>L. bata</i>	Bata	LR-nt	LR-nt
		<i>Puntius ticto</i>	Khadia	NE	DD
		<i>Puntius amphibious</i>	Khadia	NE	DD
		<i>Puntius punctatus</i>		NE	DD
Synbranchiiformes	Mastacembidae	<i>Mastacembus armatus</i>	Baam	NE	VU
Peraciformes	Channidae	<i>Channa marulius</i>	Padam Sauri	LR-nt	VU
		<i>Channa punctatus</i>	Sauri	LR-nt	LR-nt
	Anabantidae	<i>Anabas testudineus</i>	Kabai	LR-nt	LR-nt
Siluriformes	Bagridae	<i>Mystus vitatus</i>	Katuwa	VU	VU
		<i>Mystus seenghala</i>	Tengara	NE	LR-nt
	Clariidae	<i>Clarias batrachus</i>	Mangur	VU	VU
	Heteropnidae	<i>Heteropneustes fossilis</i>	Singhi	VU	VU
	Siluridae	<i>Wallago attu</i>	Padin	LR-nt	LR-nt

EN=Endangered, Vu (Vulnerable), LR-nt= Lower risk near threatened, LR-lc (Lower risk least concern), NE (Not evaluate), DD (Data deficient), *Exotic fish.

Table: 2 Catch structure of fish fauna showed a varied number of different families throughout the sampling sites of Ghungutta Dam Ambikapur Surguja (C.G.)

S.No.	Fish Family	No of species	Percentage
1	Notopteridae	1	4.76%
2	Anabantidae	1	4.76
3	Bagridae	2	9.52
4	Channidae	2	9.52
5	Clariidae	1	4.76
6	Cyprinidae	10	47.61
7	Heteropneustidae	1	4.76
8	Nandidae	1	4.76
9	Siluridae	2	9.52
10	Total	21	100



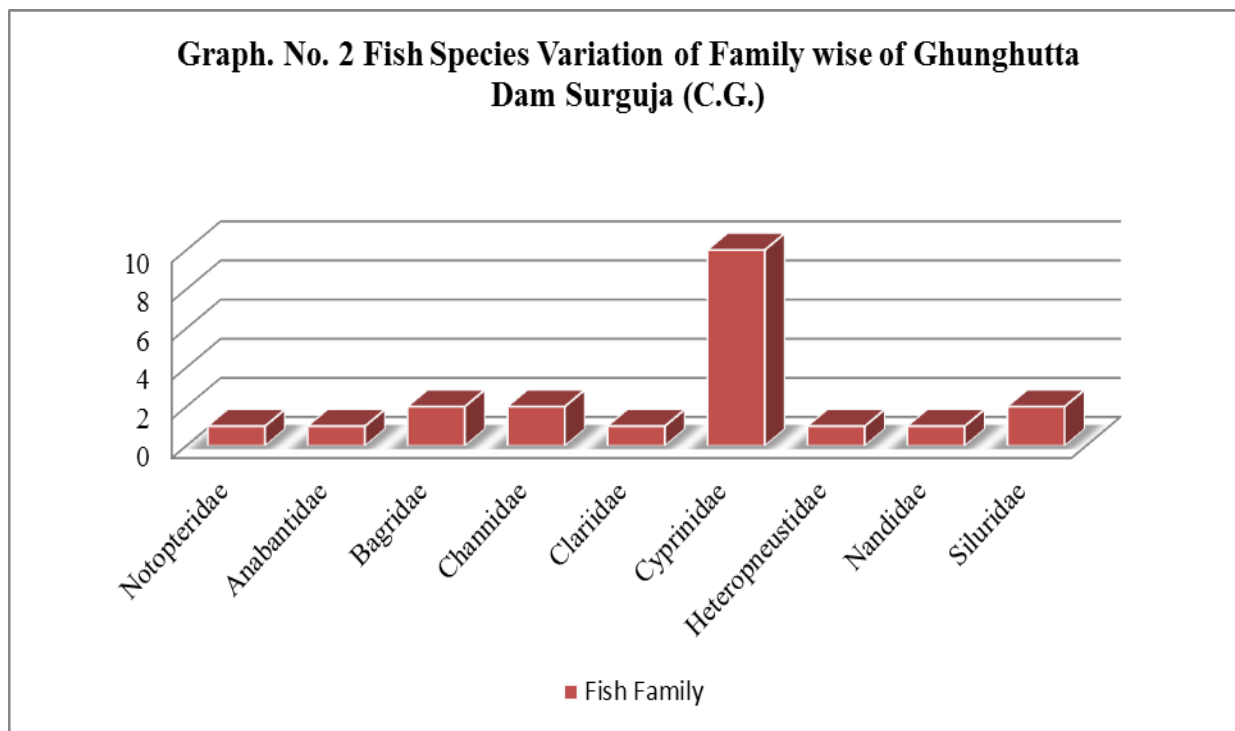
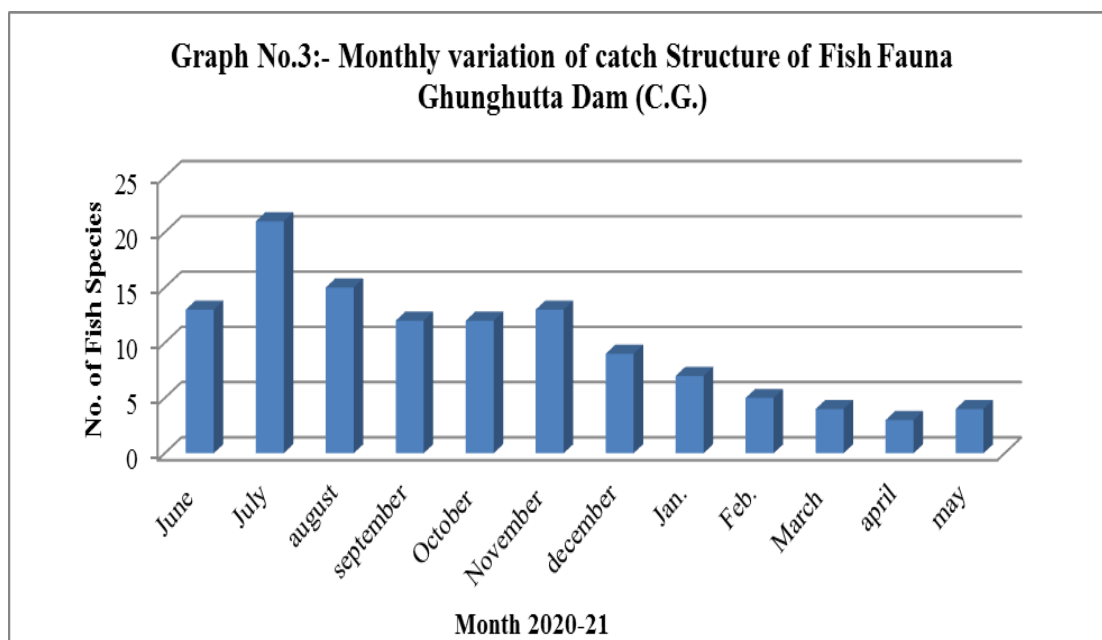


Table No 3. Monthly variation of catch Structure of Fish Fauna Ghunghutta Dam (C.G.)

S. No.	Months	No of fish species	Percentage
1	JUNE	13	13.68
2	JULY	15	15.78
3	AUGUST	13	13.68
4	SEPTEMBER	12	12.63
5	OCTOBER	10	10.52
6	NOVEMBER	11	11.57
7	DECEMBER	8	8.42
8	JAN.	7	7.36
9	FEB.	5	5.26
10	MARCH	4	4.21
11	APRIL	2	2.10
12	MAY	3	3.15
13	MIN	3	2.10
14	MAX	15	15.78



CONCLUSION:-

The present study indicates that the Ghunghutta 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 dam is gradually decreasing due to the heavy pollution load in dam created by various human and agricultural activities around the dam. Heavy silt load and total solids are the effective agents to decrease the fish population and production.

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