

ASSESSMENT OF FISH DIVERSITY AND ECOLOGICAL IMPLICATIONS IN BANGO DAM, DISTRICT KORBA (C.G.)

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ABSTRACT :- Fish enjoys a very special consideration and place in human civilization from times immemorial. Its food value, gastronomic, culinary and nutritional importance, 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. The one common goal of these all is “the fish as food for the mankind.” The study of fish fauna diversity at the micro level would unravel some remarkable facts about its vivid order family and species existing in the near past and in the present. Keeping this in mind the topic entitled "Diversity of Fish and Ecological Implication in Bango Dam Korba (C.G.) (India)" has been chosen as a problems for investigation at this stage. It is fully based on primary data generated through field observation and structured questioner. Analytical method has been used to draw inferences. During the Study June 2023 – May 2024, biodiversity of fishes at Bango Dam sampling sites for the period of one year, a total of 21 species of fishes were recorded from 10 families, and 6 order. It is also noted that the most common fishes in this region are *Labeo rohita*, *Catla catla*, *Wallage attu*, *puntius*, *Mastcembelus sp.*, *Clarius batrichus*, *Grass carp*, *Silver carp*, *Channa punctatus*, and *Piranha*. It has been reported that the fishes which are numbered, are included in the threatened category.

KEYWORDS:- Fish Species Diversity, Ecological Implication, Bango Dam Korba.

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 latter 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 have been playing a vital role not only in the ecosystem but also as a food supplement for the human all over the time and space. Once there were uncountable number of species, but today most of them have disappeared. Even their quantity has also declined alarmingly. The 1996 IUCN Red list of threatened animals lists 617 freshwater fishes (Including euryhaline salinity-level tolerant-species), about 7% of known number of fresh water fish species. Studies that take into account of fact that the red list has evaluated only a fraction of freshwater fishes estimate conservatively that 29% of fresh water fishes are extinct, endangered or vulnerable; a more realistic estimate might reach 30-35% (Stiassny, 1996) production study in the reservoir was in accordance with methodology on reservoir fisheries investigation in India.

This has drawn the attention of both the government and non-government organization. Department of fish and fisheries has established separately. Central Board of Fisheries (CBF) introduced the word "Fisheries" for the fish production which uses of modern techniques in fisheries sector. Fisheries has grown as a sunrise sector with varied resources and potential which is engaging over 14.50 million people in India at the primary level and many more along the value chain. Constituting about 6.30% of the global fish production and 5% of global

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trade, India has attained second position in both fish production and Aquaculture nation in the world. (Ministry of Agriculture and Farmers Welfare Department of Animal Husbandry, Dairying & Fisheries) (2011).

The vision of Blue Revolution is “has created an induced environment for integrated development of full potential of fisheries of the country. It has also taken care of the aspects of with substantially improvement in the income status of fishermen and fish farmers, on the one hand, and the sustainability, bio-security and environmental concerns on the other.

The present study dam water climatic condition, variety of fishes is found in abundance for a small period of time whereas fish species and its quantity get drastically reduced during most of the time. Human factors like encroachment of water bodies, its pollution and unscientific way of fishing also seem to play remarkable role in the reduction of their species and volume. Keeping the above problem in mind, fish fauna diversity has been chosen for micro level research by taking up Korba District of Chhattisgarh India, as a case study. The study area is largely inhabited by backward and tribal people which sizable section is directly and indirectly related with fishes. The aim of the present work is to fill a knowledge gap on the diversity status of fish fauna of the selected Bango dam of Korba district and its identification.

Korba district was accorded the status of a full-fledged revenue district with effect from 25 May, 1998. The district headquarter is Korba city, which is situated on the banks of the confluence of rivers Hasdeo and Ahiran. Korba is the power capital of Chhattisgarh. The district comes under Bilaspur division. The headquarter of Korba districts situated about 200 KM. from the capital city Raipur. Its lies between 22° 21' 49.8528" N and 82° 44' 5.4240" E. (Fig. 1). Bango Dam is a dam constructed in 1961-62 across the Hasdeo river in Chhattisgarh, India. It is the longest, widest dam in Chhattisgarh and the first multi-purpose water project in Chhattisgarh. It is located 70 km from Korba, Korba district. It has a catchment area of 6,730 km². The dam has a large effective storage capacity of 2.89 cubic kms (102.07 tmc ft). It has the capacity to generate 120MW electricity. Hasdeo Bango Dam is constructed across Hasedo river.

The river originates about 910.0 m (2,985.6 ft) above sea level, at a place about 10.0 km (6.2 mi) from Sonhat in Koriya district. The total length of the river is 333.0 km (206.9 mi), Among the above-mentioned water resources many are perennial and annual.

REVIEW OF LITERATURE:-

The fishes of the world are of varied nature in terms of body features, colorations and sense organs. This due to the geographical conditions in which they originate and grow. These conditions also determine their magnitude. That's why fishes of tropical land are quite distinct from that of the temperate and cold areas. Since tropical climate is further divided into four sub regions viz. Equatorial, Monsoon, Savanna and Hot Desert (Koeppen V., 1936). The tropical monsoon climate is characterized by scorching summer season followed by rainy session and harsh winter season. During the rainy season rivers, nalas and ponds overflow due to heavy rainfall in the eastern part. This also causes submergence of low-lying areas which look Likes Sea. Opposed to it the hot summer season experiences no rain thereby resulting in dryness of numerous rivers, Canal, ponds, streams and low-lying areas.

The natural calamities, anthropogenic activities and pollution may destroy or modify the habitat of freshwater fishes (Sarkar, 2021). These are the major threats for aquatic ecosystem (Cowx, 2002, Lyubov, 2011). Over fishing or indiscriminate fishing (use of mosquito net, dynamite and electro fishing) causes mass mortality of fish species and huge reduction of their population size (Sarkar et al., 2008, Singh, 2019) and introduction of exotic fish may cause the introduction of new diseases and parasites in new habitat. They are also increase the conflict between exotic and Indigenous fishes and finally the introduced exotic fishes may reduce the population size of indigenous fish species (Singh and Lakra, 2011). Maintained record of rare non-commercial fish species, endangered fishes. Same work done by Beata Wiecek et.al 2015 and Uttam kumar Sarkar et.al.2013.

MATERIAL AND METHODS:-

Study Area: Bango Dam, situated near the town of Korba in Chhattisgarh, India, is an eminent multipurpose dam built on the Hasdeo River, a tributary of the Mahanadi River. This dam is a critical source of both

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irrigation and hydroelectric power generation for the region. With a catchment area that spans a considerable expanse, it creates a substantial reservoir, which is not only functional but also scenic. The serene atmosphere and picturesque beauty make it a popular spot for picnics and leisure outings. The lush green surrounds and the tranquil water attract nature lovers and provide an excellent opportunity for bird watching, especially during the migratory season. The reservoir is also a favored spot for anglers. With the industrial city of Korba in the vicinity, the dam provides a much-needed respite from the bustle of urban life, offering a unique blend of natural beauty and industrial significance.

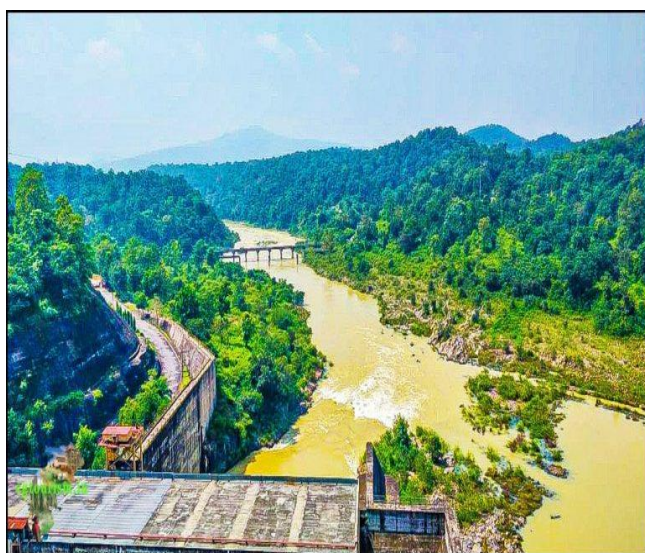


FIG-1. A VIEW OF BANGO DAM KORBA (C.G.)

The study area falls in the tropical monsoon climate. Its most of the rivers are seasonal excepting Shivnath River. Even the ponds and dams almost get dry during the summer season. The Shivnath River presents small and big patches of pool of waters. Its bed is stony in nature. But it overflows during the rainy season. In this season variety of fishes from downstream riches not only to its source area is including tributaries, nalas and ponds and low-lying fields. Thus, both volume and varieties of fishes increased; the abundance of fishes in this period and its rareness during the summer season attracts the researchers to take up a thorough study as it not only provides livelihood to fish catchers and its sellers but also provides reach source of protein to its consumers. The area of research in this region is virgin.

Sampling and data collection were done for one-year June 2023 to May 2024. Two traverses have been selected for the field survey Bango dam Korba district (C.G.). Observation method has been applied to note down variety of fishes caught and brought by the fishermen for selling local hats and bazaar along this traverse. Fish species were collected with the help of local fishermen and the tribal people at various locations. The specimens were preserved in 5% formalin, morphological measurement with the help of fishes of UP and Bihar by Gopal Ji Shrivastva (2010) and the fresh water fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka - A Hand Book by K.C. Jayaram.1994 (Edited by the Director, Zoological Survey of India, Kolkata). Species Diversity of fishes are measured the following method. Sunita Bakawale and Kanhere R.R. (2013). Fish identification, classification and arranged with the help of Talwar and Jhingran (1991) with slight modification by days Fauna (1958), Jayaram (1999), Mondal (2014) species identification was done on the basis of morphometric characters-total & standard length of the body.

RESULT AND DISCUSSION:-

In a developing economy context, open water inland fisheries not only play an important role for the diet and health of the population, but also the livelihood of many people engaged in this activity. This very important fact the socio-economic status of village population and urban population has been depending on the available water resources, which are nearby. Fish marketing is one most important small-scale industry for the urban and rural peoples. Especially it has been seen during weekly hat and bazaar in villages; find different varieties of small and large fishes. The monitoring surveys and identification oriented to common fishes, endangered and non- commercial fish's species which are observed during the study. Rapid degradation and serious threats of aquatic biodiversity has been seen in Indian scenario.

During the Study June 2023 – May 2024, Ecological Implication of fish diversity at Bango dam for a period of one year, a total of 21 species of fishes were recorded from 10 families, and 6 order as shown in table 1.

Table: 1. Fish Diversity Bango Dam at Korba District (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
Synbranrmes	Mastacemdae	<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>Heteropnees fossillis</i>	Singhi	VU	VU
	Siluridae	<i>Wallago attu</i>	Padin or Lonch	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.

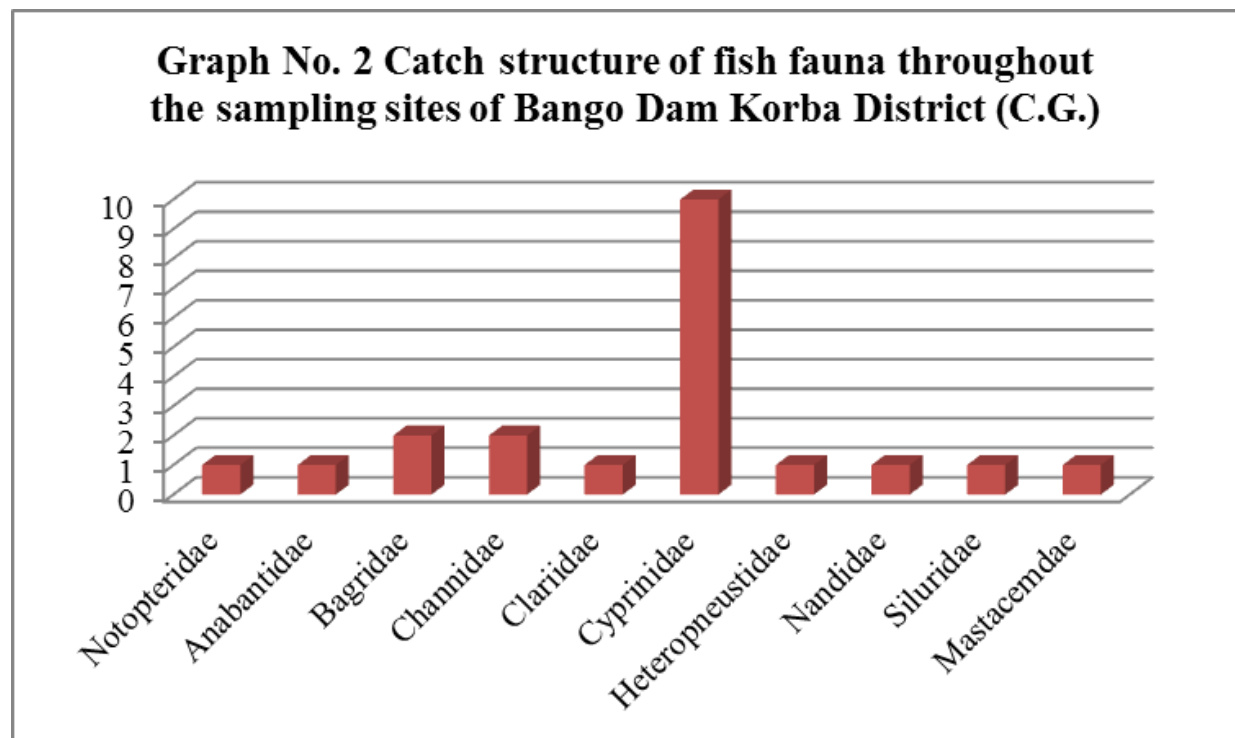
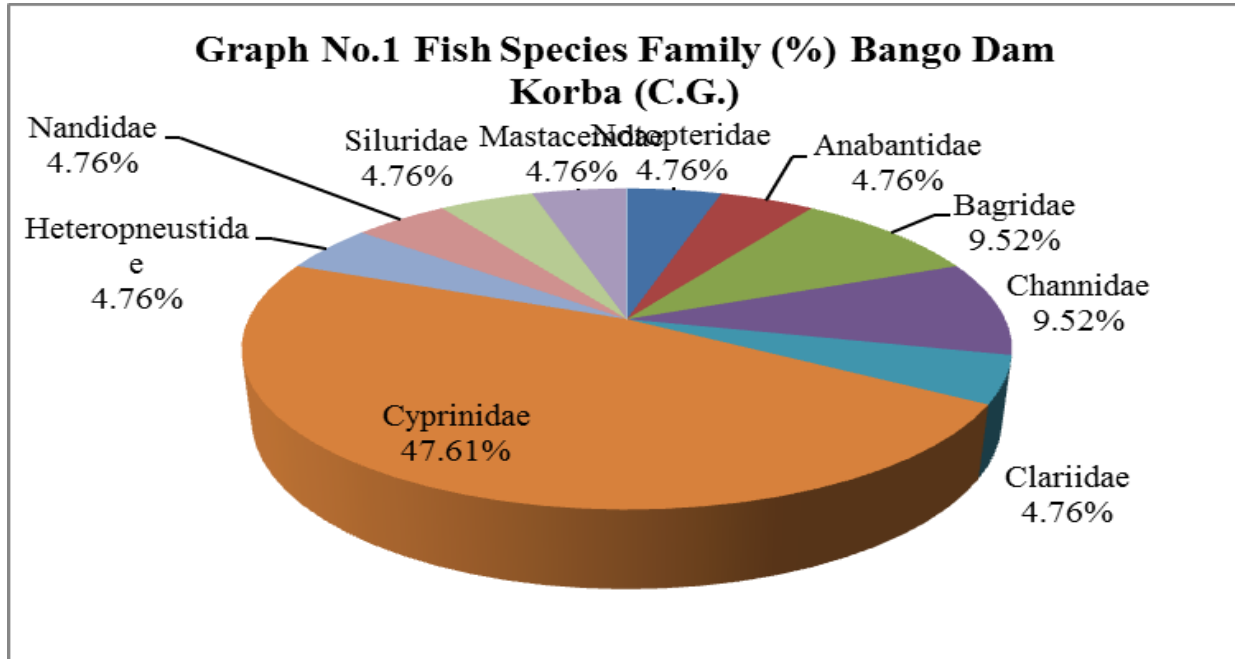
The catch structure of fish fauna throughout the sampling sites of Bango dam showed a varied number of different families as shown in table no 2.

Table: 2. Catch structure of fish fauna throughout the sampling sites of Bango Dam Korba District (C.G.)

S. No.	Fish Family	No of species	Percentage (%)
1	Notopteridae	01	4.76
2	Anabantidae	01	4.76
3	Bagridae	02	9.52
4	Channidae	02	9.52
5	Clariidae	01	4.76
6	Cyprinidae	10	47.61
7	Heteropneustidae	01	4.76
8	Nandidae	01	4.76
9	Siluridae	01	4.76
10	Mastacemdae	01	4.76
	Total	21	100

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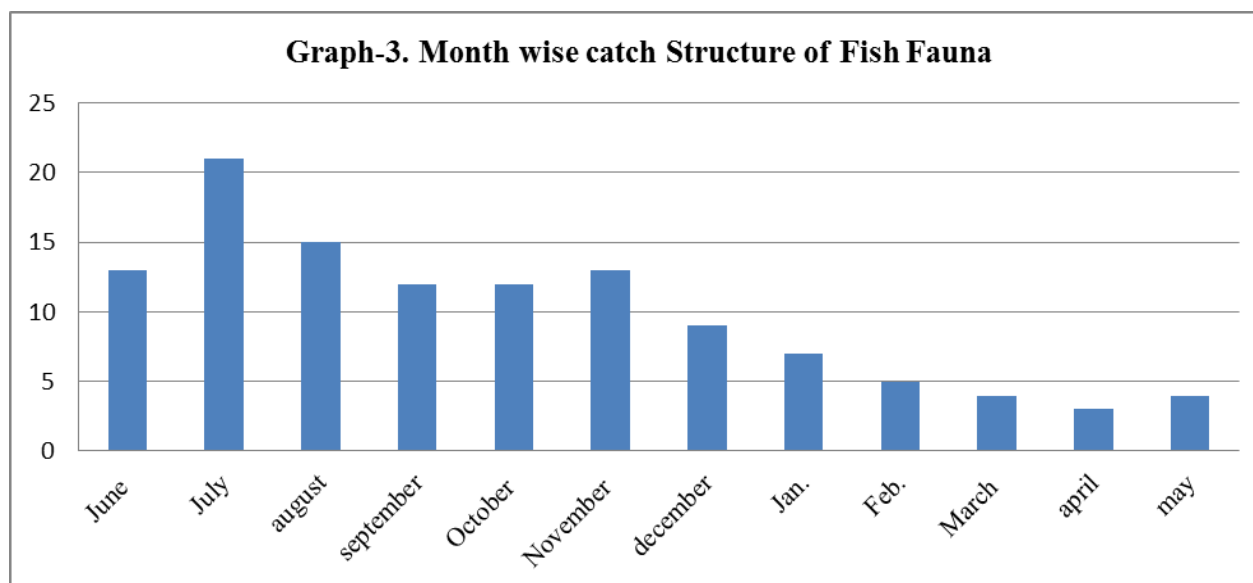
Among them, Cyprinidae was the most dominant with 10 (47.61%), Bagridae 2, (9.52%), Channidae 2(9.52%), Siluridae 1 (4.76%), Nandidae 1 (4.76%), Clariidae 1 (4.76%), Heteropneustidae 1(4.76%), respectively. Cyprinidae was the most dominant species on sampling site of Bango dam. The distribution of family 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 Bango dam Korba (C.G.) is shown in Table No 3.

Table No 3. Month wise catch Structure of Fish Fauna

S. No.	Months (June 2023 to May 2024)	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	08.42
8	JAN.	7	07.36
9	FEB.	5	05.26
10	MARCH	4	04.21
11	APRIL	2	02.10
12	MAY	3	03.15
13	MIN	3	
14	MAX	15	



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. During the

field observation and according to respondents recorded 21 species (table 1). This distribution can be easily he above result shows that percentage of common carp fishes like rohu, catla, mrigal and silver carp are the dominant fishes in the study area. *M. Tengna*, *M.*

Cavasiusu, M. Oar, and w. attu has found in moderate quantity. The above result shows that percentage of common carp fishes like rohu, catla, mrigal and silver carp are the dominant fishes in the study area. *M. Tengna, M. Cavasiusu, M. Oar, and w. attu* has found in moderate quantity. This uneven distribution of fish families and species seems to be attributed to the regular seed production and fish production of major carps in Chhattisgarh by both the government and the private hatcheries playing a vital role in view of taking the state amongst the highest fish producing state in the country. The rural and tribal fishermen are also showing much interest in purchasing fast growing fish seed for making more money in short duration. This is clearly seen in good price of Rohu, catla and mrigal in the market. These steps have also damaged the natural aquatic environment as large numbers of families and species are hardly seen nowadays. There low propensity has laid them to the verge of extensions that's why quit a good number of them have been reported as an endangered fish species, which troubles the conservators and environmentalist.

CONCLUSIONS:-

In the present investigation, it was concluded that the Bango dam is a healthy water body providing a habitat for fresh water fishes of diverse type. However, there is constant threat to fish population due to eutrophication and illegal fishing activities. The illegal fishing activities should be banned to prevent depletion of fresh water fish resources and further studies should be conducted to generate more details regarding seasonal production and ecology of fishes. In the light of present study of Bango dam, it is time to make proper policies and take necessary steps to implement so that the future generation can get the fishes lively on earth.

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