



## “Ichthyofaunal diversity of Parasдох dam of Tapti River in Betul District”

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### Abstract

The present study was conducted for the ichthyofaunal diversity of Parasдох Dam of Tapti river Betul District. Parasдох dam of Tapti river has been constructed on Tapti river. The water of dam is used for irrigation, fishery and drinking purposes. Fish collections were done with gillnets of standardized dimensions with several mesh sizes. The study were conducted during January 2021 to December 2023. 24 species of freshwater fishes and 23 taxa was identified during this study. The Ichthyofaunal diversity spans through 8 families and 6 orders. The diversity of fishes showed that the water quality of Parasдох dam is quite favourable for aquatic organisms. Changes in ichthyofaunal diversity can be used to know the changes in freshwater ecosystem as ichthyofaunal diversity is largely dependent on available food sources and predators present in given ecosystem.

**Key Words:** Ichthyofauna, Diversity, Dynamics, Freshwater ecosystem.

### Introduction

Fishes have nutritive value and are of great benefit from commercial point of view. Riverine fish fauna is subjected to a series of habitat changes such as water current, turbidity level, fishing pressure, loss of breeding grounds and the changes in fish food organisms due to environmental factors. India is one of the mega biodiversity countries and occupies ninth position in terms of freshwater mega biodiversity country. Freshwater biodiversity contains almost all conceivable aquatic habitats with 21,723 living species of fish have been recorded out of 39,900 species of vertebrates. (1) Fish is one of the major groups of vertebrates. It influences human life in a number of ways. It is a rich source of food and fish plays a predominant role in overcoming the nutritional deficiencies of Proteins, fat and vitamins. It also provides several by-products like fish meal, fish glue and fish oil etc. Fish not only provide food but boost up the economy of many countries of the world as well (2). Fishes are very important from the biodiversity point of view and are the best bio-indicators of the given ecosystem (3). Over the last century, riverine ecosystems have suffered most due to intense human intervention resulting in habitat loss and degradation. As a consequence, many species of fishes have become highly endangered, particularly in rivers where heavy burden is placed on freshwater resources. The main causes of depletion fresh water diversity are habitat destruction and defragmentation (4), water abstraction, industrial pollution and private use (4-7) exotic species introduction, pollution (8) and global climate change impacts (9,10). Freshwater fish are one of the most threatened taxonomic groups (11) because of their high sensitivity to the quantitative and qualitative alteration of aquatic habits. (12, 13, 14). Pawara et al. (15) found 18 fish species belonging to 5 orders, 8 families and 14 genera in Godavari River at Dhangar Takli of Parbhani district in Maharashtra. Borana and Zafar (16) studied Ichthyofauna of western region of Narmada River, Madhya Pradesh and recorded that fifty-eight fish species belonging to thirty-eight genera, sixteen families and six orders. Tapti is a major river in central India. It is one of the major river of peninsular India, with the length of around 724 kilometers. The river arises from a place called Multai, situated in Betul district of eastern Satpuda range of southern Madhya Pradesh and flows Westward to Madhya Pradesh Nimar region, Maharastra's Khandesh and East Viderbha regions in North West corner of the Deccan plateau and South Gujrat, before emptying into the Gulf of Cambay of Arabian sea, in the Surat district of Gujrat. The Tapti basin lies in the states of Maharastra (51504 sq/km), Madhya Pradesh (9804 sq/km) and Gujrat (3837 sq/km). the Parasдох dam situated on Tapti river district Betul. Biodiversity means the variation in the genetics and lifeforms of populations, species, communities and ecosystem. Biological diversity is important to the fulfillment of human needs. Fishes from highest species diversity among all vertebrate groups a part from its economic importance.

### 2. Material and Methods:

**Study area:** The present study is conducted at The Parasдох dam constructed on Tapti River located near village Pachdhar of Multai Tehsil District Betul M.P. The location of reservoir in at longitude 78°01'03", Latitude 21°41'16". The total Catchment area at the reservoir site is calculated as 588.50 km<sup>2</sup> and with intercepted C.A. of 324.94 km<sup>2</sup> & net C.A. of 263.56 km<sup>2</sup> 75% dependable yield works out as 61.22 MCM. 13 Nos. of minor and one medium scheme is constructed and 6 Nos. of scheme are proposed on the U/S of Parasдох dam. It's water mainly used for drinking water source, irrigation and fisheries. It is located 30 km from Betul. Parasдох dam is mainly rain-fed and receives the water of Tapti rivers, the cultivated land and forest area around it. For present study area divided in to four sampling sites and all the samples will be collected according to the standard protocols. Water samples collected from four sampling

stations selected for the analysis are site-S1 (near Overflow Outlet of reservoir), Site-S2 (Near main wall of reservoir), Site-S3 (Near Goula village) and Site-S4 (Near Pachdhar Village) Fig 1.

Samples for the analysis were collected from four different stations of Parasдох reservoir. The water sample was collected on monthly and seasonal basis from 7.00 to 9 AM. Various physico-chemical parameters were analysed following the method as give in (APHA 2017, Adony, 1985).

### Sampling Period:

Fishes were collected from four different sites of the study area for two consecutive years i.e. from January 2021 to December- 2023 with the help of local fishermen and brought to the laboratory.

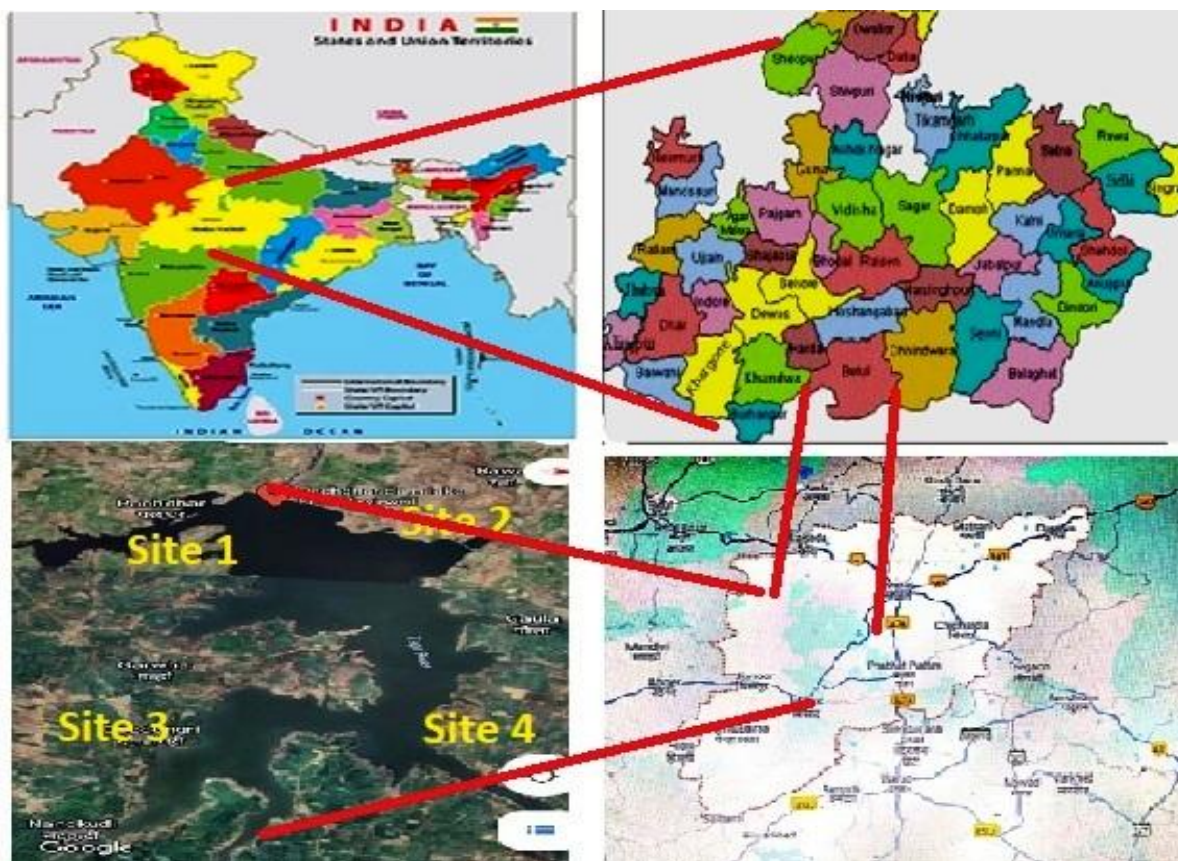


Fig. 1 Location map of Parasдох dam with Sampling Sites

**Collection of Sample:** Fishes were collected from Parasдох Dam of different sites of the study area for two consecutive years i.e. from January2021 to December- 2023 with the help of local fishermen and brought to the laboratory. Collected fishes were labeled; preserved and identified by using Day (18) for any further confirmation Zoology Department; J H Govt P G College Betul was concerned.

### 3. Result and Discussion

The present study showed 24 fish species,13 genera,7 families, 6 orders were recorded in the four sites respective viz. site-S1 (near Overflow Outlet of reservoir), Site-S2 (Near main wall of reservoir), Site-S3 (Near Goula village) and Site-S4 (Near Pachdhar Village).

Total twenty species of fishes were noticed in the Site-1 from the observed species *Labeo rohita*, *Catla catla*, *Cirrhinus mrigala*, *Laubuca laubuca* are the main fishes of Parasдох dam of Tapti River. The member of order Cypriniformes were found dominated. The most abundant family of fishes was Cyprinidae 80% then Ophicephalidae 5%, Siluridae 7%, Belonidae 2% and Notopteridae 2% while families like Mastacembelidae, Bagridae, Schiibeidae, Anguillidae together constituting nearly 1% each (Fig.2). during investigation we also reported some of the threatened fish species *Notopterus chitala*, *Tor tor*, *Labeo dussumieri*, *Mystus punctatus*, *Anguilla bangalensis*. Total eighteen species were recorded in the Site-2: trhe most abundant family of fishes was Cyprinidae 82%, Ophicephalidae 5%, Siluridae 5%, Notopteridae 4% each and other families Mastacembelidae, Bagridae, Belonidae, Schiibeidae, Anguillidae constituting 1% each (Fig.3). Total nineteen species were recorded in the Site-3: the most abundant family of fishes was Cyprinidae 83%, Ophicephalidae 6%, Siluridae 5%, Mastacembelidae 2% each and other families Belonidae, Notopteridae, Bagridae, Schiibeidae, Anguillidae constituting 1% each (Fig.4).

Total twenty four fish species were recorded in the Site-4: the most abundant family of fishes was Cyprinidae 85%, Ophicephalidae 4%, Siluridae 6%, Mastacembelidae 2%, each and other families Bagridae, Belonidae, Schiibeidae,

Notopteridae, Anguillidae constituting 1% each (Fig.5). The total twenty fish species recorded at Site-1, eighteen fish species recorded at Site-2, nineteen fish species recorded at Site-3 twenty four fish species recorded at Site-4.

As an outcome of the present Ichthyofaunal study, in all 24 fresh water fish species and 22 taxa were identified from Parasдох Dam which belongs to 8 families and 5 orders. The family Cyprinidae was dominant with 12 fish species (55%) followed by Siluridae 02 (9%), Channidae 02 (9%), Mastacembelidae 02 (9%), Notopteridae 01 (5%), Clariidae 01 (5%), Gobiidae 01 (4%), Bagridae 01 (4%) (Figure 1).

**Table 1: Distribution of Ichthyofauna of Parasдох dam of Tapti river.**

Order	Family	Species	Local name
Clupeiformes	Notopteridae	<i>Notopterus notopterus</i>	Patola
Cypriniformes	Cyprinidae	<i>Catla catla</i>	Catla
		<i>Labeo rohita</i>	Rohu
		<i>Labeo calbasu</i>	Kalbos
		<i>Labeo bata</i>	Nawari
		<i>Labeo fimbriatus</i>	Tambir
		<i>Rasbora daniconius</i>	
		<i>Cirrhinus mrigala</i>	Mrigal
		<i>Cirrhinusreba reba</i>	Masha
		<i>Cyprinus carpio var. nudus</i>	Common carp
		<i>Cyprinus carpio var. communis</i>	Comman carp
		<i>Puntius sophore (Hamilton)</i>	Palushi
		<i>Puntius sarana (Hamilton)</i>	
		<i>Puntius clupeids</i>	
		<i>Puntius ticto</i>	Kaoli
		<i>Gonoproktopterus kolus (Sykes)</i>	Batter
		<i>Crossocheilus latius(Hamilton)</i>	Sandkoa
		<i>Garra mullya (Sykes)</i>	Maya
	<i>Labeo sp</i>		
	<i>Tor tor</i>		
Perciformes	Channidae	<i>Channa punctata (Bloch).</i>	Dhadkya
		<i>Channa marulius (Hamilton)</i>	Marai
		<i>Channa gachua</i>	Dheri Dhok
	Gobiidae	<i>Glossogobiusgiuris (Hamilton)</i>	Dhisala
Siluriformes	Siluridae	<i>Wallago attu.</i>	
		<i>Ompokbimaculatus (Bloch)</i>	Patava
		<i>Ompac pabda</i>	Kaliwanz
	Bagridae	<i>Mystus bleekeri (Day)</i>	Katarna
		<i>Mystus seenghala</i>	
		<i>Mystus vittatus</i>	Singhard
Clariidae	<i>Heteropneustes fossilis (Bloch)</i>	Shikker	
Synbranchiformes	Mastacembelidae	<i>Mastacembelus armatus (Lacepede)</i>	Bam
		<i>Macrognathus pancalus (Hamilton)</i>	Bam

**Table 2: Distribution of fishes Familywise percent composition at different study sites.**

SN	Fish family	Study Site 1	Study Site 2	Study Site 3	Study Site 4
1	Notopteridae	2	4	1	1
2	Cyprinidae	80	82	83	85
3	Siluridae	7	5	5	6
4	Bagridae	1	1	2	1
5	Belonidae	2	1	1	1
6	Ophiocephalidae	5	5	6	4
7	Mastacembelidae	1	1	1	1
8	Other	2	1	1	1

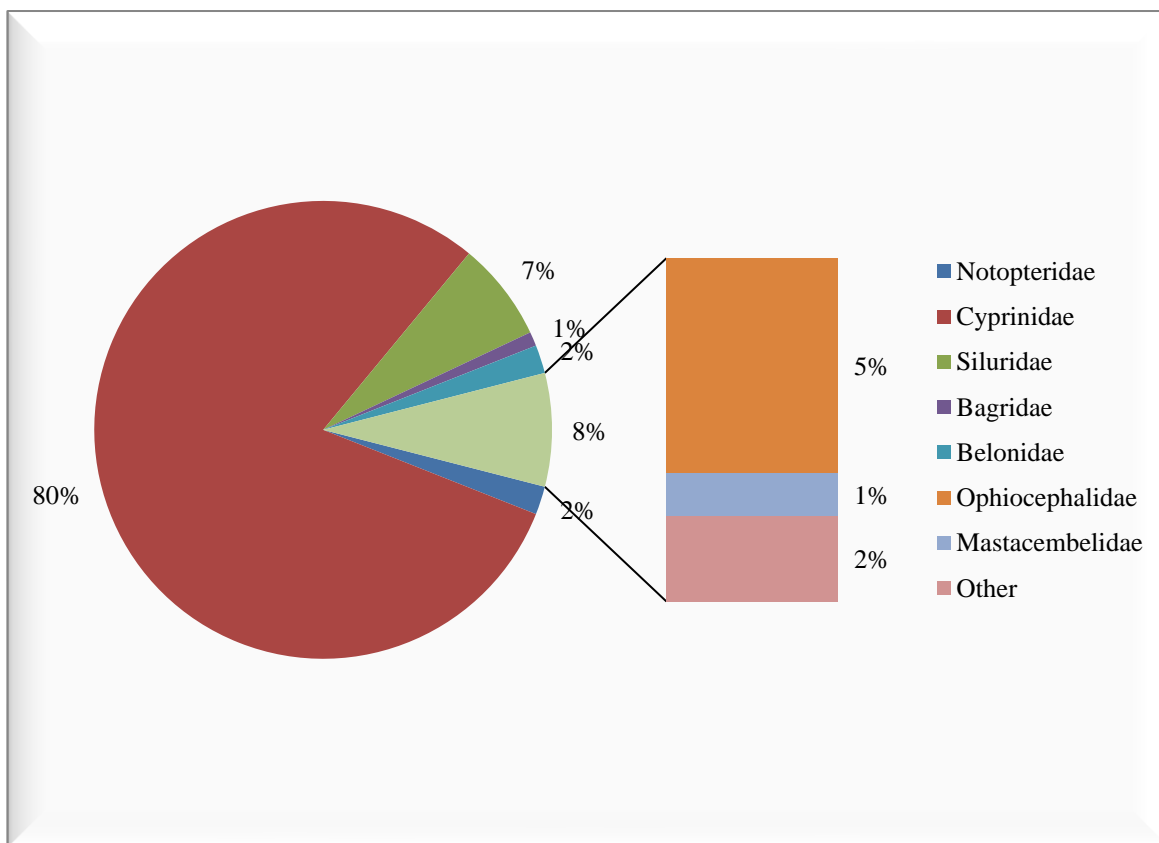
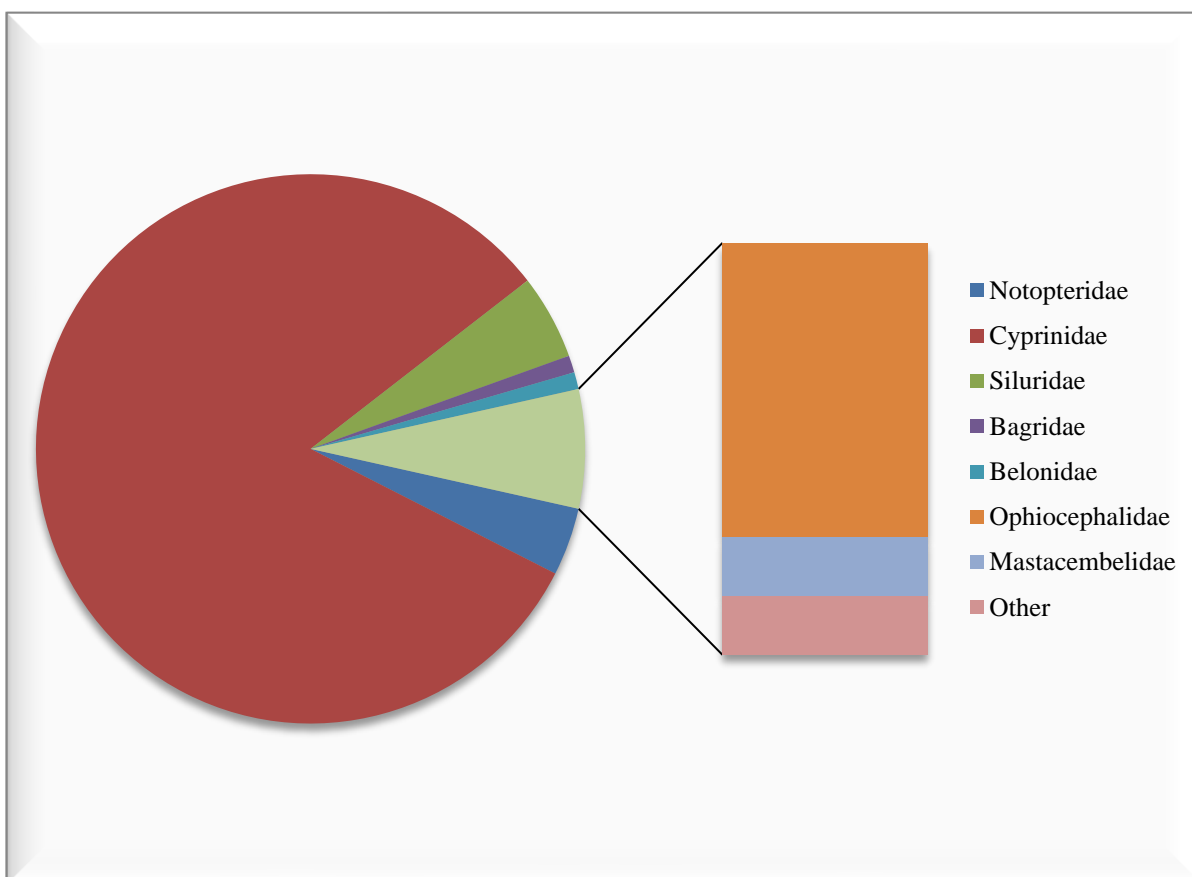
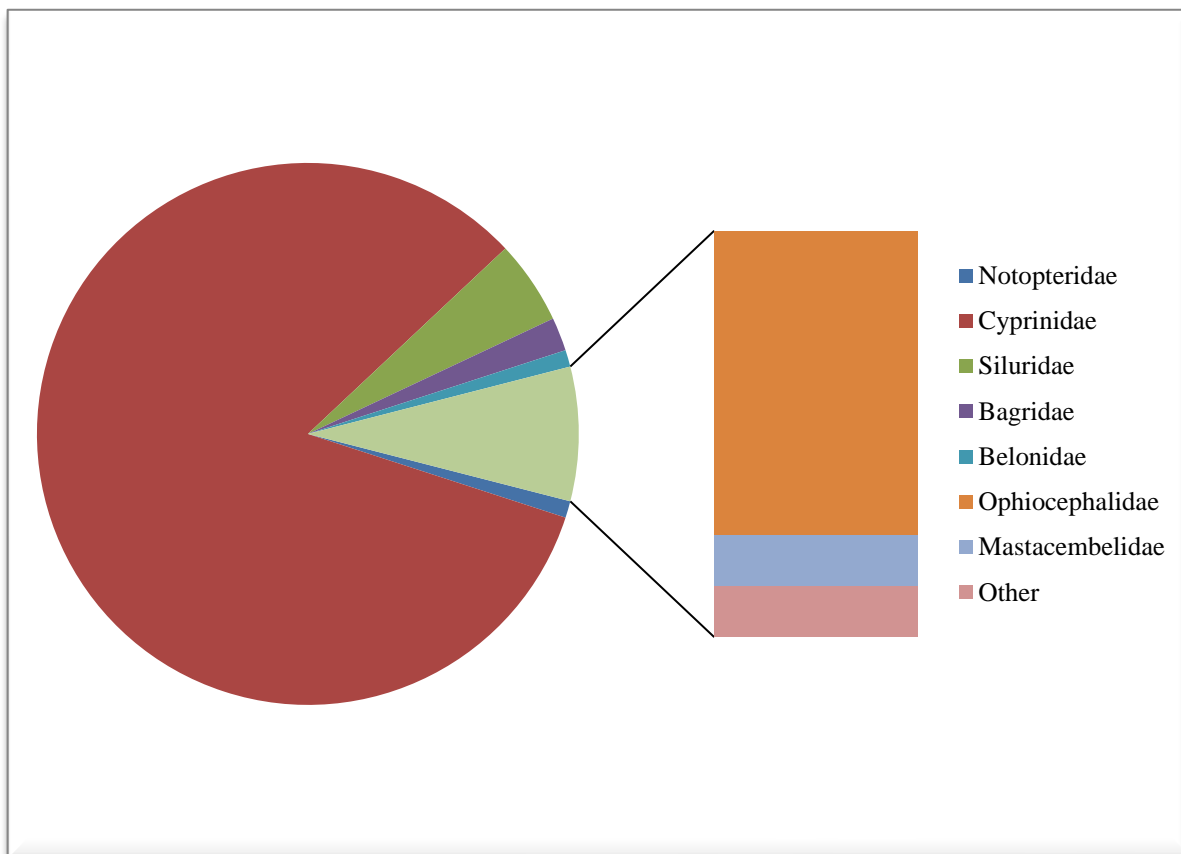
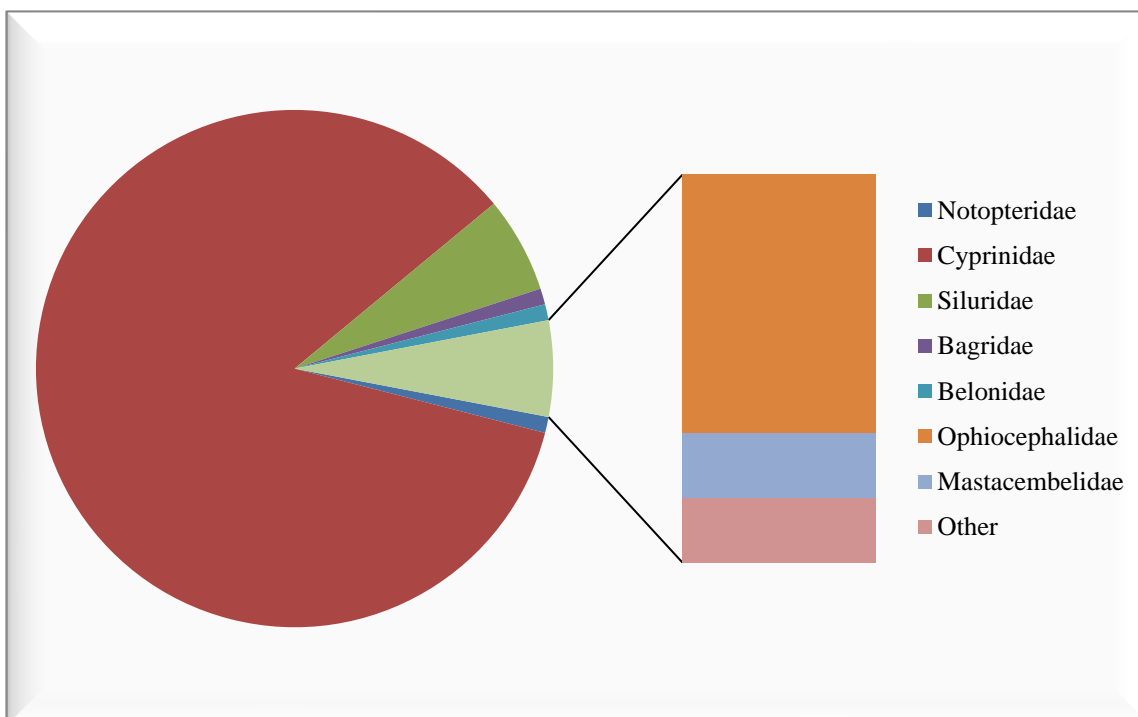


Fig. 2: Familywise percent composition of fishes of study Site 1





**Fig. 4: Familywise percent composition of fishes of study Site 3**



**Fig. 5: Familywise percent composition of fishes of study Site 4**

In accordance with our results Karamchandani et al. (1967) studied the fish and fisheries of Tapi river and noticed 52 fish species consisting 14 families. In 2003 Lohar and Borse reported 24 fish species belonging to 7 families in Tapi river of Maharashtra state. Damde et al. (2010) also recorded highest diversity at sacred sites as compared to others sampling sites in Tapi river of Madhya Pradesh. Similarly, Chaudhary and Patil (2010) reported Ichthyofauna of Tapi river (Bhusawal district) water listed 22 species under 15 genera belonging to 9 families and 6 orders. Total 32 fish species belonging to 5 orders, 9 families and 33 genera obtained in the Tighra reservoir. Furthermore, 20 fish species

from Tapti river (Betul district) and 70 fish species from Chambal river (Western M.P.) have been obtained (Mahor, 2011). Sharma et al. (2011) have observed by survey of Narmada river and have reported 42 species belonging to 25 genera 7 order and 14 families. Chouhan et al. (2013) have observed by survey of Narmada river and have reported 59 fish species, 34 genera 7 order and 17 families. Pathak et al. (2014) reported 58 fish species were collected and identified from Western segment of river Narmada (M.P.) which belongs to 38 genera, 16 families and 6 orders. The present study mainly focuses on fish collection and distribution in Parasдох dam of Tapti river. Recent data regarding fish diversity, aiming to contribute a better knowledge of the fish diversity of Tapti river. To conserve fish biodiversity has an extensive importance as it is not always possible to identify individual species severely to assist aquatic ecosystem. The Parasдох dam of Tapti river of consist a number of fresh water species of fishes. The fish fauna of Parasдох dam eg. *Notopterus chitala*, *Tor tor*, *Tor khudree*, *Tor putitora*, *Tor mussulah*, *Garragotyla*, *Labeo dussumieri*, *Rajamus bola*, *Ompak bimaculatus*, *Ompak pabda*, *Rita pavementata*, *Rita chrysea*, *Mystus punctatus*, *Eutrophichthys vacha*, *Clupisoma bastari*, *Anguilla bangalensis* are threatened due to several anthropogenic activities like pollution, deforestation, over fishing. Due to changes in environmental changes, increasing global warming, pollution and other harmful toxin effect adversely to the growth of fish. Ichthyofaunal diversity has an endangered zone. We can't assume the estimated life cycle.

#### 4. Conclusion:

The findings of present survey showed that the diversity of fishes in Parasдох dam is dominated by Cyprinidae family and most of the fishes or the dam are belonging to this family. Most of the fishes are carps and they are also in demand. The result suggested that the water parameters of the dam are still favourable for the aquatic life. Documentation of biodiversity is very much important aspect to understand different ecosystems and their interactions. One should know what really exist and then planning for conservation can be made. These types of studies for understanding Ichthyofauna are very important in order to conserve fresh water bodies. These water bodies are life lines for the peoples who live nearby them. Due the anthropogenic activities fish diversity of these fragile smaller-ecosystems are at huge loss. Long term management plan is required to conserve this inherent treasure. This type of study is very much important in designing conservation management plans.

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