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Icthyofaunal diversity of Angoori Barrage, Datia Madhya Pradesh

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Abstract
The present research work was carried out to explore the ichthyofaunal diversity of Angoori Barrage in Datia district of Madhya Pradesh from January 2020 to December 2021. The study was conducted in four different sampling sites of Angoori Barrage for analyzing the different varieties of piscian species, which includes Gandhari, Lamacha, Pisnaari and Dam head. During the present study, a total 18 species of fishes were documented which were classified under the 08 orders and 12 families. Order Cypriniformes (38.88%) contribute maximum number of piscian species followed by Siluriformes (27.77%), Beloniformes, Ophiocephaliformes, Osteoglossiformes, Perciformes, Anguilliformes and Cichliformes (5.55%) respectively. In the present study share percentage composition of piscian species of order Cypriniformes was dominant with 07 species followed by Siluriformes with 05 species, while order Beloniformes, Ophiocephaliformes Perciformes, Osteoglossiformes, Anguilliformes and Cichliformes were represented by single species respectively.

Keywords: Ichthyofaunal diversity, Angoori Barrage, Madhya Pradesh

Introduction
Datia district is situated in the Gwalior division at north area of Madhya Pradesh state. It lies between the 25.6845° North and 78.5661° East. Angoori Barrage is an important water body which was constructed under the Rajghat Canal Project for irrigation and drinking water supply in the year 1992-93. This Barrage has provided a new life to the population of Datia district through irrigation and drinking water supply. Beside irrigation and drinking water supply for the surrounding area, this Barrage is also used for composite fish culture. The diversity of piscian fauna has its own significance value because fisheries business plays a crucial role in the economic sector. Fishes are the most important valuable cold blooded aquatic animal in terms of nutritional value as well as medical point of view.). Over a thousand of piscian species occur in India (Jhingran, 1985) [5]. The Indian fish fauna is an assemblage of about 2500 species depicted diverse characteristics, of which 930 belonging to 326 genera inhabit the inland water (Jayaram, 1999) [4] and 1570 are found in marine water (Kar *et al*, 2003) [6]. In India, 2,246 indigenous fin-fishes have been described of which 765 belongs to fresh water (Lakra *et al*, 2009) [7]. The freshwater fishes are distributed amongst approximately 20 orders, 100 families and 300 genera (Daniels *et al*., 2000) [3]. Today various fisheries resources are wiped out across the India due to greater human invasion as well as water pollution load on aquatic bodies. Ichthyodiversity is the most significant knowledgeable scientific field to assess the different kind of piscian species of any aquatic body. Therefore from author point of view, the main objective of this research work acts as a baseline information window for different varieties and piscian composition of Angoori Barrage of Datia district.

Material and Methods
Data Collection and Analysis: The fish samples were collected and identified from all four ampling sites with the help of local fish catchers**.** These fishermen use various kind of gill and cast nets of different mesh size for trapping the fishes. Some local fishermen operated boat (kisti) also during day time for fishing activities. The collected fish samples were examined and identified with the help of standard authentic keys and literature. The literatures used for this research investigation such as Days (1958) [2], Jhingaran (1985) [5]. Jayaram (1999) [4], Talwar and Jhingran (1991) [13] and Srivastava (1980) [17].

Fig 1: Satellite image of Angoori Barrage

Result and Discussion

During the present research work, a total eighteen fish species were documented. These belong to eight order namely Beloniformes, Cypriniformes, Ophiocephaliformes, Siluriformes, Osteoglosiformes Perciformes, Anguilliformes and Cichliformes and twelve families Belonidae, Cyprinidae, Channidae, Notopteridae, Ambassidae, Bagridae, Clariidae, Heteropneustedae, Pangasiidae, Siluridae Anguillidae and Cichlidae. The identified fish species (Table:02) includes *Xenentodon cancila, Labeo rohita, Catla catla, Labeo calbasu, Ctenopharyngodon idella, Cyprinus carpio, Puntius sophore, Rasbora doniconius, Channa striatus Notopterus notopterus, Chanda nama, Sperata aor, Clarias batrachus, Heteropneustes fossilis, Pangasius bocourti, Wallago attu, Anguilla bengalensis and Oreochromis mossambicus.* Order Cypriniformes contain one family with six genera and seven species (38.88%), order Siluriformes with five families and five genera along with five species (27.77%), while order Beloniformes, Ophiocephaliformes, Osteoglossiformes, Perciformes, Anguilliformes and Cichliformes each with only single family, one genera and one species (5.55%) respectively. (Table: 01)

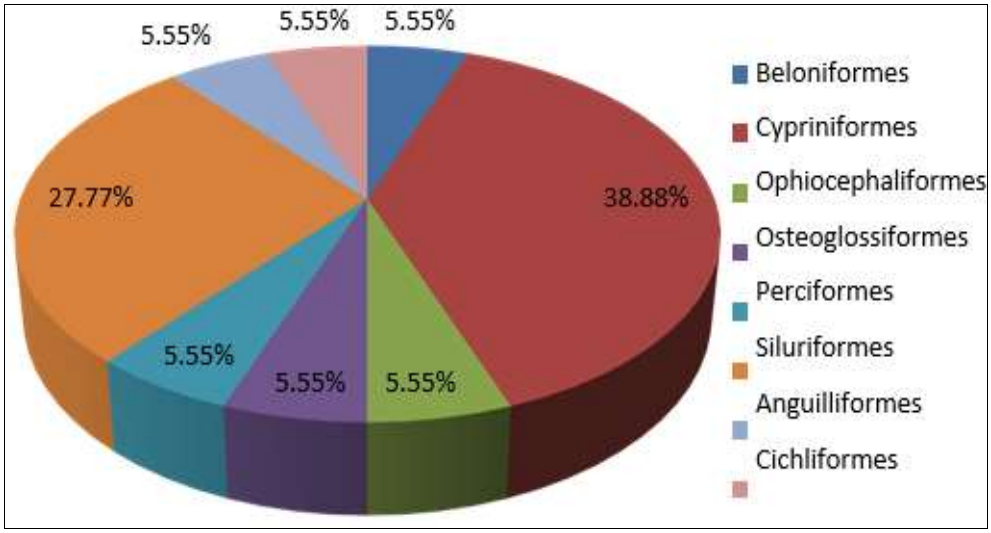

Fig 2: % Composition of species of angoori barrage

Table 1: Number of Piscian order, Families and Percentage composition of fish species of Angoori Barrage

Order	Families	Genera	Species	% Composition of Piscian Species
Beloniformes	1	1	1	5.55%
Cypriniformes	1	6	7	38.88%
Ophiocephaliformes	1	1	1	5.55%
Osteoglossiformes	1	1	1	5.55%
Perciformes	1	1	1	5.55%
Siluriformes	5	5	5	27.77%
Anguilliformes	1	1	1	5.55%
Cichliformes	1	1	1	5.55%
Total = 08	= 12	= 17	= 18	= 100%

There are several workers, who have done their work on ichthyofaunal diversity at various water bodies located in and around Madhya Pradesh region. Kumar *et al*. (2005) [8] studied the fish species diversity of river Narmada in Khedighat, Bdarwaha, Madhya Pradesh. They recorded 21 species of fish belonging to 04 orders and 06 families in which family cypriniformes were dominated with 15 species of fish. Paunikar *et al*. (2012) [10] reported ichthyofaunal diversity of Gaur River, situated at Jabalpur district of Madhya Pradesh. They found a total 33 fish species belonging to 05 order namely Cypriniformes, Siluriformes, Synbranchiformes, Perciformes and Beloniformes, in which the dominant composition of fish varieties were belonging to order Cypriniformes. Uchchariya *et al*. (2012) [14] also reported a total 40 species of fishes from Tighra reservoir of Gwalior (M.P.) with 08 order, 12 families and 23 genera. They also found that order Cypriniformes was the dominant order with maximum number of fish species in the reservoir. During the two years of study by Wani and Gupta (2015) [16] reported, a total of 21 fish species belonging to 06 order, 11 families and 17 genera of piscian species at Sagar lake of Madhya Pradesh. The most abundant family of the fish was Cypriniformes represented by 10 species and contributing about 48% of total fish diversity of the lake.

Our results were also supported by Rao *et al*., (2014) [11] in their studies on the fish diversity of River Sarada, Visakhapatnam District, Andhra Pradesh, India. They recorded a total number of 66 fish species belonging to 09 orders, 22 families and 38 genera, in which order Cypriniformes was the most dominant with 26 piscian species. The fish fauna study of Lodhi *et al*. (2020) [9] of Atal Sagar Dam in Shivpuri district of Madhya Pradesh also reported, a total 22 species belonging to 06 order and 11 families. The composition of piscian species and their percent under various orders shown that, 10 species were available under the Cypriniformes with (45%), 04 species under the Siluriformes with (22%) and 02 species under the Perciformes with 18.18% and single species each under the Synbranchiformes, Osteoglossiformes and Beloniformes with (4.54%). They also reported that out of them Cypriniformes order was the most dominant group of the study area.

Table 2: An outline of Fishes Recorded in Angoori Barrage

S. No.	Order	Family	Local (commom) name	Scientific zoological Name
1.	Beloniformes	Belonidae	Suja	*Xenentodon cancilla* (Hamilton, 1822)
2.	Cypriniformes	Cyprinidae	Rohu	*Labeo rohita* (Hamilton, 1822)
3.	Cypriniformes	Cyprinidae	Catla	*Catla catla* (Hamilton, 1822)
4.	Cypriniformes	Cyprinidae	Karyaut	*Labeo calbasu*
5.	Cypriniformes	Cyprinidae	Grass carp	*Ctenopharyngodon idella* (Cuvier and Valenciennes, 1844)
6.	Cypriniformes	Cyprinidae	Common carp	*Cyprinus carpio* (Linnaeus,1758)
7.	Cypriniformes	Cyprinidae	Khadiya	*Puntius sophore* (Hamilton,1822)
8.	Cypriniformes	Cyprinidae	Zhanzara	*Rasbora daniconius* (Hamilton, 1822)
9.	Ophiocephaliformes	Channidae	Sour	*Channa striatus* (Bloch,1793)
10.	Osteoglossiformes	Notoptridae	Patola	*Notopterus notopterus* (Lacepede,1800)
11.	Perciformes	Ambassidae	Chanda	*Chanda nama* (Hamilton,1822)
12.	Siluriformes	Bagridae	Tengra	*Sperata aor* (Hamilton,1822)
13.	Siluriformes	Clariidae	Mangur	*Clarius batrachus* (Linnaeus,1758)
14.	Siluriformes	Heteropneustidae	Singhi	*Heteropneustes fossilis* (Bloch,1794)
15.	Siluriformes	Pangasiidae	Pangas/ pankaj	*Pangasius bocourtii* (Sauyage,1880)
16.	Siluriformes	Siluridae	Padhin	*Wallago attu* (Bloch and Schneider,1801)
17.	Anguilliformes	Anguillidae	Gend	*Anguilla bengalensis* (Gray,1831)
18.	Cichliformes	Cichlidae	Jalebi	*Oreochromis mossambicus* (Peters, 1852)

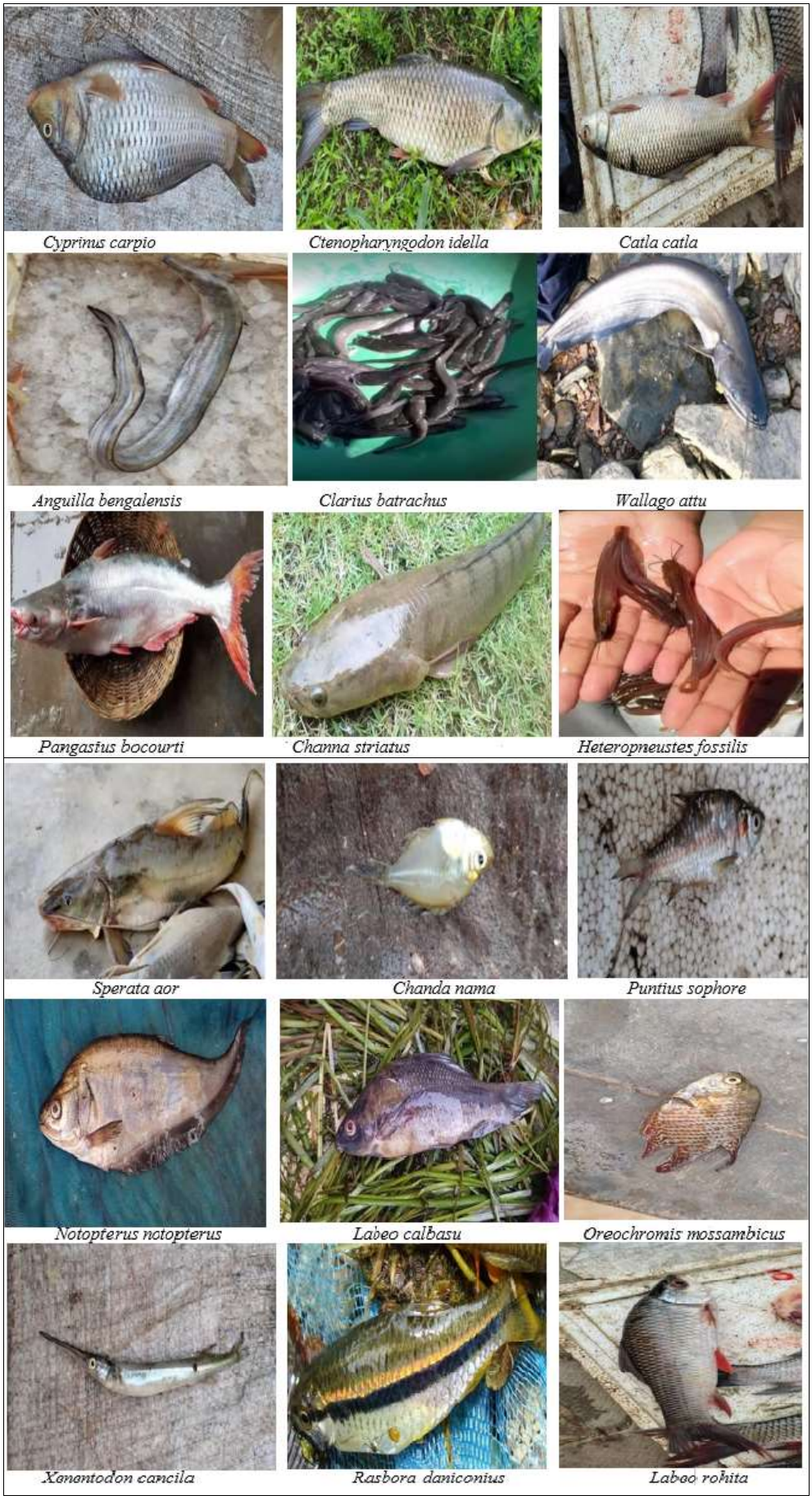

Fig 3: Photographic Plates of Various Piscian Species of Angoori Barrage

Conclusion

From the present research work it is concluded that the Angoori Barrage harbors rich fish diversity particularly of family Cyprinidae while the number of other fishes in this Barrage is too less. The anthropogenic stress impacts a negative impression on fish diversity of the entire water body. The pollution load, illegal fishing activities and the spread of huge amounts of weeds flora on this Barrage is a matter of concern which pose a serious threat to the fish faunal community. Due to which composition and varieties of piscian species are under alarming threats. Therefore there is need to give special attention for the conservation of fish diversity of this Barrage and proactive policies for the awareness of the local fishermen community. Barrage authorities should also take necessary steps to regularly check the physico-chemical and biological parameters to prevent any depletion of the Barrage ecology.

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