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Fish Diversity And Spatial Distribution In Sone River Flood Plains In Bhojpur Area (Bihar)

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ABSTRACT

This study was performed to evaluate fish diversity, community structure, spatial distribution and conservation status in 5 kilometer stretch of Sone River Flood plains in Bhojpur area from Bahiara to Sahar with three selected reservoirs during 2022, showing different major, minor and other fishes including some ornamental ones. The existed fishes showed variable fish abundance at different sites in different months during the period of investigation of one year duration (April 2022 – March 2023).

Keywords- Fish Diversity, Community Structure, Spatial Distribution, Sone River Flood Plains.

INTRODUCTION

The River Sone is an important right bank tributary of river Ganga in Indo- Gangetic plains. It originates from Amarkantak highlands in Hills of Maikala Range in Bilaspur district of Chhattisgarh at an elevation of 640 meter and latitude 20 Degree 44 inch N and longitude 82 Degree 4 Inches E. The River outfalls into Ganga at about 16 km upstream of Patna at latitude 25 Degree 14 N and longitude 84 Degree 42 inches E near a place called Maner. The total length of River is 881 km in which 40 km lies in Bhojpur area, which forms the part of southern and eastern boundary of the Bhojpur district.

The Sone being white and shallow, leaves disconnected pools of water in the remaining parts of the year after monsoon months. The channel of Sone is very wide (about 5 km at Dehri), but flood plain is narrow only 3 to 5 kms (2 to 3 Mile wide) in Bhojpur region. The catchment area of river sone is about 70055 sq kms. The river outfalls into the Ganga at about 16 km upstream of Patna at Maner.

The aquatic diversity experiences serious threats about both diversity and ecosystem stability. India is one of the mega biodiversity hotspots in the world and occupies the ninth position in terms of freshwater mega biodiversity. It is needful to develop research and systematic conservation planning to protect freshwater biodiversity (Lakra et al.,2006).

The Ganges river system have about 11 orders, 30 families, 72 genera and 141 species (Menon, 1974) has listed 141 species, belonging to 72 genera, 30 families and 11 orders from Ganga River system. However, there are no complete records on fish diversity in Sone river floodplain sites in Bhojpur district. This study is an approach to examine the fish diversity and community distribution in this region which is important due to abundance of several fish species.

MATERIALS AND METHODS

The Sone River floodplain sites in the Indo-Gangetic plain area have been selected for this study. This aquatic ecosystem contains rich flora and fauna records. The area investigated during April 2020 to March 2021 in which fish survey conducted with the help of local fishermen and fish catches through different size gill net, cast net. trap and angles. The sampled specimens were preserved in 10% formalin for identification after photography. The fishes were identified following taxonomic publications (Talwar and Jhingaran, 1991; Jayaram, 1999 and Dal et al., 2010).

RESULTS

In the present study in all 23 fish species were recorded belonging to 9 families from 5 km stretch of Sone river floodplain sites. Taxonomic position, Vernacular name, conservation status and spot of collection of the individual fish species assorted according to family are listed in the table 1. During the course of investigation maximum number of species belonged to family Cyprinidae (18) followed by Bagridae (6) and Channidae (5). The family Schilbeidae, Tetradontidae and Cobitidae represented (3) species each. Notopteridae, Siluridae, Ambassidae and Mastacembelidae represented 2 species each family. Families Sisoridae, Claridae, Heteropneutidae, Belonidae, Belontidae, Nandidae, Gobiidae and Anabantidae were represented by only 1 species each (Figure 1)

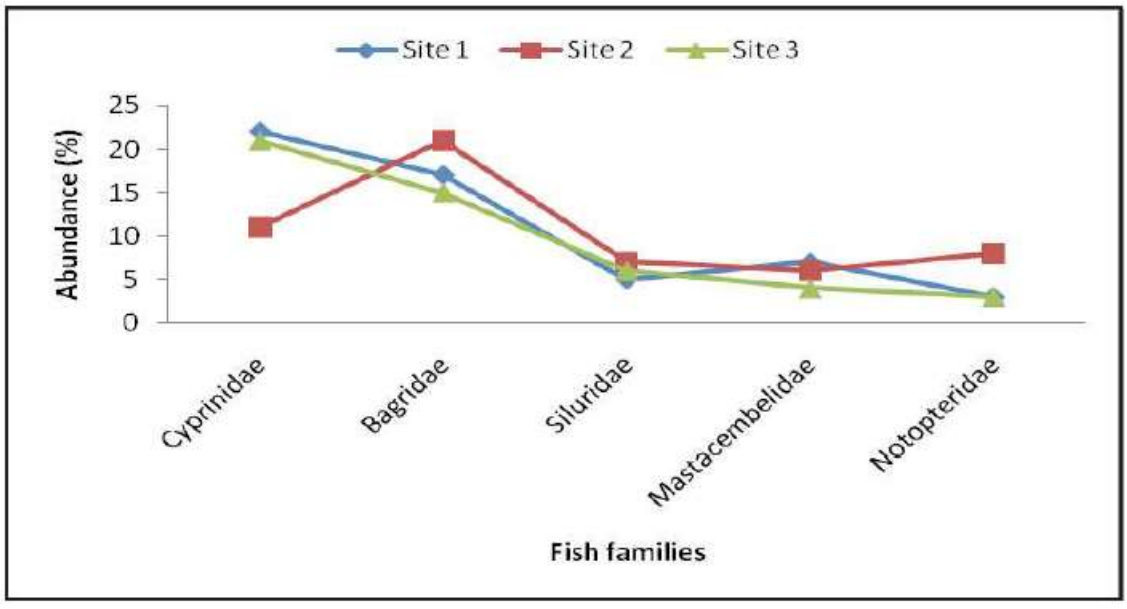

Figure 1 - Fish abundance in selected sites in Sone River floodplains.

The cyprinidae contributed highest of 33% fish species, among which, Cabdio morar (Chepua) and Punitius sp. (Sidhari) were th most abundan forms, Labeo rohita (Rohu), Catla catla (Bhakur) and Crihhinus mrigala (Nain) were not found in good number but Labeo bata, Labeo boga and Labeo calbasu occurred in good quantity. Mystus sp. was recorded in abundance with the occurrences all the year round (Table 1).

Fishers catch on an average about 5-6 kg of fish daily dominated by miscellaneous and cat fishes. According to fishers' assumption, the fish catch of the river floodplains has declined during last 20 years probably due to climate change, fishing of brood stock in the spawning ground through fishing net with small mesh size.

Figure 2 – A glimpse of local fish catches in 3 sites.

DISCUSSION

There is lack of complete records on the fishery potential in the Sone river floodplains sites. River is the major source of fisheries and significantly shares to the inland fish production; however, anthropogenic activities during recent years changed water quality through water abstraction, dam construction, sedimentation and illogical fishing. These have discerningly adverse effect on natural fish production, which showed constant declining trends.

This study showed fish diversity alteration in flood plains due to spatial and temporal characteristics of studied sites in this investigation and also previously, David (1963) listed 113 species of fish in the Sone River at upper stretch, 161 Km above and 24 Km below the Indrapuri barrage.

David (1963) recorded availability of Hilsa ilisha from close to Bettiah but in the present study it was not recorded in this stretch. Exotic fishes like Cyprinus carpio was also recorded from the river but their number of catches was negligible. It is a sad commentary that the Indian Major Carps have declined sharply in the last one decade while forage and catfishes are increasing drastically in the river. A study by K Vandana was done for fish diversity in Budi Gandak river in 2016-17 in Begusarai Region where she reported about 44 species dominant order was Cyprinifornes which was about 39 percent of total fish catch. Here in Bhojpur region, we are finding the dominancy of Cyprinidae with abundance of major carps like Catla and Labeo

A good number of ornamental fishes were also recorded during the present investigation. Due to lack of proper knowledge of the value and marketing of ornamental fishes among the fishermen, these are sold at a very low price. Most of the fish catch is sold by fishers on the spot to brokers and brokers finally sale it in local fish markets at higher rates.

CONCLUSION

The immature fishing has been during the study period, which has resulted in tremendous decrease of major carps. Therefore, fishery provisions should be strictly followed to protect fish species especially Indian major carps. Indian major carps are high priced fishes but their stocks are declining. The local fishermen explained reduced fish catch die to indiscriminate fishing, usage of fine nets, siltation, changing land use pattern and flood. This has resulted and forced many of them to migrate and change their profession.

Table 1: Fish groups in Sone River floodplain sites during study period.

Family	Genus	Site 1	Site 2	Site 3	Richness	Abundane	Relative Abundance
Crprinidae	Catla	9	3	6	3	47	21.4
	Labeo	7	3	5	4	28	12.7
	Salmostoma	2	3	4	1	6	2.7
	Mystus	2	9	5	2	11	5
	Puntius	3	6	2	2	6	2.7
Bagridae	Rita	6	13	8	3	12	5.4
	Mystus	4	15	9	1	4	1.8
Siluridae	Ompak	3	8	6	2	12	5.14
Matacembelus	Mastacambelus	8	7	4	3	19	8.6
Notopteridae	Notopterous	5	10	6	3	25	11.4

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