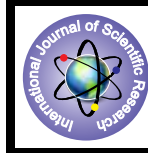


Study of Ichthyodiversity in Sahni Tola Talab(Pond) of Sundarpur Bela, Darbhanga District, Bihar



Zoology

KEYWORDS : Wetland, Ichthyodiversity, Cypriniformes, Channidae, Mangur

Uttam Kumar

Research Associate, ICAR-RCER, Research Centre for Makhana, PO - Basudeopur Bira, Darbhanga

ABSTRACT

The Ichthyodiversity of the Sahni tola talab (pond) of Sundarpur bela, Darbhanga district, Bihar was studied from March 2013 to February 2014. The present investigation reveals the occurrence of 33 fish species belonging to 8 order, 15 family and 23 genera. Among the collected species, Cypriniformes was the most abundant fish order which is represented by 6 family, 12 genera and 17 species where as Perciformes was the second most abundant fish order which was represented by 2 family 3 genera and 4 species. Besides these two orders Beloniformes, Channiformes, Mastacembeliformes, Symbbranchiformes, Clupeiformes and Tetradontiformes also were present but its number is very less. Out of 33 fish species 24 species have high food value, 8 species have low food value used by common people and 1 species i.e. Tetradon fluviatilis is not edible. Puntius is most abundant in number. The species diversity is peak in post-monsoon and low in premonsoon.

INTRODUCTION

India is one of the twelve megadiversity regions of the world with 7.7% of genetic resources of the world. In freshwater fish diversity, India ranks eighth in the world and third in Asia (1). Ichthyodiversity refers to variety of fish species which is due to differences in genotype or alleles. Fishes show maximum diversity in vertebrate. They constitute slightly more than one half of total number of living vertebrate species. Fishes are represented by about 21,730 species in the world. India represented 2,546 fish species of the world which makes about 11.72% (2). The Indian fish fauna is divided into two classes, viz., Chondrichthyes and Osteichthyes. The Chondrichthyes are represented by 131 species under 67 genera, 28 families and 10 orders in the Indian region. The Indian Osteichthyes are represented by 2,415 species belonging to 902 genera, 226 families and 30 orders of which, five families are endemic to India. Out of 2546 fish species, 73 (3.32%) belong to the cold fresh water, 544 (24.73%) to the warm fresh waters, 143 (6.50%) to the brackish waters and 1440 (65.45%) to the salt water ecosystem. The endemic fish families form 2.21% of the total bony fish families of the Indian region. There are 223 endemic fish species are found in India which represent 8.75 % of the total fish species known from the Indian region. There are about 450 families of freshwater fishes are reported globally in which 40 are represented by warm freshwater species in India. About 25 of these families contain commercially important species. Number of endemic species in warm water is about 544. The economy of many countries depends on fishes as they have been a stable item in the diet of many people and became a source of earning of foreign currency from export of fishes. Biodiversity is essential for stabilization of ecosystem, protection of overall environmental quality for understanding intrinsic worth of all species on the earth (3). Freshwater biodiversity has declined faster than either terrestrial or marine biodiversity over the past 30 years (4). Biodiversity is often ambiguously misused or overused to describe population dynamics of a location or community (5). Declining river flow rates (discharge) have been a major cause of species loss and are likely to be further reduced by global warming, reduced precipitation and increased water withdrawal for agriculture and other human uses (6). Agricultural runoff, mass bathing, domestic sewage and industrial effluent discharges into water bodies result in water pollution. Now a day, water pollution has become a major reason of loss of ichthyodiversity (Author view). The North Bihar and especially the Darbhanga district has large inland fisheries and adequate fresh water resources in the form of rivers and their tributaries, Ponds, tanks, chours and canals. The main source of water is rain in the catchment area. Fishes are one of the best indicators of quality of any aquatic ecosystem and occupy a remarkable position from socio economic point of view. Freshwater fishes are a poorly studied group since information regarding distribution, population dynamics and threats is incomplete, and most of the information available is from a few well-studied locations only (7, 8). The objectives of the

present study is to qualitative and quantitative documentation of fish species of Sahni tola talab(pond) of Sundarpur bela, Darbhanga district, Bihar and appropriate suggestion for conservation and management strategies of the given water body.

MATERIALS AND METHODS

Darbhanga is an important district of Bihar having longitude 85° 45'E - 86° 25'E and latitude 25° 53'N - 26° 27'N. Present work is based on the study of ichthyofaunal diversity in Sahni tola talab of Sundarpur Bela, Darbhanga district, Bihar. It is located about 10 km North-East from ICAR-RCER Research Centre for Makhana, Darbhanga. The Sahni tola makhana talab is perennial standing water body having area of 6 acres with an average depth of 2.8 meters. It receives water from nearby agricultural land and river during rainy season.

The fishes were collected from Sahni tola talab in different seasons by using different types of nets with the help of local fishermen from March 2013 to February 2014. Immediately photographs were taken prior to preservation since formalin decolorizes the fish colour on long preservation. The small sized fishes were directly preserved in 10% formalin whereas large sized specimens of fishes were injected with 10% formalin and make a longitudinal incision on its belly. Identification and economic importance of fishes was carried out with the help of standard literature (9, 10, 11 & 12).

RESULT AND DISCUSSION

The present investigation reveals the occurrence of 33 fish species belonging to 8 order, 15 family and 23 genera (Table no -1 & 2 and fig - 1 & 2). Among the collected species, Cypriniformes was the most abundant fish order (Table no. 1). Such type of observations was also made earlier (13, 14). Besides this order Beloniformes, Channiformes, Perciformes, Mastacembeliformes, Symbbranchiformes, Clupeiformes and Tetradontiformes were also present but its number was very less. Cypriniformes was represented by 6 family, 12 genera and 17 species (Table no - 1 & 2 & fig no - 1 & 2). Cypriniformes was represented by six family viz. Cyprinidae, Siluridae, Claridae, Heteropneustidae, Bagridae and Cobitidae. This order were represented by Catla catla, Labeo rohita, Labeo calbasu, Cirrihinu mrigala, Cirrihinu reba, Puntius conchoniuis, Puntius sophore, Cyprinus carpio, Ctenopharyngodon idella, Wallago attu, Clarius batrachus, Heteropneustes fossilis, Mystus tengara, Mystus cavasius, Mystus vittatus, Botia Dario and Nemacheilus botia. Among the species of cypriniformes family, seven species of fishes were common, two were plenty and eight were few in population. The order Beloniformes was represented by single family Belonidae and only one species Xenentodon cancila which is rare in population. The order Channiformes was represented by single family Channidae and four species namely Channa punctatus, Channa marulius, Channa gachua and Channa striatus. Out of four species one fish species

is common and three species are few in number. The order Perciformes was the second most abundant fish order which was represented by 2 family (Centropomidae and Anabantidae), 3 genera and 4 species namely Chanda nama, Chanda ranga, Anabas testudineus and Colisa fasciatus. Out of four species of Perciformes family, one

species belong to each group of population (common, rare, plenty and few). The order Mastacembeliformes was represented by single family (Mastacembelidae), single genera and 2 species viz. Mastacembelus pancalus and Mastecembelus armatus. Mastecembelus armatus was common whereas Mastecembelus armatus was plenty

Table-1 Details of Ichthyofauna collected from Sahni tola talab(pond) of Sundarpur bela, Darbhanga district, Bihar

S. N.	Order	Family	Zoological Name	Local Name	Population
1	Cypriniformes	Cyprinidae	Catla catla	Catla/Bhakur	C
2	"	"	Labeo rohita	Rohu	C
3	"	"	Labeo calbasu	Basrahi	F
4	"	"	Cirrihinu mrigala	Naini	C
5	"	"	Cirrihinu reba	Reba	C
6	"	"	Puntius conchonius	Pothia	P
7	"	"	Puntius sophore	Pothia	P
8	"	"	Cyprinus carpio	Common carp	F
9	"	"	Ctenopharyngodon idella	Grass carp	F
10	"	Siluridae	Wallago attu	Boari	C
11	"	Clariidae	Clarius batrachus	Mangur	F
12	"	Heteropneustidae	Heteropneustes fossilis	Singhi	F
13	"	Bagridae	Mystus tengara	Tengra	C
14	"	"	Mystus cavasius	Tengra	F
15	"	"	Mystus vittatus	Kanti/Tengra	C
16	"	Cobitidae	Botia Dario	Bhaglat-ta	F
17	"	"	Nemacheilus botia	Natwa	F
18	Beloniformes	Belonidae	Xenentodon cancala	Kawua	R
19	Channiformes	Channidae	Channa punctatus	Garai	C
20	"	"	Channa marulius	Saur	F
21	"	"	Channa gachua	Chanaga	F
22	"	"	Channa striatus	Sauri	F
23	Perciformes	Centropomidae	Chanda nama	Chanari	P
24	"	"	Chanda ranga	Chanari	C
25	"	Anabantidae	Anabas testudineus	Kawai	R
26	"	"	Colisa fasciatus	Khesra	F
27	Mastacembeliformes	Mastacembelidae	Mastacembelus pancalus	Pataya	C
28	"	"	Mastecembelus armatus	Baami	P
29	Symbranchiformes	Symbranchiidae	Amphipnous cuchia	Anhaya baam	C
30	Clupeiformes	Clupeidae	Gudusia chapra	Suhia	F
31	"	"	Setipinna phasa	Phasi	F
32	"	Notopteridae	Notopterus chitala	Moi	F
33	Tetradontiformes	Tetradontidae	Tetradon fluviatilis	Beng machhri	R

Abbreviations: C = Common, R = Rare, P = Plenty, F = Few

Table-2 Numeral & % diversity of different Ichthyofaunal order according to their family, genus and species

S.N	Order	No. of family	% of family	No. of Genus	% of genus	No. of species	% of species
1	Cypriniformes	6	40.00	12	52.16	17	51.51
2	Beloniformes	1	6.67	1	4.34	1	3.03
3	Channiformes	1	6.67	1	4.34	4	12.12
4	Perciformes	2	13.31	3	13.02	4	12.12
5	Mastacembeliformes	1	6.67	1	4.34	2	6.06
6	Symbranchiformes	1	6.67	1	4.34	1	3.03
7	Clupeiformes	2	13.31	3	13.02	3	9.09
8	Tetradontiformes	1	6.67	1	4.34	1	3.03
Total	8	15	100%	23	100%	33	100%

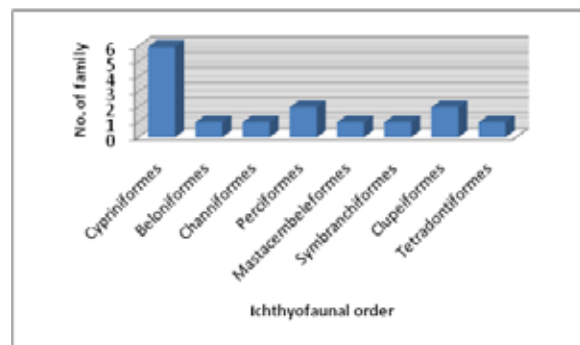


Fig-1 Graphical presentation of no. of family of each ichthyofaunal order

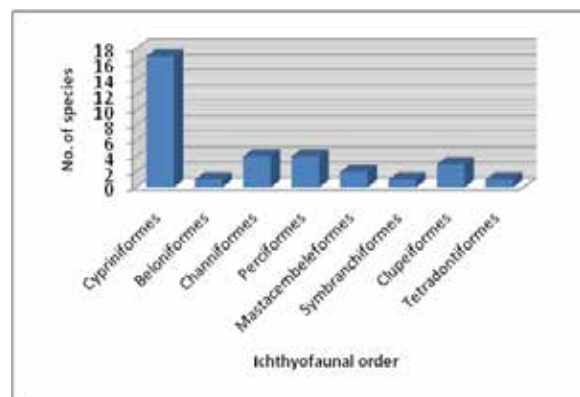


Fig-2 Graphical presentation of no. of species of each ichthyofaunal order

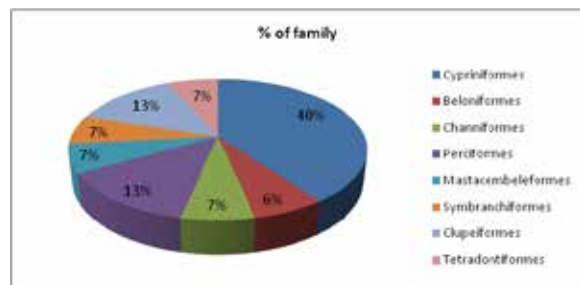


Fig-3 Graphical presentation of % of family of each ichthyofaunal order

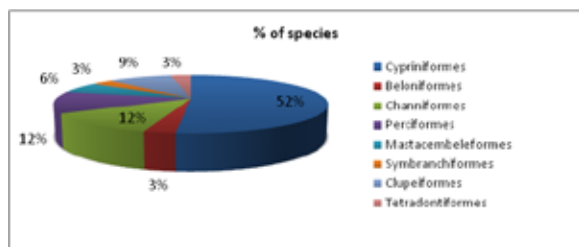


Fig-4 Graphical presentation of % of species of each ichthyofaunal order

in population. The order Symbanchiformes was represented by single family (Symbanchidae), single genus and single species namely *Amphipnous cuchia* which was common in population. The order Clupeiformes was represented by two family (Clupeidae and Notopteridae), three genus and three species. All three species (*Setipinna phasa*, *Amphipnous cuchia* and *Notopterus chitala*) were belonged to few in population. The order Tetrodontiformes represented by single family (Tetrodontidae), single genus and single species namely *Tetradon fluviatilis*.

When number and percentage of family of each order was arranged, the following result are obtained (Table no - 2 and fig no - 3 & 4). Cypriniformes > Perciformes = Clupeiformes > Beloniformes = Channiformes = Mastacembeliformes = Symbanchiformes = Tetrodontiformes. When number and percentage of genus of each order was arranged, same results are obtained (Table no - 2 and fig no - 3 & 4). Cypriniformes > Perciformes = Clupeiformes > Beloniformes = Channiformes = Mastacembeliformes = Symbanchiformes = Tetrodontiformes. When number and percentage of species of each order was arranged, the following result are obtained (Table no - 2 and fig no- 3 & 4) Cypriniformes > Channiformes = Perciformes > Clupeiformes > Mastacembeliformes > Beloniformes = Symbanchiformes = Tetrodontiformes.

Out of 33 fish species 24 species have high food value, 8 species have low food value used by common people and 1 species i.e. *Tetradon fluviatilis* is not edible. There are 19 fish species were observed in premonsoon and 24 fish species in monsoon where as 29 fish species are recorded in post monsoon. Thus the species diversity is peak in postmonsoon, coinciding with favourable conditions such as sufficient water and ample food resources. The diversity was low in premonsoon probably due to the shrinkage of the water spread of the pond. Such type of observations was also made earlier (15). *Puntius* is most abundant in number. *Puntius* sp., *Colisa fasciatus*, *Nemacheilus botia*, *Xenentodon cancila* and *Chanda ranga* may also useful as ornamental fishes.

CONCLUSION

The result of this study shows that Sahni tola talab is rich in fish diversity and sustains high productivity. Due to lack of management as well as pouring of domestic sewage from nearby house, production of fish is being gradually decreased. Now a day the area of pond is gradually decreasing due to building construction and dumping of waste materials in the pond which decreases both the diversity and productivity in near future. Scientific methods of fish culture and proper care are needed to upgrade this talab. Upgradation of talab increases the productivity and diversity of fish of this pond which leads to protein fulfilment of poor people and income generation of fishermen communities of this area.

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