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Research Paper

FISH FAUNAL DIVERSITY OF HISTORICAL TARA TAL AT SAUGAHANA VILLAGE DISTRICT BAHRAICH (U.P)

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Abstract

In present study the fish fauna of Tara tal were observed and identified thoroughly with standard identification keys of fish during July 2017 to June 2018. There are 25 genera, 33 species of fishes belonging 15 families, 7 orders were reported. Data reveals that Cyprinidae family were found to be most dominant in Tara tal and the prevalence rate is 27.27%, Nandidae family less common in this tal and prevalence rate is 3.03%. In Cyprinidae family, the *Labeo rohita* was most abundant.

Key words: Cyprinidae, fish diversity, Tara tal, Saugahana Village.

INTRODUCTION

The term biodiversity includes the entire living organism (Plants and Animals) with their genetic material and ecosystem. The fish diversity is a branch of aquatic diversity. Fish constitutes half of the total number of vertebrates in the world. They live in almost all conceivable aquatic habitats; 21,723 living species of fish have been recorded out of 39,900 species and 11,650 in marine. India is one of the mega biodiversity countries in the world and occupies the ninth position in terms of freshwater mega biodiversity. India, there are 2,500 species of fishes of which 930 live in freshwater and 1,570 are marine [13]. Biodiversity is the degree of variation of life from within a given ecosystem [14]. Biodiversity is essential for stabilization of ecosystem; protection of overall environmental quality for understanding intrinsic worth of all species on the earth [7]. Fish constitutes half of the total number of vertebrates in the

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world. Ichthyodiversity refers to variety of fish species; depending on context and scale. It could refer to alleles or genotypes within fish population to species of life forms within a fish community and to species or life forms across aqua regimes. [6, 5] Today the fish diversity and associated habitat management is a great challenge and the ability to evaluate the effects of habitat change and other impacts on the fish population required extensive surveying of the fish population before and after the change occur [27,29]. Several broad scale studies have identified modification and loss of aquatic habitat as primary factor threatening the conservation of fresh water fishes and communities [28]. The population of many fish species has reduced due to over exploitation by destructive fishing gears, various ecological and environmental changes and degradation of their natural habitats [37,36].

Fishes are the important group of animals' world contributing to the biodiversity of animals. Present investigation was undertaken to study the fish diversity from Tara tal is the first effort in this direction. Various indigenous and commercial fishes of importance were found in this area. Tara Tal is a Natural Pond located 30 k.m. from Bahraich district headquarter U.P. Cyprinidae fishes are one of the most important groups of vertebrates for man and influencing his life in various ways. Primarily fishes are used as a food source. Many vital vitamins and fatty acids are found in fishes so sometimes it is referred by doctors as good food source. [15]. The nutritive and medicinal value of fish has been recognized from ancient time to recent area.

MATERIALS AND METHODS

Tara tal is a large freshwater body (covered area about 90 acres), situated at Distance of 30 k.m North from Bahraich district handquater. The water body is surrounded by three villages Saugahna (south east), Mithaura (west south centre) and Bhimbhiwa (east). The domestic wastes and sewage of these villages are also discharges in this water body. The entire study was undertaken mostly in morning hours. The samples were captured at intervals with the help of local skilled fisherman. Drag net, caste net, scoop net, basket trap, hooks etc were used for capturing fish samples. The fishes collected from Tara tal were treated with 8% formalin for 48 hours. After that the fishes were transferred in 5% formalin and preserved for further study in the laboratory of P.G. department of Zoology, P.B. P.G. College,

Pratapgarh U.P. Preserved specimens were identified to genus and species level using taxonomic keys and standard literatures. [9,10, 11, 12, 8,3]

RESULTS AND DISCUSSION

In the present Ichthyofaunal study, a total of 25 genera, 33 species of fishes belonging to 15 families and 7 orders were recorded from the Tara tal. In this tal, on the basis of percentage composition and species richness, order Cypriniformes was influential (19 speceis), Percifomes (5 speceis), & Clupeiformes (3 speceis) and Ophiocephaliformes and Mastacembeliformes (2 speceis each) and Beloniformes and Mugiliformes (1 speceis each). During the present investigation the order of dominance is as follows:- Cypriniformes > Perciformes > Clupeiformes=Ophiocephaliformes=Mastacembeliformes=Bloniformes=Mugiliformes.(Table-2&Fig 1).

The ichthyofaunal diversity of Tara tal comprises 15 families namely Notopteridae, Clupeidae, Cyprinidae, Siluridae, Bagridae, Sisoridae, Saccobranchidae, Clariidae, Belonidae, Mugilidae, Ophiocephalidae, Centropomidae, Nandidae, Anabantidae, Mastacembelidae.(Table-1)

The sequence of Prevalence rate of encountered families is as follows :-Cyprinidae (27.27%) > Bagridae (12.12%) > Notopteridae (6.06%) = Siluridae (6.06%) = Sisoridae (6.06%) = Ophiocephalidae (6.06%) = Centropomidae (6.06%) = Anabantidae (6.06%) = Mastacembelidae (6.06%) > Clupidae (3.03%) = Saccobranchidae (3.03%) = Clariidae (3.03%) = Belonidae (3.03%) = Mugilidae (3.03%) = Nandidae (3.03%) (Table-3&Fig 2). The present study indicated that the tara tal is rich in fish fauna, a total 33 fish species were collected, and belonging to 25 genera, 15 families and 7 orders. The most dominant Cyprinidae family fishes are *Cirrhinus mrigala*, *Cirrhinus reba*, *Labeo rohita*, *Labeo calbasu*, *Puntius sarana*, *Puntius sophore*, *Catla catla*, *Amblypharyngodon mola*, *Oxygaster bacaila*, *Ompak bimaculatus*, *Wallago attu*, *Mystus cavasius*, *Mystus vittatus*, *Mystus tengara*, *Rita rita*, *Bagarius bagarius*, *Clupisoma garua*, *Heteropneustes fossilis*, *Clarias batrachus*. Of these *Labeo rohita* and *Labeo calbasu* were found most abundant. These fishes are cultivable and economically importantance. The family Notopterida was represented by 2 species, *Notopterus* was found less quantity, *Notopterus chitala* was found very rare. The family

Siluridae was represented 2 species, *Ompok bimaculatus*, *Wallago attu*, in which *Wallago attu* was found most abundant. Bagridae family was represented by 4 species, *Mystus vittatus*, *Mystus tengara*, *Rita rita*, *Mystus tengara* and *Mystus cavasius*, both were found equally abundant. Sisoridae family was represented 2 species, *Bagarius bagarius*, *Clupisoma garua*. Saccobranhidae family was represented by only 1 species, *Heteropneustes fossilis* was found less. Clariidae family was represented by only *Clarias batrachus* and was also found less abundant. Belonidae family was represented by only 1 species. Shinde *et al.*, [5] reported a total of 15 species belonging to 3 orders, 4 families and 12 genera in Harsool Savangi Dam Aurangabad (M.S) India. Mugilidae family was represented only 1 species. Ophiocephalidae family was represented by 2 species, *Channa punctatus*, *Channa striatus*, both of which were found equally abundant. Anabantidae family was represented by 2 species, *Anabas testudineus*, and *Colisa fasciatus*. *Anabas testudineus* was abundant. The most dominant order Cypriniformes with 19 species, followed by Perciformes 5 species and Clupeiformes 3 species and Ophiocephaliformes and Mastacembeliformes 2 species each and Beloniformes and Mugiliformes with 1 species each. Rankhamb [4] reported the occurrence of 26 fish species belonging to 5 orders, 7 families and 15 genera in Godavari River at Mudgal. The members of the order Cypriniformes were dominated by 15 species, followed by Siluriformes with 5 species, Channiformes with 4 species and Mastacembeliformes and Perciformes 1 species each. Yousuf *et al.*, [2] reported 29 fish species belonging to 7 orders, 10 families and 15 genera. The order Cypriniformes was found dominant. Vyas *et al.*, [1] reported, a total of 47 species of fishes belonging to 29 genera, 15 families, and 6 orders were recorded in the Hoshangabad stretch of Narmada. Our work is conformity with the Yousuf,*et.al.* [2] and Vyas and Vishwakarma [38]. The carps fishes *Cirrhinus mrigala*, *Labeo rohita*, *Catla catla* have highly Commercial and economical importance. Arya *et al.*, [16] has reported 11 carp species and Karamchandani *et al.* [17] has reported 10 carp species of economic importance. The cat fishes groups as *Mystus cavasius* and *Mystus tengara* belonging to family Bagridae are of high economic importance. The fishes *Heteropneustes fossilis* and *Clarias batrachus* belonging to Saccobranhidae family and Clariidae family respectively carry high economic value. Many researchers have reported the strong dominance of Cyprinidae family in their

investigations on ichthyofaunal diversity. Sakhare [19] reported 23 species belonging to 07 orders where Cyprinidae family was dominant with 11 species from Jawalgaon reservoir Sholapur district Maharashtra. Battul *et. al.*, [18] reported 18 species from Ekruckh lake Sholapur district , where Cyprinidae family was dominant with 8 species. Three species of Major carps namely *Catla catla*, *Labeo rohita* and *Cirrhinus mrigala* are being cultivated in the perennial ponds [34]. According to Ubharhande and Sonawane [20] Paintakle dam Contributes 20 food fishes, 18 Common fishes, 12 ornamental fishs. 10 highly economic and experimental fishes each, 09 highly nutritive fishes, 07 larvivorous and mosquito control fishes, 06 hill stream, 04 exotic fishes, 03 vulnerable, 02 threatened, 01 uncommon coarse food fish are recorded. The process of documentation of ichthyofauna diversity of this tank is for from completion. With recent scientific development and new strategies we can conserve aquatic resources and ensure its genetic diversity. Rehman *et.al* [30] investigated the fish biodiversity and core threats for conservation of Beel in Bangladesh. They recorded 33 fish species belonging to 6 orders. They suggested that comprehensive studies on fisheries biology including reproductive biology, growth, stock assessment and their association with existing laws are essential for the sustainable management and conservation of fish species. Pesticides are mainly poisonous and thus are hazardous to aquatic organisms and affect ecosystem integrity and disrupt its functioning [31]. Jain [33] recorded 61 fish species belonging to 38 different genera, 19 different families and 9 different orders from various water bodies of western Uttar Pradesh. The order Cypriniformes was dominant with 23 species. Our results are inconformity with this work. Nagma and Khan [34] reported 36 species belonging to 6 order, 11 families and 23 genera from Bijnor district of Western Uttar Pradesh. Gupta and Tripathi [32] reported 61 Ichthyospecies belonging to 18 families and 8 orders from river Gomti, Lucknow. Cypriniformes emerged out as the dominant order. Study shows that high pollution level, numbers of fishes were found satisfactory in most of the selected sites of this river. Verma *et.al* [35] documented 45 commercially fish species belonging to 7 orders, 17 families and 32 genera from Bakhira Lake, Uttar Pradesh. The Cypriniformes were dominant with 18 species. They concluded that proper management of the lake may help to boost the fish production and habitat conservation.

The studies on Ichthyofaunal diversity from different fresh water bodies have been carried out during that last few decades [26,22, 25,23 21,24].

CONCLUSIONS

The aim of the study was to identify fish species in the study area. During the study period, it was found that the fish abundance of Tara tal is declining at an alarming signal. It was observed that anthropogenic activity altering the pond ecosystem and cause habitat alteration and fish stock depletion. The environmental threats like siltation, habitat loss, dumping of domestic and agricultural waste, overfishing, dewatering and climate change may be damaging the fisheries resources.

Table-1:Taxonomic position and scientific name of fish species with common name, local name, economic value of fish groups in Tara tal , at Saugahana Village district Bahraich (U.P.)

Order	Family	Scientific Names	Common Name	Local Name	Remarks/ Economic value
Clupeiformes	Notopteridae	<i>Notopterus notopterus</i> (Pallas,1776)	Faetherback	Patra	Food Fish
	Notopteridae	<i>Notoperus chitala</i> (Hamilton,1822)	Humped back	Moi	Food fish
	Clupeidae	<i>Gudusia chapra</i> (Hamilton,1822)	Gangashed	Suhia	-
Cypriniformes	Cyprinidae	<i>Cirrhinus mrigala</i> (Hamilton,1822)	Mrigal	Naine, mrigal	Excellent fish for stoking the ponds (carps)
	Cyprinidae	<i>Cirrhinus reba</i> (Hamilton,1822)	Raba carp	Raia, rewabata	carps
	Cyprinidae	<i>Labeo rohita</i> (Hamilton,1822)	Rohu	Rohu	Food Fish (carps)
	Cyprinidae	<i>Labeo calbasu</i> (Hamilton,1822)	Kalbaz orange fin labeo	Karaunchar	Food fish
	Cyprinidae	<i>Puntius sarana</i> (Hamilton,1822)	Sarana	Darahee	Larvivorous fish
	Cyprinidae	<i>Puntius sophore</i> (Hamilton,1822)	Stigma barb	Sidhari	Consumed in large quantities by poors
	Cyprinidae	<i>Catla catla</i> (Hamilton,1822)	Catla	Bhakur, katla	Food fish (carps)
	Cyprinidae	<i>Amblypharyngodon mola</i> (Hamilton,1822)	Mola carplet	Dhawai	-
	Cyprinidae	<i>Oxygaster bacaila</i> (Hamilton,1822)	Chalhawa	Chalhawa	Larvicidal
	Siluridae	<i>Ompak bimaculatus</i> (Bloch) 1797	Butter cat fish	Jalkapoor	It is Excellcnt food fishes(cat fish)
	Siluridae	<i>Wallago attu</i> (Bloch and Schneider,1801)	Freshwater shark	Padhani	Food and Gamefish

	Bagridae	<i>Mystus cavasius</i> (Hamilton, 1822)	Dwarf catfish	Sutahawa tengara	Predatory (cat fish) fish
	Bagridae	<i>Mystus vittatus</i> (Bloch,1797)	Striped dwarf cat fish	tengan	Esteemed as food for its pleasant smoky flavor (cat fish)
	Bagridae	<i>Mystus tengara</i> (Hamilton, 1822)	Tengara	Tengara	Food fish (Predatory fish)
	Bagridae	<i>Rita rita</i> (Hamilton, 1822)	Rita	Hunna & Ritha	Food fish
	Sisoridae	<i>Bagarius bagarius</i> (Hamilton, 1822)	-	Gonch	-
	Sisoridae	<i>Clupisoma garua</i> (Hamilon, 1822)	-	Bakeri	Food fish
	Saccobranchidae	<i>Heteropneustes fossilis</i> (Bloch., 1785)	Stinging cat fish	Singhi	Good nourishing and tasty fish
	Clariidae	<i>Clarias batrachus</i> (Linn, 1758)	Mangur	Mangur	Live fish
Beloniformes	Belonidae	<i>Xenentodon cancila</i> (Hamilton, 1822)	Fresh water gar fish	Kawwa machli	Good for eating with Pot-herbs
Mugiliformes	Mugilidae	<i>Rhinomugil corsula</i> (Hamilton,1822)	Fresh water grey mullet	Hunra	-
Ophiocephaliformes	Ophiocephalidae	<i>Channa punctatus</i> (Bloch., 1785)	Snake-head fish /Spotted snake head	Girae	Live fish prolific breeder
		<i>Channa straitus</i> (Bloch., 1785)	Stripped Snake-head	Sauri	Carnivorous,- Prefers muddy waters
Perciformes	Centropomidae	<i>Chanda nama</i> (Hamilton,1822)	Glassy Perchlet	Chanari	Useful for malaria & guinea worm control (Talwar & Jhingram 1991)
	Centropomidae	<i>Chanda ranga</i> (Hamilton,1822)	Glassy Perchlet	Chanari	Good Aquarium fish
	Nandidae	<i>Badis badis</i> (Hamilton,1822)	-	Sumha	-
	Anabantidae	<i>Anabas testudineus</i> (Bloch.,1785)	Climbing Perch	Kawai & sumha	Hardy fish due to Presence of Accessory respiratory organ
	Anabantidae	<i>Colisa fasciatus</i> (Bloch & Schn.1801)	Banded colisa	Khosti	Aquarium fish
Mastacembeliformes	Mastacembeledae	<i>Macrogathus aculeatus</i> (Bloch.1787)	Lesser spiny eel	Malga & Pataya	-
	Mastacembeledae	<i>Mastacembelus armatus</i> (lacepede, 1800)	Lesser spiny eel	Baam	Food fish highly economic/ Hill stream fish
Order=7	Family=15,	Genus/genera = 25, Species = 33			

Table-2: Order wise Ichthyofaunal diversity of Tara Tal at Saugahana District Bahraich.

S.No	Order	Number of species available
1	Clupeiformes	03
2	Cypriniformes	19
3	Beloniformes	01
4	Mugiliformes	01
5	Ophiocephaliformes	02
6	Perciformes	05
7	Mastacembeliformes	02
	Total	33 fish species

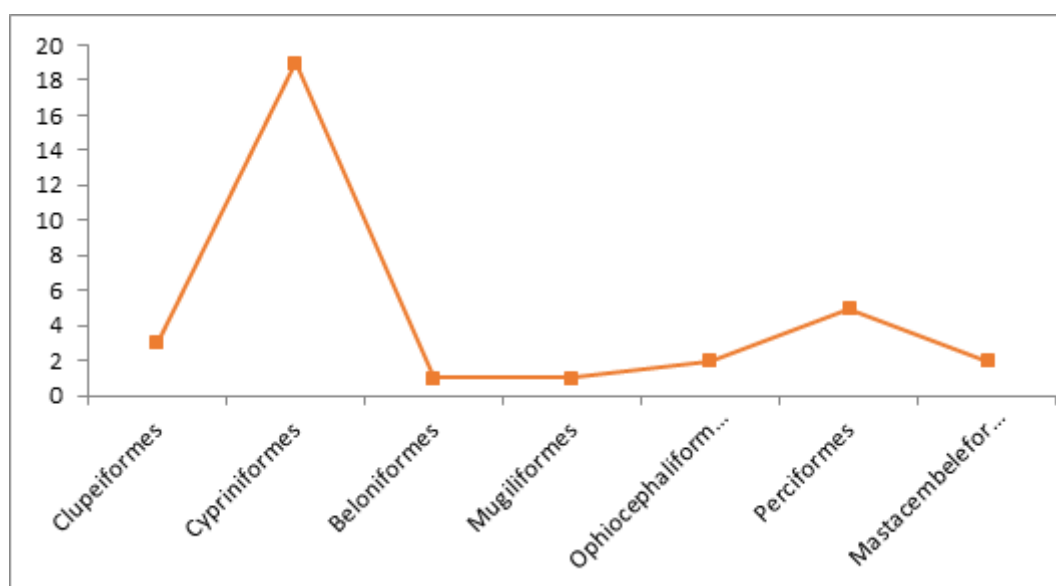


Fig-1: Order wise Ichthyofaunal diversity of Tara Tal at Saugahana District Bahraich.

Table-3: Family wise, Ichthyofaunal species recorded with prevalence rate of Tara Tal at Saugahana, District Bahraich U.P

S.No	Name of family	No. of species	Prevalence rate
1	Notopteridae	2	6.06%
2	Clupidae	1	3.03%
3	Cypinidae	9	27.27%
4	Siluridae	2	6.06%
5	Bagridae	4	12.12%
6	Sisoridae	2	6.06%
7	Saccobranhidae	1	3.03%
8	Clariidae	1	3.03%
9	Belonidae	1	3.03%
10	Mugilidae	1	3.03%
11	Ophiocephalidae	2	6.06%
12	Centropomidae	2	6.06%
13	Nandidae	1	3.03%
14	Anabantidae	2	6.06%
15	Mastacembeledae	2	6.06%
	Total=15 Family	33 species	

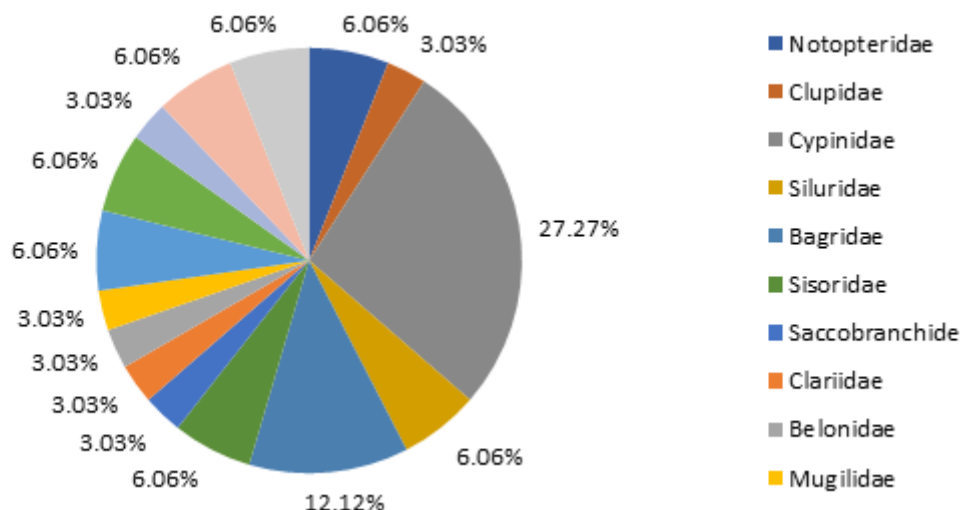


Fig:2 Family wise, Ichthyofaunal species recorded with prevalence rate of Tara Tal at Saughana, District Bahraich U.P

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