ICHTHYOFAUNAL DIVERSITY OF HATTIKUNI RESERVOIR, YADGIR DISTRICT, KARNATAKA

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Abstract: The ichthyofaunal diversity is a good indicator of health of aquatic ecosystem. A good piscine diversity represents the balanced ecosystem. The present study deals with the variety of freshwater fishes in Hattikuni reservoir, yadgir district, Karnataka. The study was undertaken for a period of two years and monthly collections were made from February-2014 to January-2016. The result of the present investigation reveal that occurrence of 22 species belonging to 12 different genera, in 07 families, 04 order were recorded. The members of order cypriniformes were dominated by 11 species followed by siluriformes with 06 species, perciformes 04 species and, Oisteoglossiformes 01 species.

Keywords: Ichthyofauna , Diversity , Hattikuni reservoir.

Introduction

The aquatic ecosystem is important and it has large number of economically important animals especially fish which is an important source of food. Fishes are aquatic creatures, perfectly adapted for life in water. Freshwater bodies comprise variety of fishes. Fish constitutes half of the total number of vertebrates in the world. About 21,730 species of fishes have been recorded in the world of which about 11.7% are found in Indian water (murugan, A.S.2012). In India out of 2500 species of fishes, 930 live in freshwater (Jayaram 1999) and 1,570 are marine (Kar *et al.,* 2003. Fresh water fish are used as bio indicators for the assessment of water quality, river network connectivity or flow regime (Chovane et.al 2003) fish being rich source of proteins and have high nutritive and economic value.

Many workers are studied Taxonomy, biodiversity and distribution of fishes found in fresh water freshwater bodies of various part of India. David (1963) recorded fish fauna of Godawari and Krishna river, Yadav (2004 & 2006) reported 33 Species from Pench National Park, Dist. Nagpur and 84 species from Tadoba National Park Dist, Chandrapur S.V. Rankhamb (2009 & 2010) reported 26 species from Godavari river at Mudgal Dist, Parbhani, S.G. Gedekar and R.V. Tijare (2010 & 2012) 49 species from Wainganga river, Markandadeo region Dist Gadchiroli (MS). The workers like Kamble and Reddi (2012), Kharat *et al.* (2012), Galib *et al.* (2013), Nagabhushana and Hosetti (2013), Chandrashekhar (2014), Biswas and Panigrahi (2014) have contributed in the field of study of fish faunal diversity.

Human beings from time immemorial use fishes for various purposes. Millions of human are suffering from hunger and malnutrition while fishes form rich source of food and provide a meal to tide over a nutritional

difficulties of man. Fishes have formed an important item of human diet from time immemorial and are primarily caught for this purpose (Sarwade and Khillare, 2010).

In order to maintain sustainable development and stability of ecosystem, surveillance of fish faunal diversity of water bodies is needed. In the present study an attempt has been made to highlight the ichthyofaunal diversity of Hattikuni reservoir.

Materials and methods

Study area

Hattikuni is one of the village in Yadgir District in Karnataka State. It is located 10 km away from the Yadgir District. Hattikuni Reservoir is a perennial fresh water body located 01 km away from Hattikuni village. It lies between Longitude and Latitudes of 16°52'50"North and 77°10'21"East respectively. The catchment and command area of Hattikuni reservoir covers around 137.89 ha. Its water spread area is 2145 hectares.

Fig.1. Map showing Hattikuni reservoir

Fig.2. A view of Hattikuni Reservoir

Methodology

Fishes were collected from different selected localities with the help of local fisherman using different types of nets namely cast net, gill net and circular net. . Immediately photographs were taken taken prior to preservation since formalin decolorizes the fish colour on long preservation. Formalin solution was prepared by diluting one part of concentration formalin or commercial formaldehyde with nine parts of water i.e., 10% formalin (Hamilton, 1822; Misra, 1962; Munro, 2000).

Fishes brought to laboratory were fixed in the solution in separate jars according to the size of species. Smaller fishes were directly placed in the formalin solution while larger fishes were given an incision on the abdomen before they were fixed.

The fishes collected and fixed were labeled giving serial numbers exact locality from where collected, date of the collection spots where ever possible. The common local name of fish used in this region was labeled in each jar. Identification was done based on keys for fishes of the Indian subcontinent (Day 1958; Jayarma; 1981; Jayaram 1999; Talwar and Jhingram 1991). Classification was carried on outlines of day (1889), Jayram (1961), Nelson (1976) and Jayaram (1981).The identification of the species was done mainly on the basis of the colour pattern, specific spots or marks on the surface of the body shape of the body, structure of various fins etc

Results and discussion

During the study a total of 22 species of primary freshwater fishes belonging to 12 genera, 07 families and 04 order were recorded from the study sites. Number of species and their relative abundance is given in Table 1. On the basis of percentage composition and species richness, order Cypriniformes was dominant (11 species) followed by Siluriformes (6 species), Perciformes (4 species), Osteoglossiformes, (1 species). During the present investigation the order of dominance and percentage copmosition of species is given in the table (Table 1, Fig. 3).

The ichthyofaunal diversity of Hattikuni Reservoir comprises of 07 families namely, Cyprinidae, Bagridae, Siluridae, Claridae, Channidae, Cichlidae and Notopteridae . (Table 1 & Fig. 4).

The family Cyprinidae was represented by 11 species, *Catla catla*, *Labeo rohita*, Labeo calbasu, *Labeo boggut, Labeo bata, Labeo fimbriatus, Cirrhinus mrigal, Cirrhinus reba, Cyprinus carpio, Puntius sarana* and *Puntius ticto.*

Out of 11 species, *Catla catla, Labeo rohita, Cirrhinus mrigal* were abundant. *Labeo. calbasu* and *Cirrhinus reba* were found common. *Labeo boggut, Puntius sarana and Cyprinus carpio* were found moderate. *, Labeo bata, Labeo fimbriatus, Punctious ticto* found rare.

The family Bagridae was represented by 3 species, *Mystus cavasius, Mystis vittatus, Mystus seenghala.* Out of 3 species *Mystus cavasius and Mystus seenghala* were found common and *Mystis vittatus* found rare.

The family Channidae was represented by 3 species, *Channa punctatus. Channa striatus, and Channa murulius. Out of 3 species, Channa punctatus. Channa striatus* found rare and *Channa murulius* was found moderate.

The family Siluridae was represented by 2 species, *Ompak bimaculatus* were found moderate and *Wallago attu* was found rare.

The family Claridae was represented by 1 species, *Clarius batrachus* and was found rare. The family Cichlidae was represented by 1 species, *Oreochromis mossambicus* and was found rare. The family Notopteridae was represented by 1 species, *Notopterus notopterus* and was found moderate.

Out of 22 fish species found in the Hattikuni Reservoir, 11 species belong to the carp group. The carps, *Catla catla, Labeo rohita*, Labeo calbasu, *Labeo boggut, Cirrhinus mrigal*, Cirrhinus reba *Cyprinus carpio have* highly commercial and economical importance. While the other carps *Labeo bata, Labeo fimbriatus Puntius sarana, and Puntius ticto* are less economically important.

Among the catfishes, *Mystus cavasius, Mystus vittatus* and *Mystus seenghala* belonging to Bargidae family are of high economic importance and *Ompok bimaculatus* belonging to family Siluridae and *Clarius batrachus* belonging to family Clariidae also have high economic importance. While the other fish *Wallago attu* belongs to family Siluridae has less economic importance.

Among the murrels, *Channa striatus* and *Channa murulius* bears high economic importance while *Channa punctatus* has moderate economic importance.

Among the family Notopteridae, *Notopterus notopterus* has less economic importance. The family Cichlidae representing *Oreochromis mossambicus* have little economic importance.

Fishing operations throughout year with low catches in monsoon compared to high in post monsoon and summer seasons. It is suggested that the fishery authorities should investigate and practice the proper exploitation and management of this inland fishery resources according to ecological principals. They should recommend and determine the stocking standards and reasonable introduction according to potential of fish productivity and character of this water body. Scientific fishing standard and fishing quotas are to be worked out; this will play an important role in protection of the reservoir and its biodiversity. Thus it is necessity of every individual to play an active role to achieve the goals of sustainable fishery development and handover the resources in healthy conditions to the future generations.

The work will provide future strategies for development and fish fauna conservation in Hattikuni reservoir. To maintain Ichthyodiversity has importance as it is not always possible to identify individual species critical to sustain aquatic ecosystem.

It was concluded that further studies may be done to develop techniques for fish culturing. The use of illegal methods to catch fish should be banned in this area to prevent further depletion of freshwater fish resources. The fisherman's should make aware with about fishing, scientific training and facilities made available to the fish farmers fishing of the spawn, larval fish and immature fish should be avoided and subsidies loan facility may be provided on large scales which may help in high yield of fish production in the Hattikuni reservoir.

Table No. 1: List of Species Recorded in the Hattikuni Reservoir, Yadgir District, Karnataka from February 2014 to January 2016

SI.No	Species	Order	Family	Abundance
01	*Catla catla* (Hamilton,1822)	Cypriniformes	Cyprinidae	A
02	*Labeo rohita* (Hamilton,1822)			A
03	*Labeo calbasu* (Hamilton,1822)			C
04	*Labeo boggut* (Sykes, 1839)			M
05	*Labeo bata* (Hamilton,1822)			R
06	*Labeo fimbriatus* (Hamilton,1822)			R
07	*Cirrhinus mrigala* (Hamilton,1822)			A
08	*Cirrhinus reba* (Hamilton,1822)			C
09	*Puntius sarana* (Hamilton,1822)			M
10	*Puntius ticto* (Hamilton,1822)			R
11	*Cyprinus carpio* (Linnaeus, 1758)			M
12	*Mystus cavasius* (Hamilton,1822)	Siluriformes	Bagridae	C
13	*Mystus vittatus* (Bloch, 1794)	Siluriformes	Bagridae	R
14	*Mystus seenghala* (Sykes, 1839)	Siluriformes	Bagridae	C

15	*Channa punctatus* (Bloch, 1794)	Perciformes	Channidae	R
16	*Channa striatus* (Bloch, 1794)	Perciformes	Channidae	R
17	*Channa marulius* (Hamilton,1822)	Perciformes	Channidae	M
18	*Oreochromis mossambicus*	Perciformes	Cichlidae	R
19	*Ompak bimaculatus* (Bloch, 1794)	Siluriformes	siluridae	M
20	*Wallago attu* (Bloch & Schneider, 1801)	Siluriformes	siluridae	R
21	*Clarius batrachus* (Linnaeus, 1758)	Siluriformes	Claridae	R
22	*Notopterus notopteruss* (Pallas, 1769)	Osteoglossiformes	Notopteridae	M

A: Abundant; **C**: Common; **M**: Moderate; **R**: Rare;

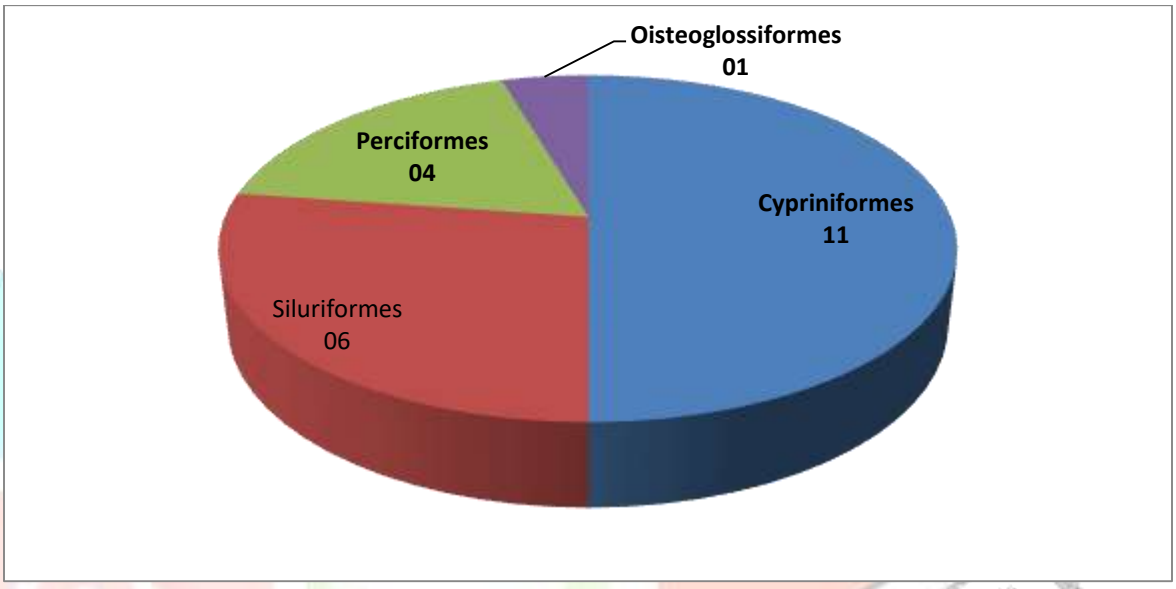

Fig. 3: Order- wise fish species composition number of Hattikuni reservoir.

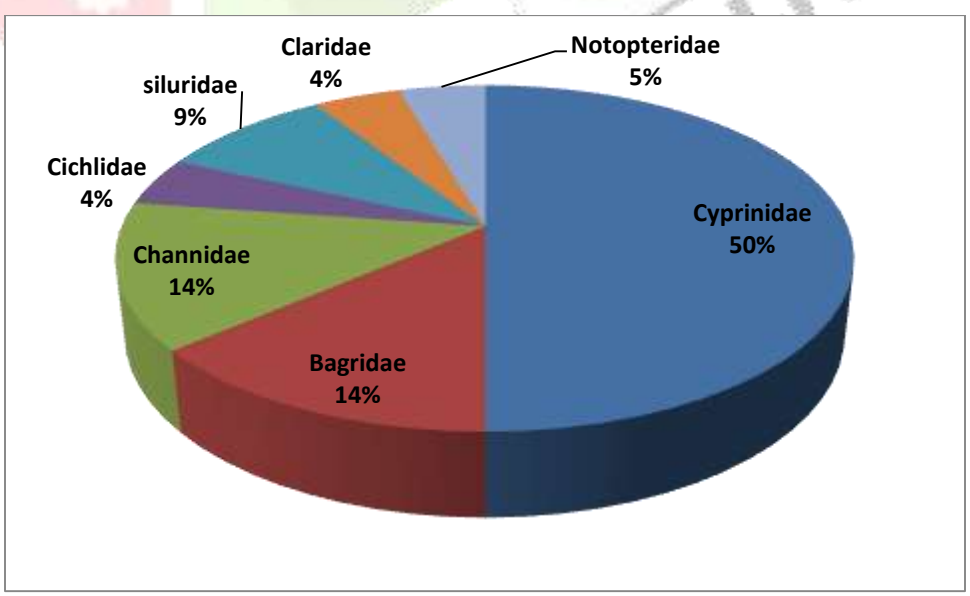

Fig. 4: Order- wise fish species composition percentage of Hattikuni reservoir.

Conclusion

The reservoir exhibit a good ichthyofaunal diversity represented by 22 species of fishes belonging to 12 genera, 07 families and 4 orders. The fish community in reservoirs includes the native species and the introduced species for the purpose of fish production. This study should open a new ways for incoming Ichthyofaunal research.. The diversity and abundance of fishes in this reservoir represents the suitability of water for aquaculture practices. To maintain the richness of aquatic ecosystem continuous monitoring of Lake is needed.

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