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The Biodiversity of Fish Fauna in Nageshwar Pond Chapra District, Saran, Bihar (India)

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Abstract: ***The present study deals with the diversity of fish fauna found in Nageshwar pond ofchapra district saran. The diversity of fish fauna has never been studied in the Nageshwar pond of chapra district saran. In this study, the diversity of freshwater fishes of Nageshwar pond of Chapra district Saran was studied and assessed from January, 2008 to December, 2009.The aim of the paper was to assess the variety and abundance of the important fish fauna inhabiting in this region. We documented and described 17 freshwater fish species of Nageshwar pond of chapra district saran that were belonging to the 3 orders and 6 families and 9 genera. Among them, Nine species were belonging to the family Cyprinidae, three species were belonging to channidae, two species were belonging to Bagrridae, while the remaining other families i.e., Clariidae, E, Heteropneustidae, and Osphronemidae were represented by only single species. To save fish diversity and to develop asustainable fisher practices, proper documentation, leading to diversity information system is an urgent need. The paper also describes the species composition with their relative contributions and a few important findings that may help to better understand the current scenario of ichthyofaunal diversity. Hence, the results of our present study would deliver useful information about the diversity of fish fauna of Nageshwar pond that could be useful later treasured in the systematic, fisheries management and conservation.***
Keywords: Aquatic system, Icthyofaunal diversity, Nageshwar pond of Chapradistrict Saran, conservation

I. INTRODUCTION

Nageshwar pond is situated of Chapra district (Saran),Bihar, India. The fresh water pond is more than 20 year old. This pond is about 4 acre in area and with an average depth of about more than 4 to 5 meters (13-15 feet). The water of this pond is used by fish production. The pond is also use for washing dirty cloth bathing of domestic animal and used by animal for drinking purpose. Sample of the water to physiochemical characteristics is analyses according to standard method of APHA (2005). The main resource of water in Nageshwar pond mainly depends on rain fall. India is endowed with a rich variety of inland fisheries resources in the form of long extensive river system spanning the length and breathe of the country and is dotted with 2.21 million ha of tanks and ponds, 1.97 million ha of Jheels, mans and derelict water etc. which have the potential to place the country among the top inland fish production of the world. Inland fish production in India has registered a phenomenal growth in the last three and half decades; the overall yields fall much below the optimum level of production. There had been a wide gap between production from these water bodies and this actual potential. Inspire of impressive growth rate achieved in fish production in past independent era, there is still chronic shortage of fish throughout the country and it needs to be further accelerated in order to the growing demands for the people. According to an estimate, about a billion people in south East Asian countries rely on fish for animal protein (younis and Donaldson 1982). About 70% of the people of India are fish and mea eaters (NCA 1976). Assam and West Bengal have the highest % (95%) of fish eating population in the country. Though fish is very popular diet enjoying patronage of all section of the society, the fish is not contributing to the nutrition of our protein starved, economically backward people, to the extent it should be in the present day .now a day the consumption of fish by the poor people becomes a difficult task, because of its high price in the market and this is happened only due to the existing gap between demand and supply. The nutritional advisory committee (NAC) has recommended a daily requirement of 75 gm of fish in the diet of an Indian with an estimated requirement of 11 kg. Per anum. However India's fish consumption per capita is about 3.5 kg. per annum against the worlds average per capita consumption of 12.1 kg. peranum. (chauhan 1991).

The shortage of fish production throughout the country can be attributed to the under utilization of resources (Jhingran 1990). Most of the inland water permits a higher degree of manipulation to the biological advantage of the ecosystem and economic advantage of man. The demand and nutritive aspect of fishes necessitates the scientific handling and conversion of natural water bodies into

productive fisheries. Thus, scientific knowledge on these aquatic environments and productivities of aquatic communities of almost importance for better utilization of these aquatic resources.

A fish is defined as any member of paraphyletic group of organism that consists of all gill-bearing aquatic animals. They are the keystone species which control the distribution as well as richness of other organisms in the ecosystems. They are good indicators of the water quality and health of the ecosystem [3]. Our country India is sanctified with a very rich and diverse natural water resource in the form of rivers, streams, estuaries, backwaters etc. The country is also gifted with a rich fish genetic biodiversity with approximately 2, 200 fish species and ranks 9th in term of freshwater mega biodiversity [12]. A significant portion of the freshwater fish production in India is still based on the harvest from wild population [15]. About 21,730 species of fishes have been recorded in the world so for listed of which, about 11.7% are found in Indian waters [6]. Valid scientific descriptions exist for about 24,600 living species of fishes 482 families and 57 orders [11]. Systematically, the first assessment which categorized of 46 freshwater fish species as threatened in India [1]. In the second assessment, 320 freshwater fishes were included and 43 freshwater fish species were categorized as critically endangered, 90 as endangered and 81 as vulnerable [6]. Meanwhile, a recent assessment for central India (Madhya Pradesh, Chattisgarh and Rajasthan) reported 168 fish species, of which, 41 species (24.40%) were placed as threatened [14]. Generally freshwater fishes are a poorly studied group. There is no proper documentation and most of the information available is from a few well-studied locations only. Hence there is a fundamental need for taxonomists to describe unknown species in the study of biodiversity especially in these species-rich areas.

Chapra district of Masrakh region has not been extensively surveyed for fish diversity. The fish diversity is not only the wealth of the district Chapra but it also has serious implications in fisheries. The review of literature indicates that very limited information is available. Studies of available literature show that no attempted has been made to document the fish diversity along with their habitat, in this region. Therefore, In the present study, a detailed survey was conducted in the Nageshwar Pond, Chapra Dist., Bihar to ascertain the present scenario of fish diversity within the pond.

II. MATERIALS AND METHODS

A. Fish samples collection

Fish samples were collected at regular interval with the help of local fisherman at different site of the pond. They applied following gears to catch the fishes.

1) Drag Net (Darwari)
2) Castle Net (BhanwarJal)
3) Scoop Net (Jav)

Samples were collected August, 2008 to January, 2009 in the study area. The Fishes collected from the pond were treated with 10% formalin for five days. After that the fishes were transferred in 5 % Formalin and preserved for detailed study and identification in the laboratory. The identification was made with the help of Day's fish fauna of "BRITISH INDIA" and the "classification of the fished present and extinct" of Leo. S Berg. Morphometric characters includes Total length of the body standard, Length of the body, Length and depth of the head, Position and diameter of the eye, Length of snout, Maximum and minimum girth, Length of Pre dorsal fin, Pre pectoral fin, Pre anal fin and Pre caudal fin. Descriptive Characters includes Profile and Shape of the body, Skin texture and coloration, Position and shape of the mouth, lips and snout, Barbels and jaws, Scales and lateral line system, Origin, shape, size and type of median, paired and caudal fins, Fin rays and fin formula, Tail and special marking. Fishes are classified and arranged based on the work of Mirza (1990) [9], Mirza and Sandhu, (2007) [10] and Jayaram (1999) [7], Talwar and Jhingran (1999-1981) [16]. Then each sample was placed in a separate labelled plastic jar and preserved in 10% formalin solution for long term preservation. A field kit, containing measuring tape, rope, buckets, preservative, enamel trays, digital camera, etc. was prepared for regular use. A boat was engaged and the station was visited in the sequence, which was carefully followed throughout the investigation period.

III. RESULTS AND DISCUSSION

The present study was carried out to determine the current status of freshwater fish biodiversity found in Nageshwar Pond of chapra district in Bihar. We have reported 17 freshwater fish species inNageshwar Pond. During the present study were of Nageshwar Pond, the diversity of fishes comprised of 2 Classes Osteichtyes and Actinopterygii, 3 Order Cypriniformes, Siluriformes and Perciformes, 6 Family Cyprimidae, Bagridae, Heteropneustidae, Claridae, Channidae and Osphronemidae, 09 GenusCatla, Channa, Cirrhina, Clarias, Colosa, Heteropneustes, Labeo, Mystus and Puntiusand 17 species belong viz.,CatlaCatla, Channa Gachua, ChanaPunctatus, Channa Stewartii Cirrhinusmriglaa, Cirrihinus Reba, Clariasbatrachus , ColisaFasiata, Heteropneustes Fossilis,

LabeoCalbasu,Labeo Pangusia Labeorohita, Mystustengara, Mistusvittatus, Puntiussarana, Puntiusticto and Puntiussophore. Similarly Sakhare (2001) [13] has reported 23 species from Jawalgaon reservoir Solapur district in Maharashtra. Battul*et al*. (2007) [2] have reported 18 species from Ekruckh lake Solapur district in Maharashtra, Khedkar and Gynanath (2005) [8] has reported 37 species from Issapur Reservoir, District Yeotmal of Maharashtra State, India.

Table 1: Systematic list of fishes of Nageshwar Pond inchapra district, Bihar

S. No.	Order	Families	Genera	Species	Local Name
1	Perciformes	Channidae	Channa	Channagachua	Chanaga
2	Perciformes	Channidae	Channa	Chanapunctatus	Girai
3	Perciformes	Channidae	Channa	Channastewartii	Saur
4	Perciformes	Osphronemidae	Colisa	Colisafasiatus	Khosti
5	Cypriniformes	Cyprimidae	Cirrhinus	C. mirigala	Naini
6	Cypriniformes	Cyprimidae	Cirrhinus	C. reba	Reba
7	Cypriniformes	Cyprimidae	Catla	CatlaCatla	Bhakura
8	Cypriniformes	Cyprimidae	Labeo	Labeopangusia	Reba
9	Cypriniformes	Cyprimidae	Labeo	Labeocalbasu	Karaunchar
10	Cypriniformes	Cyprimidae	Labeo	Labeorohita	Rohu
11	Cypriniformes	Cyprimidae	Puntius	Puntiusticto	Sidhari
12	Cypriniformes	Cyprimidae	Puntius	Puntiussarana	Darahee
13	Cypriniformes	Cyprimidae	Puntius	Puntiussophore	Pothia or Sidhari
14	Siluriformes	Heteropneustidae	Heteropneustes	Heteropneustesfossilis	Singhi
15	Siluriformes	Bagridae	Mystus	Mystustengara	Tengara
16	Siluriformes	Bagridae	Mystus	Mystusvittatus	Tengara
17	Siluriformes	Claridae	Clarias	Clariasbatrachus	Mangur
Total	3	6	9	17	

Thus, the result of the present study revealed that the large number of species inNageshwar Pond were belong to the Siluriformes and Cypriniformes which the fish species composition belongs to the other i.e., Sybranchiformes, Perciformes and Osteoglossiformes was found to be least. Hence, the members of the family Schilbeidae and Cyprinidae were found to be highly abundant in Nageshwarof Rohtas district. Such wide-ranging distribution might be associated to substrate of the dam that could afford appropriate habitat for nest building or geological and glacial history of study area.Climatic factor such as droughts could also affect on the distribution of cyprinid fishes as described by Lachner and Jenkins (1971) [16].

IV. CONCLUSION

During the period of investigation (August, 2008 to January, 2009) 17 fish species belonging to 6 families and 9 genera were recorded. The results of the present study revealed that, Nageshwar Pond being a freshwater resource supports a rich and diversified fish fauna. However, for greater production of fish regular monitoring of fishes must be done at different sites, the pond has broken embankment. This gives chance of escaping of fishes during the raining season. Therefore embankment on all sites of the pond should be raised so that undesired exit or entry of water can be controlled.

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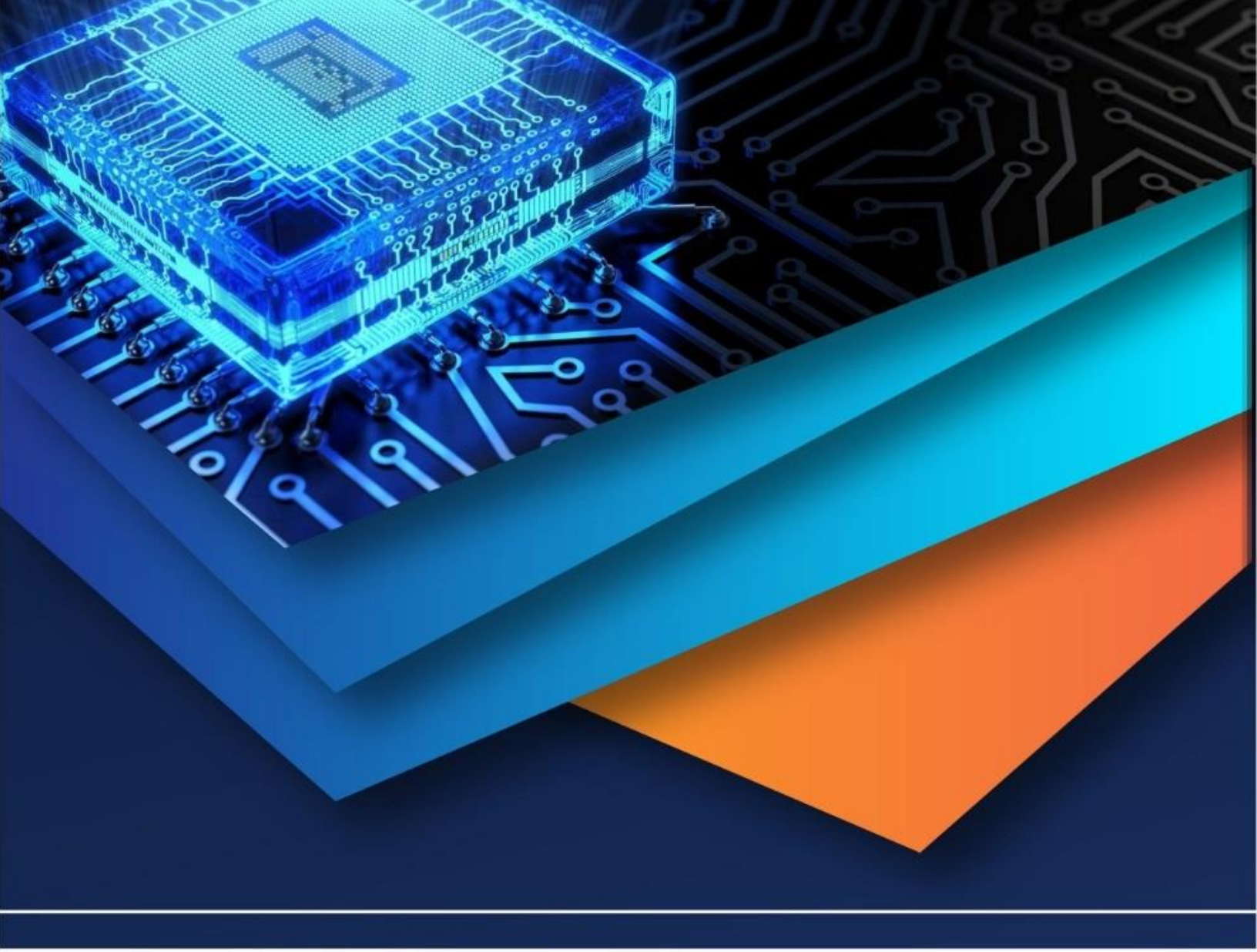

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