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Diversity and Conservation Status of Fish Fauna in Chichtola Lake, Gondia District, Maharashtra, India

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Abstract: Chichtola Lake is located at the periphery of Nagzira Wildlife Sanctuary and one of the most important perennial lake which supports diverse fisheries communities. Present study was carried out to assess the fish diversity and their status. The present work was carried out for two years from October 2017 to September 2019 in Chichtola lake of Gondia district, Maharashtra State, India. The present finding showed that the lake is the habitat of 31 fish species from 13 families. Cyprinidae was the most dominant family. The family Cyprinidae represents sixteen (16) species followed by Channidae (3 species), Bagridae (2 species), Ambassidae (1 species), Anabantidae (1 species), Badidae (1 species), Belonidae (1 species), Claridae (1 species), Cichlidae (1 species), Heteropneustidae (1 species), Nandidae (1 species), Notopteridae (1 species) and Siluridae (1 species). Out of 31 species 90.91% species are Least Concern (LC), 3.03% Vulnerable (VU), 3.03 % Near Threatened (NT) and 3.03% are Data Deficient (DD). Habitat loss, over fishing and increase in number of invasive species of plants and fishes are the major threats causing biodiversity loss of fish in the lake.

Keywords: Fish diversity, Conservation, Chichtola lake, Gondia, Cyprinidae, Channidae, Bagridae, Heteropneustidae

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Introduction

The varied weather and physico-geographic topographies underwrite to rich biodiversity. Biodiversity has been viewed in many ways depending upon the perspectives of people from different spheres. In many instances, it has also been referred to “life” or “wilderness” (Winter and Hughes, 1997). Biodiversity affects the capacity of living systems to respond to changes in the environment and is essential for providing goods and services from ecosystems nutrient cycling and clean water (Rahbek and Colwell, 2011). Globally

lots of wetlands are under threat (Finlayson *et al.*, 1991). An increasing population in India places enormous pressure on natural wetlands and described major causes of wetland loss in the country, agriculture again dominating as the primary cause (Foote *et al.*, 1996). The freshwater resources are very precious for the life on our planet. The number of dams, reservoirs, tanks, etc. have significantly increased in last few years. The aquatic ecosystem is important as it contains numerous economically important animals

especially fish which form an important source of protein for human food. The development of fisheries in these fresh water resources needs to be increased through the scientific development (Pawara *et al.*, 2014). Fishes form the most diverse group of vertebrates and have importance both as human food and as material for scientific study (Marshall, 2000). Fish diet provides proteins, fat and vitamins A and D. For better knowledge regarding fish and fisheries especially in Maharashtra, it is essential to study the distribution and the availability of fish from lakes, rivers and tanks (Shinde, 2009). Thus, there is need to survey fish fauna associated with different freshwater habitats, which will help in planning methods for their production. The freshwater ichthyofaunal diversity is changing and getting depleted fast as a result of the water pollution, destruction or degradation of habitats and invasion of exotic species (Revenga *et al.*, 2005). The water management systems of eastern Vidarbha observed that introduction of high yield species of fishes resulted in increased production till natural fish food was available in the tanks. Year after year the fishing continued, but the aspect of fish food was neglected. Today after 30-40 years of continuous production, the major problem for the fisheries cooperatives is drastically falling production of high yield species. In past the growth of fish was 1-1½ kg in a year but now it is only about 200 g in a year (Rajankar *et al.*, 2011). Velankar (2011) has published an article on Village Tanks and Community Based Management in Gondia District, Maharashtra State, India. Raut *et al.* (2021) has documented 62 number of fish species with the title - Ichthyofaunal Diversity and Conservation Perspective of Some Selected Wetlands in Nagzira- Navegaon (NN) Corridor, Gondia District of Maharashtra State, India.

Chichtola Lake (GPS Coordinates 21°12'15.01"N and 80°5'52.39" E; Fig. 1) is located at the periphery of Nagzira Wildlife Sanctuary and one of the most important perennial lake which supports diverse fisheries communities. Present

study was carried out (from October 2017 to September 2019) to assess the fish diversity and their status in Chichtola lake of Gondia district, Maharashtra State, India.

Fig. 1: Google map of Chichtola Lake.

Materials and Methods

The present work was carried out for two years from October 2017 to September 2019 in Chichtola lake of Gondia district, Maharashtra. The fish study was carried out on monthly basis in different seasons during the study period. The seasons defined as winter from October to January, summer from February to May and monsoon from June to September. Fishes were collected with the help of local fishermen during their fishing period using different type of nets namely gill nets, cast nets and drag nets. Fishes were brought to laboratory and preserved in 10% formalin solution in separate specimen jars according to the size of species. Small fishes were directly placed in the 10% formalin whereas large fishes were given an incision in their abdomen and preserved. Species identification and confirmation were carrying out with the help of standard keys and books of Jayram (1999) and Talwar *et al.* (1991).

Results and Discussion

The present finding showed that the Chichtola lake is the habitat of 31 fish species from 13 families (Table 1). Some fish species found in this lake have been shown in Figure 2. Cyprinidae was the most dominant family. The family Cyprinidae represents sixteen (16) species followed by

Table 1: Diversity and status of fishes during study period

S. No.	Local Name	Scientific Name	Family	IUCN Status
1	Zamdi	<i>Parambassis lala</i>	Ambassidae	LC
2	Koi	<i>Anabas testudineus</i>	Anabantidae	LC
3	Rengdya Katwa	<i>Mystus bleekeri</i>	Bagridae	LC
4	Jalya Katwa	<i>Mystus cavasius</i>	Bagridae	LC
5	Telgi	<i>Badis badis</i>	Badidae	LC
6	Chachya	<i>Xenentodon cancila</i>	Belonidae	LC
7	Bilona	<i>Channa gachua</i>	Channidae	LC
8	Botri	<i>Channa punctata</i>	Channidae	LC
9	Dadak	<i>Channa striata</i>	Channidae	LC
10	Wagur	<i>Clarias batrachus</i>	Clariidae	LC
11	Laltilapia	<i>Oreochromis niloticus</i>	Chichlidae	LC
12	Katla	<i>Catla catla</i>	Cyprinidae	LC
13	Mrugal	<i>Cirrhinus mrigala</i>	Cyprinidae	LC
14	Grass Carp	<i>Ctenopharyngodon idella</i>	Cyprinidae	LC
15	Sipnus	<i>Cyprinus carpio</i>	Cyprinidae	VU
16	Silver Carp	<i>Hypophthalmichthys nobilis</i>	Cyprinidae	DD
17	Rohu	<i>Labeo rohita</i>	Cyprinidae	LC
18	Mulki Rohu	<i>Labeo calbasu</i>	Cyprinidae	LC
19	Khunus	<i>Labeo gonius</i>	Cyprinidae	LC
20	Gadad	<i>Pethia conchonius</i>	Cyprinidae	LC
21	Karvali	<i>Puntius chola</i>	Cyprinidae	LC
22	Poshti	<i>Puntius sarana</i>	Cyprinidae	LC
23	Pershi	<i>Salmophasia bacaila</i>	Cyprinidae	LC
24	Molwar	<i>Amblypharyngodon mola</i>	Cyprinidae	LC
25	Gani	<i>Rasbora daniconius</i>	Cyprinidae	LC
26	Nevara	<i>Labeo boggut</i>	Cyprinidae	LC
27	Kanas	<i>Labeo fimbriatus</i>	Cyprinidae	LC
28	Singur	<i>Heteropneustes fossilis</i>	Heteropneustidae	LC
29	Dukkar	<i>Nandus nandus</i>	Nandidae	LC
30	Bhadar	<i>Notopterus notopterus</i>	Notopteridae	LC
31	Waranja	<i>Ompok bimaculatus</i>	Siluridae	NT

DD- Data deficient; LC- Least concern; NT- near threatened; VU- Vulnerable

Channidae (3 species), Bagridae (2 species), Ambassidae (1 species), Anabantidae (1 species), Badidae (1 species), Belonidae (1 species), Clariidae (1 species), Cichlidae (1 species), Heteropneustidae (1 species), Nandidae (1 species), Notopteridae (1 species) and Siluridae (1 species) (Fig. 3). Out of 31 species 90.91% species are Least Concern (LC), 3.03% Vulnerable (VU), 3.03 % Near Threatened (NT) and 3.03% are Data Deficient (DD) (Fig. 4). Habitat loss, over fishing and increase in number of invasive species of plants and fishes are the major threats causing biodiversity loss of fish in the lake. The fishery of

lake Chichtola is of great importance to the surrounding villages where protein is scarce. Fishing is the greatest simple economic activity depended upon by the communities surrounding the lake and it is overfishing perceived to be one of the major threats to biodiversity.

The fishermen should make aware about scientific training for fishing which may help in high yield of fish production in the Chichtola lake. Fishing during reverse fish migration should be banned by fishery authorities and fishing cooperative societies. There is a rich diversity of

Fig. 2: Pictures of some fishes of Chichtola lake.

Fig. 3: Family-wise distribution of fish species of Chichtola lake.

Fig. 4: IUCN Status of fish species of Chichtola lake.

fish in Chichtola lake but majority of the fish diversity is threatened by anthropogenic activities. Ichthyofaunal diversity and distribution is useful for designing and implementing conservation strategies. Fishery Department should provide scientific training to fishermen, provide facilities to fish farmers and provide loan on subsidized basis which may help in high yield of fish species and there is an urgent need to follow legislative and other measures for conservation of fishery.

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