

Conservation status of fishes reported from Sarua lake of District Gorakhpur, (U. P.), India

¹A P Singh, ²C. Vijayakumar

Department of Zoology
St. Andrew's college
Gorakhpur, U.P.

Abstract- An attempt was made to study the conservation status of the fishes naturally occurring in Sarua lake, Campiorganj, Uttar Pradesh. The study was conducted from Jan. to Dec. 2022. During exploration, a total of 30 species of fishes belonging to 21 genera, 14 families and 10 orders were identified and specimens were preserved in the laboratory. As per latest version of IUCN Red List, out of 30 species of fishes identified, 2 species comes under EN (endangered), 8 species come under NT (near threatened) and 20 under LC (least concern) so far.

Keywords: Fish diversity, Conservation, Sarua lake.

Introduction: Around the world, there is a growing concern over the loss of aquatic ecosystems and the biodiversity that goes along with them [1] particularly for regions close to rivers [2]. For example, freshwater fish are the category of vertebrates that pose the biggest threat on the planet after amphibians. It is believed that fish populations are declining more rapidly than those of higher animals [3]. Changes in land and water conditions can significantly reduce the diversity of fish, putting the surviving species at risk. Fish living in lentic freshwater bodies face more challenging and unpredictable living conditions, and human activities may cause them to experience extraordinary stress. Freshwater biodiversity loss is primarily caused by pollution, water diversion, exotic species introduction, habitat degradation and fragmentation, and the effects of global climate change [4]. The aim of this study is to assess the current status of the fish biodiversity, distribution, threats and other management issues in sarua lake.

Wetlands are important parts of water bodies and perform many valuable functions for them for the environment and society. The Ramsar Convention claimed that wetlands are the largest in the world a productive environment with amazing. They are considered one of them the richest sources of biodiversity. Due to urbanization and anthropogenic pressures most wetlands are exposed to higher amounts of biologically active nutrients accumulation [56].

Sarua lake, a wetland, is located near Campiorganj, district Gorakhpur, Uttar Pradesh. The total area of this lake is 354.53 hectares. The maximum water depth in the lake is 15 feet during monsoon and minimum in summer. It has good biodiversity because it is rich in both flora and fauna, and the presence of good biodiversity is healthy for growing, dynamic and economically efficient water body. The edge of the lake is heavily infested with *Eichornia crassipes* and caused by organic deposition sedimentation of lake.

Prakash et al. (2015a, 2015b, 2015c, 2016 and 2019) [7-9], Verma et al. (2016a and 2016b) [10-11] and Verma (2016a, 2016b, 2016c, , 2016e, 2017a, 2019a and 2019b) [12-18] conducted the limnological studies as well as studies on fish biodiversity in a fresh water body. The present study is an effective attempt to study the conservation status of the fishes naturally occurring in Sarua lake, a wetland of Campiorganj, Gorakhpur, Uttar Pradesh.

Study Area : The wetland under exploration is situated in block Campiorganj, district Gorakhpur, Uttar Pradesh (Image 1-2). The lake is more than 11 km away from Campiorganj. It is situated between the latitude 27.0548740°N ,83.2271232°E.

Image1: Map of Gorakhpur district showing location of Campiorganj

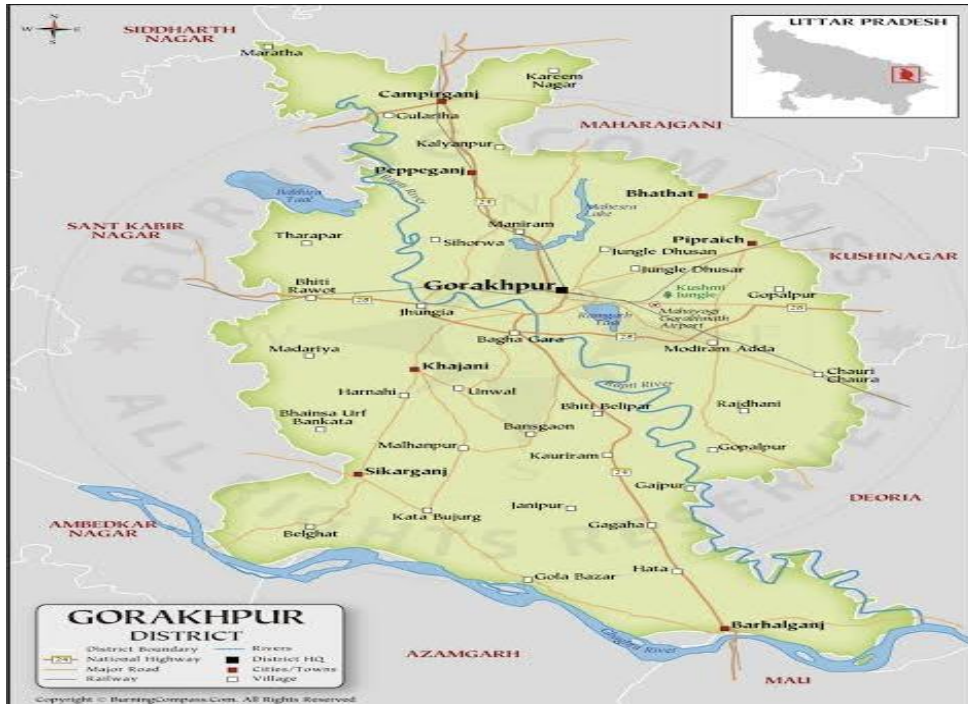
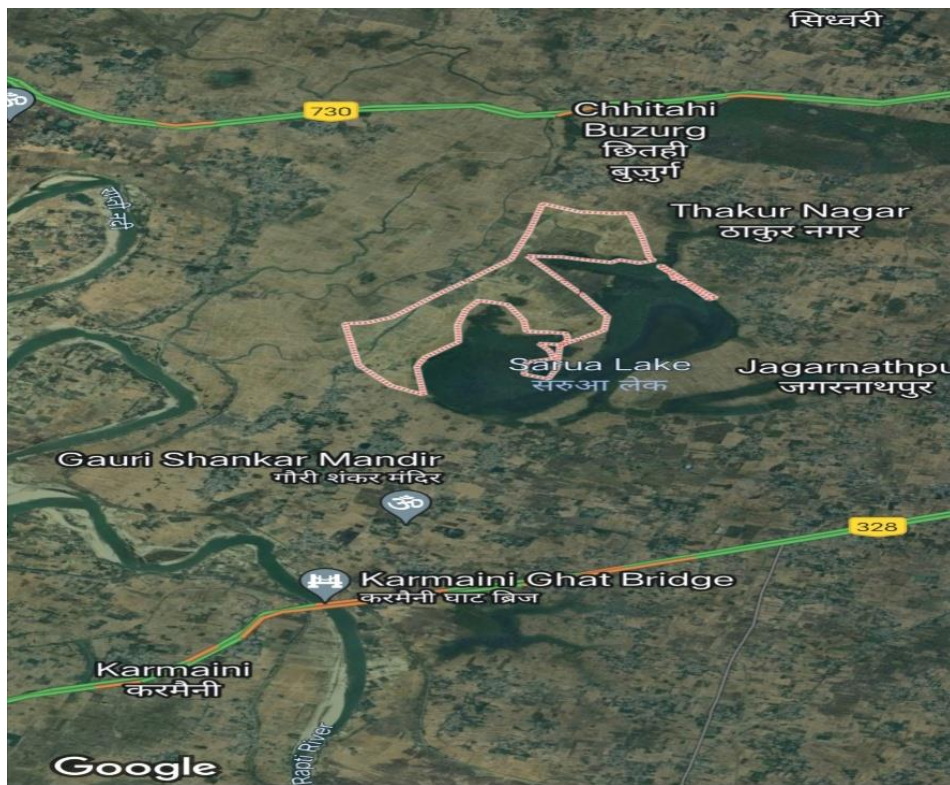


Image2: Satellite map of Sarua lake, Campiorganj, Gorakhpur



Materials and methods : Fish were caught and collected for the study from the pond by using hand nets, cast nets, hooks, pulling nets with the help of local people and fishermen while fishing. Studying fish recovery and collection were done twice in a month from January 2022 to December 2022. Fish were later identified using Mishra's standard keys, [19], Day, [20], Jhingran [21], Jayaram [22], Srivastava [23] and L. Flora [24]. Also interacting with local people helped the authors in several ways in data collection and identification.

Results and Discussion: . The present study showed that the family Cyprinidae (13 species) contributed the highest, followed by Channidae (2 species), Bagaridae (2 species), Siluridae (2 species), Mastacembelidae (2 species) and other families only one species found.

A total of 30 species of fishes belonging to 21 genera, 14 families and 10 orders were identified during entire study period. Zoological names of these 30 different species of fishes recorded, with family, order and conservation status [25] are shown in the table given.

S.N.	Scientific name	Family	Order	Local name	Conservation status
1	<i>Catla catla</i>	Cyprinidae	Cypriniformes	Bhakur	NT
2	<i>Labeo rohita</i>	Cyprinidae	Cypriniformes	Rohu	LC
3	<i>Labeo bata</i>	Cyprinidae	Cypriniformes	Bata	LC
4	<i>Labeo calbasu</i>	Cyprinidae	Cypriniformes	Karaunchar	LC
5	<i>Labeo gonius</i>	Cyprinidae	Cypriniformes	Kursi	LC
6	<i>Cirrhinius mrigala</i>	Cyprinidae	Cypriniformes	Naini	LC
7	<i>Cirrhinius reba</i>	Cyprinidae	Cypriniformes	Raiya	LC
8	<i>Esomus danricus</i>	Cyprinidae	Cypriniformes	Flying barb	LC
9	<i>Oxygaster bacaila</i>	Cyprinidae	Cypriniformes	Chalhawa	LC
10	<i>Puntius sarana</i>	Cyprinidae	Cypriniformes	Daraheei	EN
11	<i>Puntius ticto</i>	Cyprinidae	Cypriniformes	Sidhari	LC
12	<i>Puntius darsalis</i>	Cyprinidae	Cypriniformes	Sidhari	LC
13	<i>Puntius conchonius</i>	Cyprinidae	Cypriniformes	Rosy barb	NT
14	<i>Mystus tengra</i>	Bagaridae	Siluriformes	Tengana	LC
15	<i>Mystus vittatus</i>	Bagaridae	Siluriformes	Tengana	LC
16	<i>Ompak bimaculatus</i>	Siluridae	Siluriformes	Jalkapoor	NT
17	<i>Wallago attu</i>	Siluridae	Siluriformes	Padhani	NT
18	<i>Heteropneustes fossilis</i>	Heteropneustidae	Siluriformes	Singhi	NT
19	<i>Pangasius pangasius</i>	Pangasidae	Siluriformes	Payas	LC
20	<i>Clarias magur</i>	Clariidae	Siluriformes	Magur	LC
21	<i>Channa punctatus</i>	Channidae	Perciformes	Girai (Snake headed fish)	NT
22	<i>Chanda ranga</i>	Channidae	Perciformes	Chanari	LC
23	<i>Colisa fasciata</i>	Osphronemidae	Anabantiformes	Khosta	NT
24	<i>Oreochromis niloticus</i>	Cichidae	Cichliformes	Nile tilapia	NT
25	<i>Mastacembelus armatus</i>	Mastacembelidae	Synbranchiformes	Baam	LC
26	<i>Mastacembelus aculeatus</i>	Mastacembelidae	Synbranchiformes	Baam	EN
27	<i>Xenentodon cancila</i>	Belonidae	Beloniformes	Kauva	LC
28	<i>Tetradon cutcutia</i>	Tetradontidae	Tetradontiformes	Galfulni	LC
29	<i>Notopterus notopterus</i>	Notopteridae	Osteoglossiformes	Patra	LC
30	<i>Glossogobius giuris</i>	Gobiidae	Gobiiformes	Kharpya	LC

Table 1: Different fish species with conservation status recorded during 2022

EN=Endangered, LC=Least concern, NT= Near threatened

On the basis of rate of decline, population size, area of geographic distribution and degree of population, distribution fragmentation etc., IUCN [25] classified the species into nine groups including EN (Endangered), VU (Vulnerable), NT (near threatened), LC (least concern) and NE (not evaluated). During survey, a total of 30 species of fishes belonging to 21 genera, 14 families and 10 orders were identified. As per latest version of IUCN Red List, out of 30 species of fishes identified, 2 species comes under EN, 8 under NT (near threatened) and 20 under LC (least concern) so far, images of some collected fishes given below-



Puntius darsalis.
Oreochromis niloticus.



Glossogobius giuris
Puntius ticto



Puntius sarana.



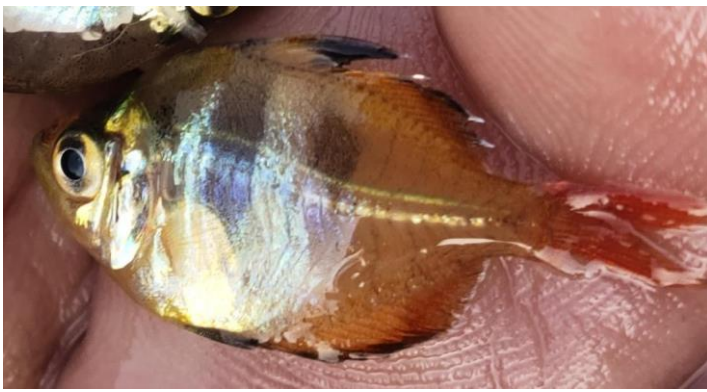
Chanda ranga



Puntius conchoniis



Esomus danricus



Mystus tengra.



Colisa fasciata



Oxygaster bacaila



Clarius magur



Xenantodon cancila



Mastacembelus armatus



Channa punctatus



Heteropneustes fossilis
Wallago attu



Ompak bimaculatus
Catla catla
Labeo rohita



Cirrhinius mrigala

Labeo calbasu

Conclusion and recommendation: Fishes are very important components of the wetlands and they play an important role in food web. The occurrence of fishes attracts many piscivorous migratory birds to this wetland. The gradual degradation of wetland due to numerous factors can cause lot of this fish diversity. Therefore, ecological point of view a detailed study of biodiversity of this wetland is required so that effective conservation and management action plan can be designed and implemented for sustainable development (Verma 2019d) [26] of this wetland.

- Establishing a fish sanctuary is necessary to protect native fishes.
- Fishermen should be made more aware of the value of ornamental fish species and how to get a better price through awareness programmes.
- To preserve fish species and increase fish productivity, particularly for Indian major carps, rigorous adherence to fishing regulations is necessary. Major carps in India are expensive fish, but the population is downing. Nets with a mesh size of less than 2 cm should be completely prohibited in order to protect Indian big carp, especially during breeding season.

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