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Preliminary survey of biodiversity of Chittaura Jheel, a wetland of Bahraich district, U.P

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Abstract

Chittaura Jheel of Bahraich district of Uttar Pradesh is one of the largest natural wetland of this district. It covers an area of about 15 ha and is rich in faunal and floristic diversity. To assess the biodiversity of this wetland, a preliminary survey was carried out during the year 2020 which indicate the rich biodiversity of this waterbody. The notable animal diversity includes annelids (5 species), arthropods (14 species),

molluscs (5 species), fishes (22 species), amphibians (3 species), reptiles (2 species) and birds (3 species) and zooplanktons were available there. The result also shows the occurrence of 28 hydrophytes. Out of 28 species, 6 belonging to floating weeds, 3 to emergent weeds, 7 to submerged weeds, 7 to marginal weeds and 5 species of green algae and phytoplankton.

Keywords: Biodiversity, Chittaura Jheel, wetland

Introduction

Wetlands are areas where water is primary factor controlling the environment and the associated plants and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by water (Sharma and Sharma, 2011) [15]. Wetlands are among the world's most productive environments. They are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals including fish, amphibians, reptiles, birds, mammals, and invertebrate species depend for survival (Prakash, 2020) [4]. Wetlands like lake etc. are of utmost importance for several reasons. They represent only a part of our land bases but they provide shelter to a great number of animal and plant species. Many species only use the wetland for a very small but in the important part of their life cycle such as for breeding and responding (Yadav *et al.*, 2011) [15]. So, conservation of wetlands is very much essential as wetlands are one of the most threatened habitats of the world. The most important step for conservation of wetlands is to maintain a proper water quality (Smitha and Shivashankar, 2013). They have been an essential part of human civilization meeting many crucial needs for life such as drinking water, food, fodder, energy supply, flood storage, transport, recreation, biodiversity, and climate stabilization. The geomorphologic, climatic, hydrological and biotic diversity across continents has contributed to wetland diversity. Wetland loss may be defined as the loss of wetland area, due to conversion of wetland to non-wetland areas as a result of human activity and wetland degradation is the impairment of wetland functions as a result of human activity. The loss of wetlands has led to several ecological disasters in some areas, including large-scale devastation due to inundation. The major causes of loss of biodiversity in wetland systems include land use patterns, habitat destruction, pollution, exploitation of resources, and invasive species. Wetlands are under increasing stress due to the rapidly growing population, technological development, urbanization and economic growth. Due to urbanization and anthropogenic pressure most of the wetlands in India are succumbed to greater degree of biologically active nutrient accumulation (Verma and Prakash, 2018) [13].

Some studies have been made by different researchers on the limnology as well as plankton, insect, benthos and fish biodiversity of wetlands in U.P. during the last few decades such as Prakash *et al.*, (2015) [4], Verma and Prakash (2018 & 2020) [13], Prakash and Verma (2019), Prakash and Singh (2020) [4], Prakash (2020a,b), Prakash and Yadav (2018 & 2020) [4], Prakash and Ranjan (2020) [4], Ranjan and Kushwaha (2020) [9] and Singh and Prakash (2021) [10]. Therefore, the present study is aimed to systematic survey on the fish diversity of this jheel.

Materials and Methods

Chittaura Jheel (also known as Ashtwarka jheel), a wetland is a horse shoe shaped large shallow lentic waterbody. The area of wetland is about 15 ha with total catchment area of about 46 ha. It is situated about 8 km from Bahraich city, on Gonda road, near Jittora or in Chittaura villages, of Chittaura Block of district Bahraich. It is situated between the latitude 28° 24'N to 27° 43'N, longitude and 81° 05' E to 81° 30' E longitude. A small river, Teri Nadi, flows from this lake. The Jheel is enriched with several

type of vegetation such as *Nymphaea*, *Nelumbo* and *Nympha* as well as aquatic birds like Duck, Saras and Bagula. Many migratory birds are also found. The abundant

food attracts hundreds of resident and migratory birds including Siberian crane during winter season. The water of Jheel is used for aquaculture.

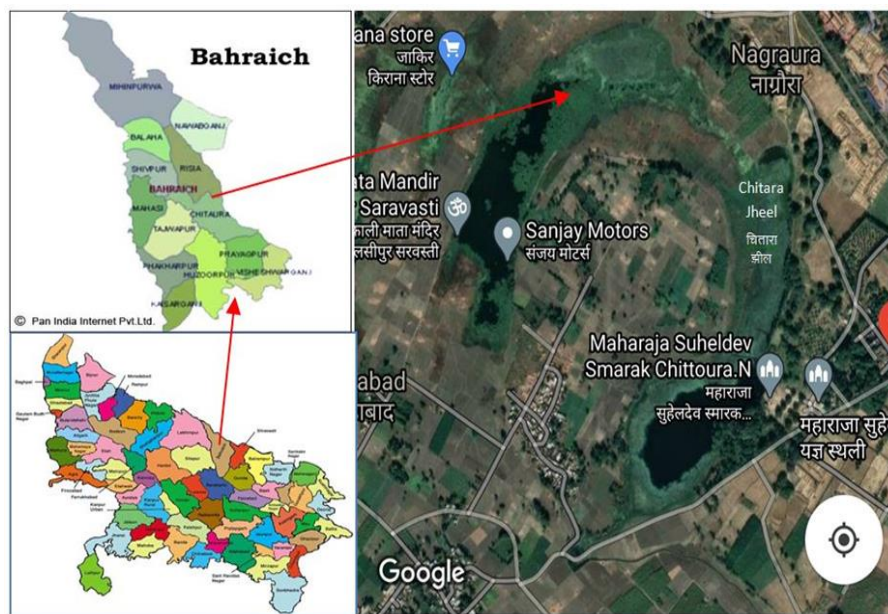


Fig 1: Satellite map of Chittaura Jheel of Chittaura Block of Bahraich district of U.P.

The periodical preliminary surveys of the Chittaura Jheel were carried out during the year 2020 by following standard methods. The annelids, arthropods, molluscs, Fishes, amphibians, reptiles and birds were identified using the standard literatures. People of local communities of adjoining areas also assisted the authors in many ways for collection, identification and hospitality.

Results and Discussion

In the present preliminary survey, faunal diversity comprises annelids (5 species), arthropods (14 species), molluscs (5 species), fishes (22 species), amphibians (3 species), reptiles (2 species) and birds (3 species) and

zooplanktons where as the floral diversity includes 31 hydrophytes. Out of 28 species, 6 belonging to floating weeds, 3 to emergent weeds, 7 to submerged weeds, 7 to marginal weeds and 5 species of green algae and phytoplankton.

Faunal Diversity

The Chittaura Jheel is rich in faunal as well as floral diversity. Besides several microscopic zooplankton (belonging to Protozoa, Rotifera and Crustacea) annelids, arthropods, molluscs, fishes, reptiles, birds and mammals have also been observed in and around the Jheel as given in the table.

Table 1

Class (Phylum)	Order	Genus
Clitellata (Annelida)	Oligochaeta	<i>Tubifex</i> (Sludge worm)
	Arhynchobdellida	<i>Poecilobdella</i> (Indian freshwater Leech)
	Rhynchobdellida	<i>Batrachobdella</i> and <i>Pheretima</i>
	Haplotaxida	<i>Limnodrilus</i> (Red worm)
Crustacea (Arthropoda)	Copepoda	<i>Branchiura</i> (Fish lice)
	Amphipoda	<i>Gammarus</i>
Insecta (Arthropoda)	Diptera	<i>Chironomus</i> and <i>Eristalis</i>
	Trichoptera	<i>Hydroptila</i> (Macro caddisflies)
	Hemiptera	<i>Notolecta</i> , <i>Gerris</i> and <i>Hebrus</i>
	Coleoptera	<i>Dineutus</i> , <i>Laccophilus</i> and <i>Cybister</i>
	Odonata	<i>Ischnura</i> and <i>Agrionaeis</i>
Gastropoda (Mollusca)	Mesogastropoda	<i>Thiara</i> , <i>Pila</i> , <i>Lymnaea</i> and <i>Melanoides</i>
Bivalvia (Mollusca)	Eulamellibranchia	<i>Unio</i>
Pisces /Fishes (Vertebrata)	Cypriniformes	<i>Catla catla</i> , <i>Labeo rohita</i> , <i>Labeo bata</i> , <i>Cirrhinus mrigala</i> and <i>Puntius ticto</i>
	Siluriformes	<i>Mystus seenghala</i> , <i>Mystus vittatus</i> , <i>Wallago attu</i> , <i>Clarias batrachus</i> , <i>Heteropneustes fossilis</i> and <i>Ailia coila</i>
	Ophiocephaliformes	<i>Channa gachua</i> , <i>Channa punctatus</i> and <i>Channa marulius</i>
	Perciformes	<i>Anabas testudeni</i> , <i>Chanda ranga</i> and <i>Colisa fasciatus</i>
	Clupiformes	<i>Notopterus notopterus</i> , <i>Notopterus chitala</i> and <i>Gudusia chapra</i>
	Beloniformes	<i>Xenentodon cancila</i>
Amphibia (Vertebrata)	Synbranchiformes	<i>Mastacembelus armatus</i>
	Anura	<i>Rana trigina</i> (Indian bull frog) and <i>Bufo melanostictus</i> (Common Indian toad)

Reptilia (Vertebrata)	Testdines	<i>Chitra indica</i> (Indian narrow-headed soft shell turtle) and <i>Testudo graeca</i> (Tortoise)
Birds (Vertebrata)	Gruiformes	<i>Antigone</i> (Sarus crane) and sometimes migratory bird and <i>Leucogeranus</i> (Siberian crane).
	Pelecaniformes	<i>Heron</i> (Indian Egret)

Floristic Diversity

The Chittaura Jheel has rich floristic diversity. Besides microscopic phytoplankton (belonging to Chlorophyceae, Bacillariophyceae, Cyanophyceae and Euglenophyceae). Several hydrophytes (aquatic angiosperm) have also been observed in jheel are as follows:

Floating weeds: *Azolla*, *Eichhornia*, *Pistia*, *Wolffia*, *Lemna* and *Hydrorhiza*

Emergent weeds: *Nymphaea* (Lotus), *Nelumbium* and *Nymphoides*

Submerged weeds: *Hydrilla*, *Vallisneria*, *Najas*, *Nitella*, *Ceratophyllum*, *Utricularia* and *Potamogeton*.

Marginal weeds: *Typha*, *Cyperus*, *sphagnum*, *Jussiaea*, *Colocasia*, *Euhadra* and *Ipomoea* **Algae:** *Spirogyra*, *Pithophora*, *Microsystis*, *Oscillatoria* and *Anabaena*.

Considering the importance, causes, and consequences of loss of this highly productive ecosystem with rich biodiversity, it seems better to protect and conserve the Chittaura Jheel. The conservation is necessary because loss of a regional wetland not only accounts for the loss of biodiversity but also disturbs the biotic constitution and geo-climatic balance of the region. All these finally may lead to non-sustainability and natural disasters. However, biodiversity at genetic, species, and ecosystem levels is the product of long evolutionary process in prevailing eco-climatic conditions, and their loss is indeed the loss of time and space which is irreversible. Looking on the biodiversity of the waterbody, it is urgently needed to preserve this wetland so as to offer a natural abode to the animals, a beautiful habitat to the plants and ecological gift to the environment. The survey report therefore, suggests the importance for the conservation and sustainable utilization of Chittaura Jheel of Bahraich in the greater interest of nature and humanity.

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