



Fish diversity and occurrence from Bariya Talab of district Balrampur, Uttar Pradesh, India

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Abstract

During present study on fish diversity in Bariya Talab of district Balrampur, Uttar Pradesh was carried out from January 2022 to June 2023 for a period of 18 months. Fishes are very important from biodiversity point of view. Therefore, during the present survey, total 14 fish species belonging to 12 genera and 9 families were collected and identified in this region.

Keywords: Diversity, fishes, Bariya Talab, freshwater

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Introduction

Water is the most productive resource for pisciculture. Fishes are the group of subphylum-Vertebrata, division Gnathostomata, superclass-pisces in the world and are very useful in biological researches. Around the world

approximately 22,000 species of fishes have been recorded out of which 11% are found in India, that is about 2,500 species of fishes of which 930 live in freshwater and 1,570 are marine (Kar,2003 and Ubarhande et.al.2011).India is one of the mega biodiversity countries in the world and occupies the ninth position in terms of freshwater mega-biodiversity (Shinde et.al., 2009).

Life on the earth is diverse at many levels, beginning with genes and extending to the wealth and complexity of species, life form and functional roles, organized in spatial patterns from biological communities to ecosystems, regions and beyond (Colwell,2009).In other words, it means variety and variability among living organisms their genetic differences and the

ecosystems in which they live. The diverse weather and physico-geographic features contribute 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”. The Challenges of quantifying patterns of diversity at the species level, even when the organisms are known to science is complicated by the problem of detecting rare species and the underlying complexity of the environmental template. Biodiversity is the variation in the genetics and life forms of populations, species, communities and ecosystems (Winter and Hugs, 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)

In Uttar Pradesh has vast potential of aquatic bio-resources and offers considerable scope of inland fisheries development and agriculture. The state contributes approximately 14.68% of the total national fish diversity (Lakra, 2010). The aquatic resources are available in the form of 28,500 km of rivers and canals, 1.38 lakh ha of reservoirs and 1.61 lakh ha of ponds and tanks as well as 1.33 lakh ha of flood plain lakes and derelict water. During the last few decades, the fish biodiversity of the state are declining rapidly due to introduction of exotic fish species (Dwivedi and Nautiyal, 2010, Pathak et al., 2011) and anthropogenic environmental degradation like urbanization, damming, abstraction of water for irrigation, power generation and pollution, which have subjected natural water bodies in general and rivers, in particular to severe stress with devastating effects on freshwater fish diversity (Lakra, 2010). The aim of this study was to investigate the current fish diversity and provide the first systematic account of fishes in Bariya Talab behind collectorate office of district Balrampur, Uttar Pradesh, India.

Studies of taxonomy (Ichthyofaunal diversity) have been immense interest to researchers of all

times (Day, 1978, Hamilton, 1922 and Menon, 1992).

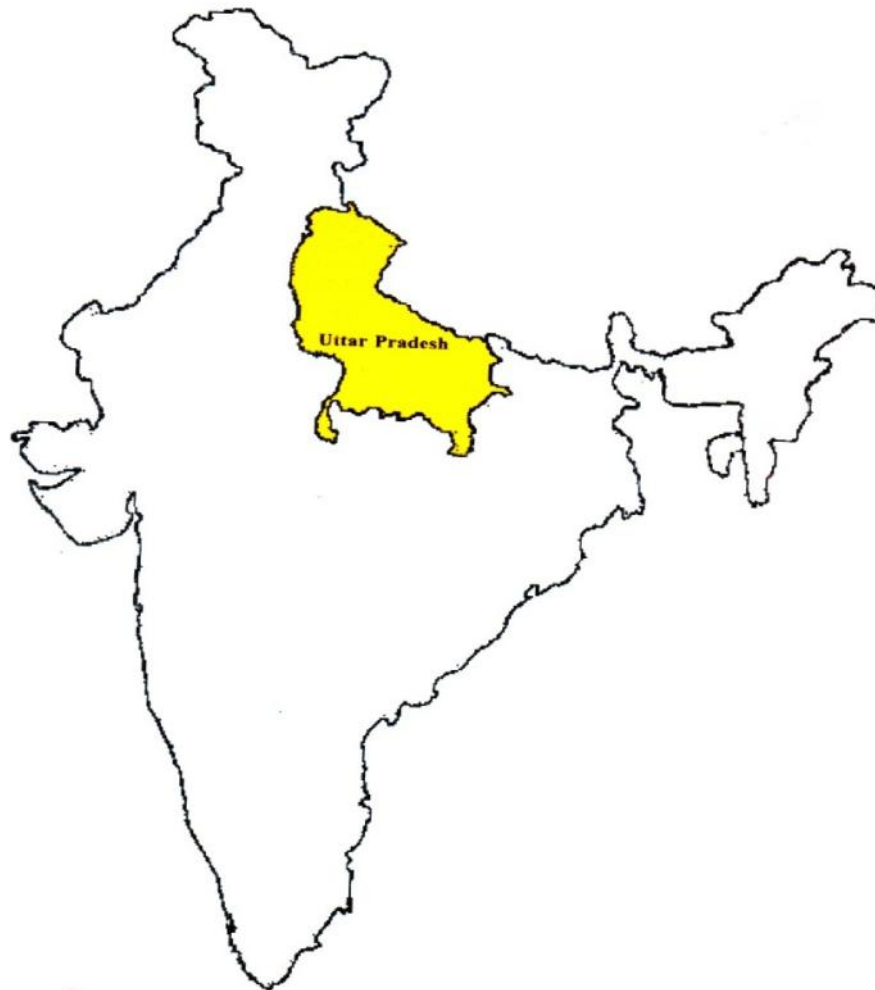
Many species of fishes are found in different ponds, lakes, dams and rivers, Many workers have worked on the fish species of different reservoirs of Uttar Pradesh. Fish from Uttar Pradesh have been reported by Srivastava (2002) who listed 87 fish species. Hora (1949) made a detail study on river Rihand fish fauna and recorded 42 fish species. Welch (1952), Motwani and David (1957) reported 95 fish species from river Sone and Srivastava et al. (1966) reported 55 fish species from river Ken, district Banda, Uttar Pradesh. Menon (1992) listed 141 fish species occurring in Ganga river system. Joshi (1994) has given an account of the fish fauna of Kali river. Jitendra Kumar et al. (2013) reported 62 fish species belonging to 41 genera from various water body sources of district Faizabad, Uttar Pradesh. Nagma and Afzal Khan (2013) listed 36 fish species belonging to 23 genera from water bodies of district Bijnor, Uttar Pradesh. Shukla and Singh (2013) listed 18 fish species belonging to 17 genera from Aami river Gorakhpur. Verma et al. (2015) reported 83 fish species belonging to 58 genera from water sources of Lucknow district, Uttar Pradesh. Seema Jain (2017) listed 61 fish species belonging to 38 genera from various water sources Western Uttar Pradesh, India. Similar results other fish faunal diversities, wetlands have also been noted by Munshi and Srivastava (1988), Talwar and Jhingran (1991), Jain (1998), Menon (1999), Jagera et al. (2001), Singh and Mishra (2001), Yadav (2005), Pandey and Das (2006), Vishwanath (2007), Lakra et al. (2008), Dua and Prakash (2009), Lakra and Pandey (2009) Tamboli and Jha (2012), Kumar (2012), Sharma et al. (2012), Bhattacharjee (2013), Fischer (2013), Jagtap (2013), Shukla and Singh (2013), Kaushik and Bordoloi (2016), Bhat and Rao (2018), Verma et al. (2018) listed 45 fish species belonging to 32 genera from Bakhiya lake, Uttar Pradesh, India.

Mishra et al. (2021) has studies diversity of fresh water fishes and their conservation status in eastern Uttar Pradesh reported 69 fish species belonging to 07 orders, 20 families and 39 genera were found in different districts (fishes were

collected from fish markets) of eastern Uttar Pradesh. Among the species, Cypriniformes were the most leading order of the total fish diversity followed by Perciformes, Clupeiformes, Ophiocephaliformes, Mastacembeliformes, Mugiliformes and Beloniformes. In this study family Cyprinidae were the most dominating family of the total fish diversity followed by family Siluridae, Sachilbeidae, Ophiocephalidae, Anabantidae, Clupeidae, Mastacembelidae, Notopteridae, Cobitidae, Claridae, Centropomidae, Nandidae, Engraulidae, Sisoridae, Heteropneustidae, Pangasidae, Belonidae, Mugilidae, Sciaenidae and Goboidae. The fishes in these areas are under threat due to anthropogenic

activities such as overfishing and pollution hence another strongly recommend practical conservation action plan to prevent the loss of fish diversity. Shukla and Tripathi (2021) listed 13 fish genera, 27 fish species, 5 order and 9 families from Chittaura Jheel of district Bahraich, Uttar Pradesh, India.

The objective of the present study was to document fish diversity and occurrence from Bariya Talab of district Balrampur, Uttar Pradesh, India.



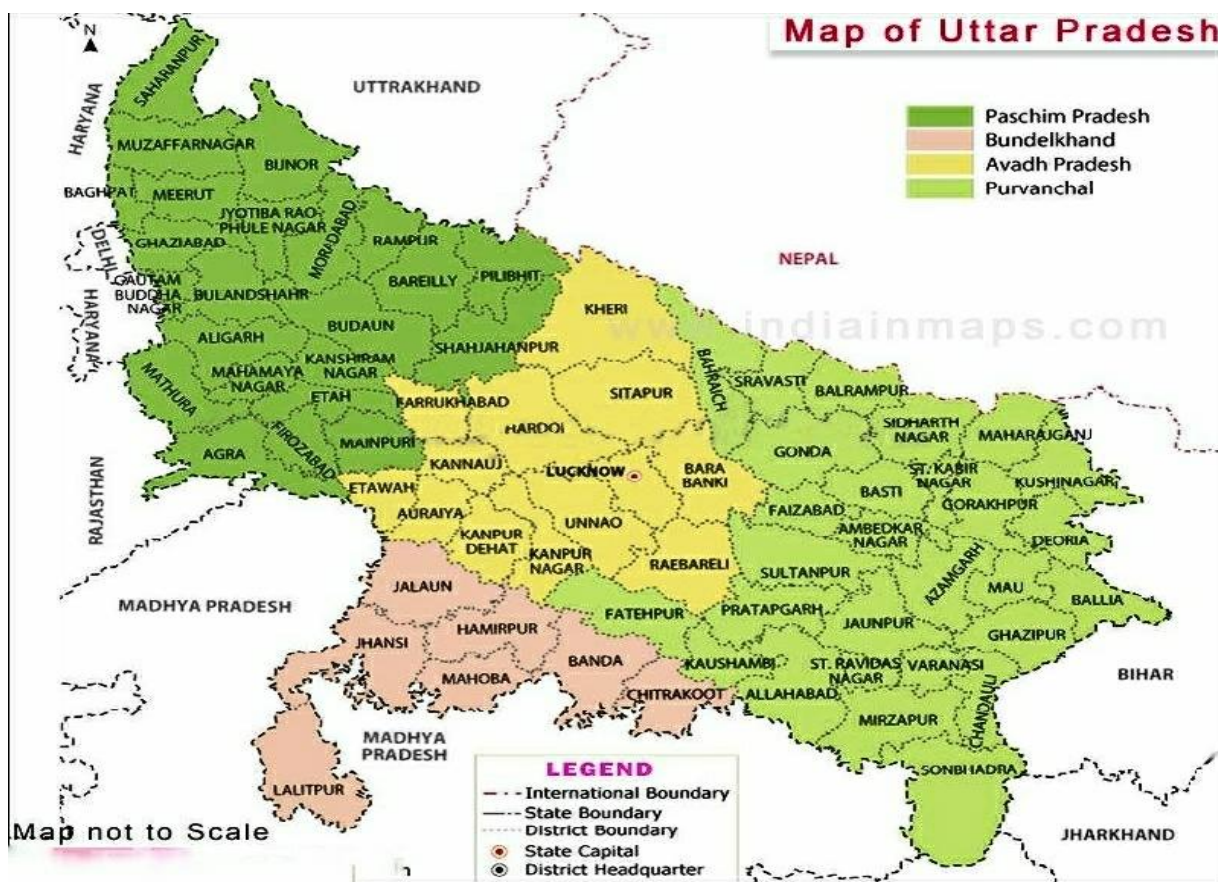
Map-1: Location of study area in India

Location of study area

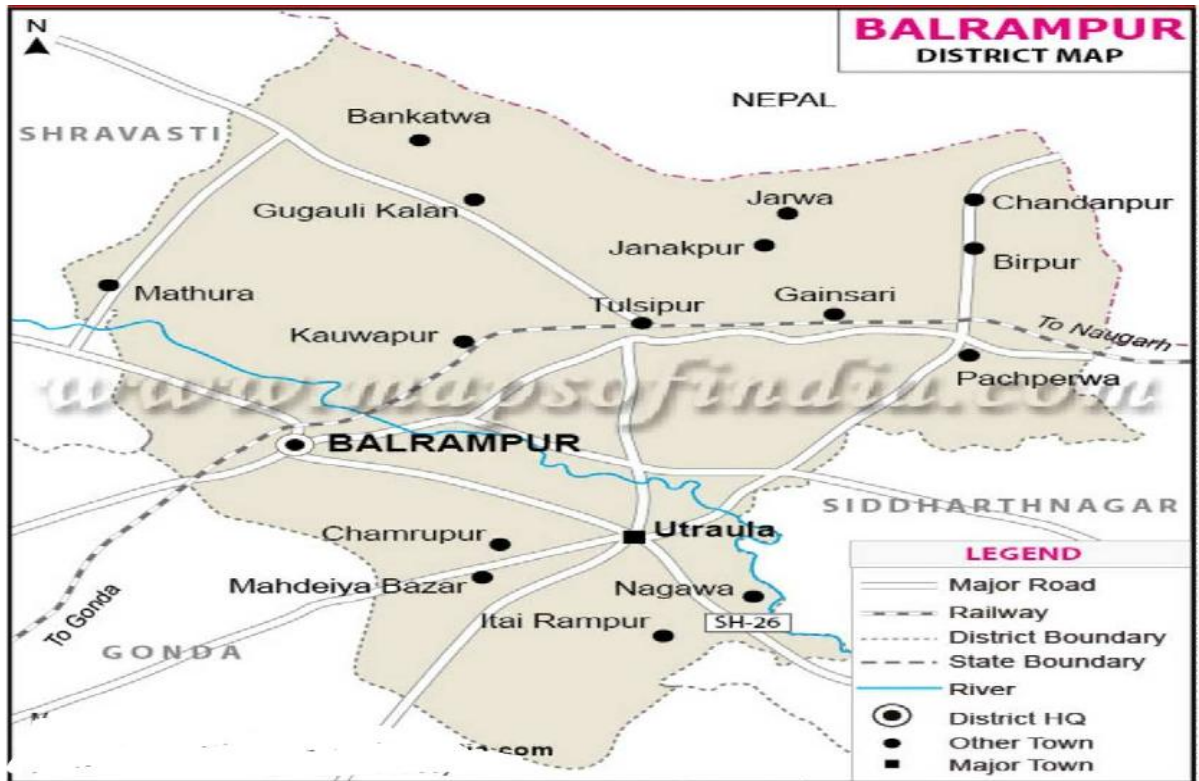
Balrampur district is the eastern part of Uttar Pradesh covering an area of 3,457Km², latitude is 27.429707 and longitude 82.176804. The district is located on the banks of river Rapti. The district shares its north and northeast border with Nepal, on the east by Siddharthnagar district, Basti on the southeast, Gonda on the south and southwest and Shravasti on the west. In the north of the district is situated the Shivalik ranges of the Himalayas which is called Tarai region (Map-1,2&3). The district Balrampur forms a part Devipatan division. The district was created on 25th May 1997 by division of district Gonda.

The district got its name after the princely state (Taluqdari) and capital, Balrampur. The state derived its name from its founder Balram Das, who founded it in c 1600 CE. The district Balrampur famous for temple of Pateshwari Devi, A Shakti Pitha.

Bariya Talab situated near behind collectorate office of district Balrampur, Uttar Pradesh, India, length 120 m and width 100 m.



Map-2: Location of study area in Uttar Pradesh



Map-3: Location of study area of district Balrampur,U.P.



Fig.-1: Fish collection for the study by Fisherman in Bariya Talab behind collectorate office of district Balrampur(U.P.), India

The present work was carried out for period of 18 months from January2022 to June2023 for completion of exhaustive work and the standard methods described for the purpose have been used. A short description of materials and methods applied during the present investigation has been presented below:

In Bariya Talab fishes were caught and collected for the study from four sites of this talabby hand nets, gill nets, cast nets, hook and drag nets with the help of local people and Fishermans mainly during the time of fishing. Investigation regarding fish capture and collection were conducted fortnightly that is every week during the study

period from the Bariya Talab, January 2022 to June2023 (Fig.-1).

Identification of fishes was done up to species level at lake to gets its natural colour, pattern of scales, fins, mouth pattern, identification marks like black spots, bloach on operculum, paired and unpaired fins and body parts with the help of standard literature by Day(1978), Jhingran (1991), Talwar et.al.(1991), Jayram(1999), Srivastava(2002), Vishwanath (2002), Mohan et.al.(2013). Interaction with local people also assisted the authors in various ways for fish data collection and identification.

Table-1: Fish diversity in Bariya Talab behind Collectorate office of district Balrampur, Uttar Pradesh, India (Data of January2022 to June2023)

S.No.	Family	Scientific name	Common Name
1	Bagridae	<i>Mystus seenghala</i>	Tengra
2	Belonidae	<i>Xenentodon cancila</i>	Kauwa
3	Clariidae	<i>Clarias batrachus</i>	Mangur
4	Cyprinidae	<i>Catla catla</i>	Bhakur
5	Cyprinidae	<i>Cirrhinus reba</i>	Naini/Reba
6	Cyprinidae	<i>Cyprinus carpio</i>	Common carp
7	Cyprinidae	<i>Labeo calbasu</i>	Black rohu
8	Cyprinidae	<i>Labeo rohita</i>	Rohu
9	Cyprinidae	<i>Puntius chola</i>	Sidhari
10	Heteropneustidae	<i>Heteropneustes fossilis</i>	Singhi
11	Notopteridae	<i>Notopterus chitala</i>	Chital/Moya
12	Ophiocephalidae	<i>Channa marulius</i>	Saur
13	Ophiocephalidae	<i>Channa punctatus</i>	Girai
14	Siluridae	<i>Wallago attu</i>	Padhni

Table-2: Family wise percentage of fish diversity in Bariya talab behind collectorate office of district Balrampur, Uttar Pradesh, India (Data of January 2022 to June2023)

S.No.	Family	Number of Genus	Number of species	% of fish diversity
1	Bagridae	1	1	4.10
2	Belonidae	1	1	3.70
3	Clariidae	1	1	21.08
4	Cyprinidae	5	6	38.02
5	Heteropneustidae	1	1	8.70
6	Notopteridae	1	1	7.41
7	Ophiocephalidae	1	2	14.87
8	Siluridae	1	1	2.12



Fig.-2: *Mystus seenghala*



Fig.-3: *Xenentodon cancila*



Fig.-4: *Clarias batrachus*



Fig.-5: *Catla catla*



Fig.-6: *Cirrhinus reba*



Fig.-7: *Cyprinus carpio*



Fig.-8: *Labeo calbasu*



Fig.-9: *Labeo rohita*



Fig.-10: *Puntius chola*



Fig.-11: *Heteropneustes fossilis*



Fig.-12: *Notopterus chitala*



Fig.-13: *Channa marulius*



Fig.-14: *Channa punctatus*



Fig.-15: *Wallago attu*

Results and Discussion

During present study, total of 14 fish species belonging to 12 genera, 14 species and 8 families were collected and identified. The detail of these fishes are listed (Table:1, Fig.-2,3,4,5,6,7, 8,9,10, 11,12,13,14 and 15). Fish diversity comprised of 8 families namely- Bagridae (4.10%), Belonidae (3.70%), Clariidae (21.08%), Cyprinidae (38.02%), Heteropneustidae (8.70%), Notopteridae (7.41%), Ophiocephalidae (14.87%) and Siluridae (2.12%), Table:2.

The family-Cyprinidae was observed as the most abundant contains 6 fish species, namely- Catla catla, Cirrhinus reba, Cyprinus carpio, Labeo

calbasu, Labeo rohita and Puntius chola were recorded while second abundant family-Clariidae contains one species, namely-Clarias batrachus was recorded, family-Ophiocephalidae contains two species, namely-Channa marulius, Channa punctatus, family- Bagridae contains one species, namely-Mystus Seenghala, family-Belonidae contains one species, namely-Xenentodoncancila, family-Heteropneustidae contains one species, namely-Heteropneustes fossilis, family-Notopteridae contains one species, namely-Notopterus notopterus, family-Siluridae contains one species, namely-Wallago attu during rainy season were also recorded during our survey in Bariya Talab behind collectorate office of district Balrampur. In this way we recorded 14 fish

species. *Heteropneustes fossilis* and *Mystus* species are economically important but these fish species are illegally exploited by the local peoples of this area. Several workers have works in various lentic and lotic water bodies regarding the distribution and abundance of fish species, Dubey(1959), Singh(1994), Jayram(1999), Singh and Mishra (2001), Srivastava (2002), Tewari (2006), Regi and Kumar (2012), Shukla and Singh (2013), Wani and Gupta (2015), Seema Jain (2017), Verma (2018), Tripathi (2020) and Shukla and Tripathi (2021).

Conclusion

The result of this study shows that Bariya Talab is very rich in fish species diversity and sustains high productivity, this water body is most suitable for fish culture. The observation can be utilized for decision making and management in a scientific manners. There is an immediate need of more conservation programme in order to retain this fresh water body in Bariya Talab behind collectorate office of district Balrampur, Uttar Pradesh.

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