Bulletin of Environment, Pharmacology and Life Sciences
Bull. Env. Pharmacol. Life Sci., Vol 9[2] January 2020 : 40-44

Online ISSN 2277-1808
Journal's URL:http://www.bepls.com
CODEN: BEPLAD
Global Impact Factor 0.876
Universal Impact Factor 0.9804
NAAS Rating 4.95

ORIGINAL ARTICLE **OPEN ACCESS**

Ichthyofaunal Diversity of River Kabulat District Charsadda, KPK, Pakistan

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ABSTRACT

A study on the fishes of River Kabul at District Charsadda, Khyber Pakhtoonkhwa was conducted from March 2017 to September 2017. A total of 16 fish species were identified belonging to 4 Orders (Cypriniformes, Siluriformes, Channiforms and Mastacembeliformes) and 8 families (Cyprinidae, Nemachilidea, Sisoridea, Siluridae, Bagridea, Channidae, Mastacembeldae and Schilibeidae). Family Cyprinidae was the richest family of the present survey represented by 5 species; viz Carassius auratus,Tor macroplepis, Barilius modestus, Barilius vagra, Rasbora daniconius, and the four families consist of two species i.e. Sisoridea, Siluridae and Channidae. Family Sisoridea consist on Glypthothorix punjabensis and Gagata cenia. Family Siluridae was also denoted by two species i.e. Ompakpabda and Wallago Attu. Family Channidae is also consist on two species i.e. Channa punctatus and Channa striata and Family Bagridea is also representing by two species i.e. Mystus bleekri and Rita rita. All other families were represented by a single species i.e., Mastacembelus armatus (Mastacembeldae) Clupisom anaziri (Schilibeidae) and Acanthocobitis botia (Nemachilidea) Throughout the study period, Clupisomanaziri was the most dominant and abundant genus of the fish followed by Glypthothrix punjabensis, Gagata cenia, Barilius modestus, Barilius vagra, Tor macroplepis, Rasbora daniconius, Carassius auratus, Wallago attu, Ompak pabda, Mastacembelus armatus, Acanthocobitis botia, Channa punctatus, Mystus bleekri, . In the present survey, many species such as Barilius modestus, Barilius vagra, Carassius auratus, Gagata cenia, Glypthothorix punjabensis, Channa punctata, Tor macroplepis, and Mastacembelus armatus etc. Were common with adjoining rivers like Khiali and Jindi. Majority of fish spices collected during the survey were edible and play a key role in local economy these includes, Carassiusauratus, Tor macroplepis, Carassius auratus, Ompakpabda, Wallago attu, Clupisom anaziri, Channa punctata, and Mastacembelus armatus.

Keywords: *RiverKabul, fish, fauna, species*

Received 21.11.2019 Revised 06.12.2019 Accepted 07.01.2020

INTRODUCTION

Fishes are cold blooded aquatic vertebrates which respire by means of pharyngeal gills, pushing and balancing themselves by means of fins [1]. Fish form the major group of faunas that is used to produce animal-based foods. Besides being consumed as food, many other fish products of great economic

importance are being obtained from marine and freshwater fishes throughout the world and include fish meal, fish flour, fish silage, fish soluble, fish glue etc [2]. In addition, sport fishing and decorative fish keeping have become popular hobbies and means of recreation, and significant due to having genetic library which is consistently advantageous in the domains of aquaculture itself as well as medicines [3].

Biodiversity is the variability of living organisms considered at all levels of organization, from genetics through species, to higher taxonomic levels, including the variety of habitats and ecosystems, as well as the processes occurring there in. Biodiversity is not the same as the number of diverse kinds of species in a habitation. Biodiversity is in fact more multifarious than species richness, although species abundance is certainly one component of biodiversity [4].

Biodiversity is essential for maintenance of aquatic ecosystem, Scientists have revealed that habitats with greater biodiversity are more resilient, that is, they are better able to adjust to and recover from various disturbance because of different species may perform overlapping functions in a biological diverse and complex ecosystem, a disturbance that effects one species may have lesser impact on the ecosystem [5].

Fishes are diversified from each other due to various factors extrinsic and intrinsic in nature the extrinsic factors includes environmental, behavioral, landslides flooding, migration and intrinsic factors includes mutational changes which effecting the external morphology and internal anatomy of living organisms and these changes causes also great diversity in fishes due to this reason all fish species are different from one another and founds a number of fish species in different diversified form [6].Fish fauna plays a prime role in the aquatic system sustenance. It also affects the aquatic system status and composition. And provides momentum for the sustainable management of the aquatic systems [7].

Review of literature

Fish fauna of river Kabul is well known and some work in this connection has already been done both in Afghanistan as well as Pakistan. The first comprehensive record of fish diversity from River Kabul comes from the work of john McClelland. He described 25 species from the upstream part of River Kabul in Afghanistan [8] another detailed account of fish of Afghanistan. According to him, the cold-water fish stocks in upper Kabul River basin are dominated by many types of fishes of Cyprinid snow trout (Schizothoracinae) and cobitids. He described 36 fish species from river Kabul in Afghanistan as shown in Table 1.

In Pakistan River Kabul flows through Khyber Pakhtunkhwa Province and joins with many rivers before its emergence with Indus at Attock. A noteworthy river that unite with river Kabul is river swat. Thus, this review includes all previous reports of fish fauna of river Kabul, its tributaries or adjacent water system such as swat particularly in the region of Peshawar, Nowshehra, Mardan, and Charsadda. Thus 35 species of fishes from Peshawar district, and 5 species from Mardan district were reported in survey in 1963, some species such as *Notopterus chitala, Oxyg astagora, Labeo dyocheilus, Catla catla, Cirrhinus mirigala, Clupisom agarua, Clupisom anaziri, Rita rita, Mystus teengara, M aor, M.vittarus* and *Macroghanthus acuieatus* were not reported in initial survey although their presence were confirmed in some later studies[7-8]**.**

MATERIAL AND METHODS

Charsadda

District Charsadda is surrounded by Mardan and Nowshehra in the west and south west and Mohmand and Malakand agencies in the north and north east as shown [3-9].It is an area of rich population which is 16 lacks and 16 thousand according to the recent census report of 2017. Agriculture is the backbone of day to day economy but the presence of various water resource such as ponds, streams and river lakes make fishing an equally important occupation the region is arid, and the climate is moderately hot in summer. The presence of 5 rivers and many private fish ponds in Charsadda provide an ample livelihood opportunity to people living along these rivers. It lies between 3403' and 3438' north latitudes and 7128' and 7153' east longitudes. Charsadda is located in the west of the Khyber Pakhtunkhwa and is bounded by Malakand District on the north. Mardan district on the east, Nowshehra and Peshawar districts on the south and the Mohmand Agency of the Federally Administered Tribal Areas on the west. The district covers an area of 996 square kilometers.

River Kabul

River Kabul appears from the Wardak valley of Afghanistan and enters the newly named Khyber Pakhtunkhwa (KP) province of Pakistan, formerly called North West Frontier province. The entrance point is Mohmand agency 17 Km north of Torkham border area. The river divides into three main branches namely River ShaAlam, River Naguman and River Sardaryab. These tributaries unite about 13 Km downwards from Charsadda arriving at Nowshehra and AkoraKhattak as a single main branch the River Kabul. Progressing forward the River falls in the mighty Indus near district Attock [10].

Study period

Study period start from March, 2017 to September, 2017.

Collection of Fish

Fish were collected from various locations i.e. Adezai, Jhamatay, Sardaryab, Nissata, collection site from Jhamatay to Sardaryab are very rich in fish species abundance due to favorable conditions of this area The collection was made with the help of cast nets hands nets with different holes size hand nets with different hole size and arms other locally adopted devices and also fishes are should be collected from local markets of river Kabul.

The fishes were mostly caught by cast net, hand net and simple hooks.

Preservation of Fish

Fish thus caught alive were then directly dropped into a solution of 10% dilute Merck formalin. These preserved specimens were separated from rest of laboratory fish and placed in separate cupboard and were identified and labeled. Ten percent formalin was used for large fish while small fishes were preserved in 5% formalin. Small fishes were directly preserved in formalin solution while larger fishes were given an incision in their abdomen and preserved. Some specimens were also preserved in 70 % Alcohols.

Identification of Fishes

Identification of fish for scientific studies was done through various taxonomic keys and through morphometric analysis. Following keys were used Talwar and Jhingram and JayarmMirza and Sandu fishes of the Punjab and Nelson keys for identification of fishes.

Table 1: Fish Identification key used

S.No	Keys used for Fishes Identification
1	Fishes of the Punjab [3]
2	A contribution to fishes of Lahore [2]
3	The fresh water Fishes of Indian region [5]

RESULTS

Ichthyofauna Reported from River Kabul at Charsadda

A total of 16 species were identified from river Kabul at district Charsadda during this study. Which belongs to 8 families i.e. Cyprinidae, Siluridae, Sisoridae, Bagridea, Schilibeidae, Mastacembeldae, Channidae, Nemachilidea and 14 genera. The most abundant family was Cyprinidae with 34% abundance, followed by Schilibeidae (16%) and Siluridae with 13% abundance.

Table 1. Fishes Species Reported from River Kabul at District Charsadda.

S.No	Family	Species
1	Cyprinidae	*Barilius modestus*
2		*Barilius vagra*
3		*Rasbora daniconius*
4		*Carassius auratus*
5		*Tor macroplepis*
6	Siluridae	*Wallago Attu*
7		*Ompak pabda*
8	Sisoridae	*Glypthothorix punjabensis*
9		*Gagata cenia*
10	Bagridea	*Mystus bleekri*
11		*Rita rita*
12	Schilibeidae	*Clupisom anaziri*
13	Mastacembeldae	*Mastacembelus armatus*
14	Channidae	*Channa punctatus*
15		*Channa striata*
16	Nemachilidea	*Acanthocobitis botia*

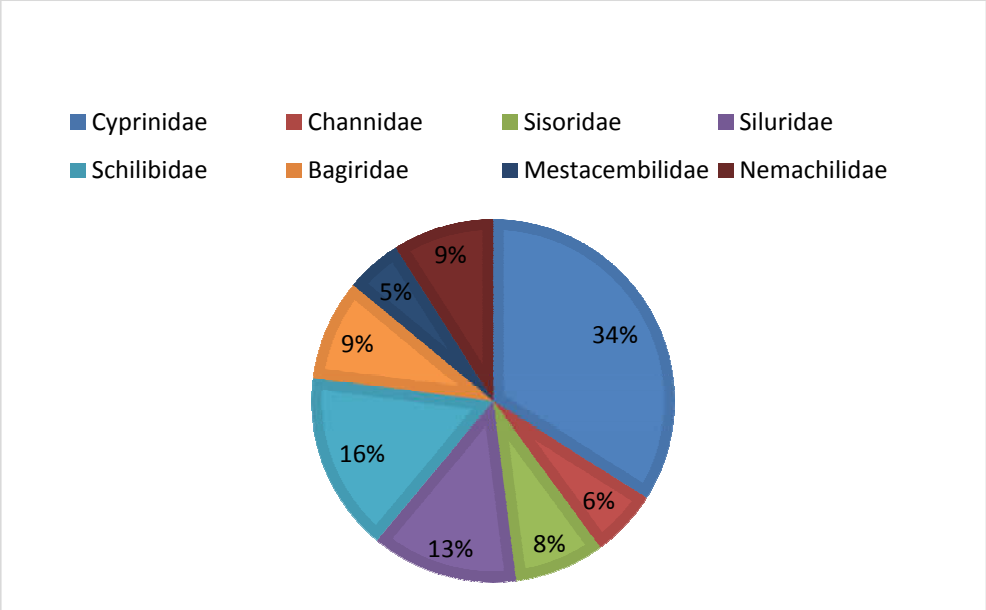

Figure 1 Percentage Composition of Fish Families collected from River Kabul at Charsadda.

DISCUSSION

A survey was conducted from March 2017 to September 2017, For the determination of ichthyo-fauna of River Kabul at Charsadda K.P in this survey 16 species were recorded i.e. *Carassius auratus, Barilius modestus, Barilius vagra, Tor macroplepis, Rasbora daniconius, Acanthocobitis botia, Glypthothrix punjabensis, Gagata cenia, Ompakpabda, Wallago attu, Clupisom anaziri, Channa strata, Channapunctatus, Mastacembelusarmatus. Rita rita, Mystus bleekri*

Cyprinidae was the most common and abundant fish family of the present study. Which is also reported by [11] as most abundant fish family in Eastern Asia. It is also reported as a most abundant family by [3-6]. In Asia there are about 1300 species of Cyprinidae. Most of these are cultured for food, in this respect 242 species of fresh water are cultured globally and in these carps (cyprinids) are the dominant species. In Cyprinidae following were the most abundant species in our collection i.e., *Barilius modestus, and B.vagra*while the family Channidae was dominated by *Channa punctata.* These species were also recorded in great abundance in the River Swat by[11-15]. Both Cyprinidae and Channidae have remain dominant families of the study region over the past many years.

The present collections were performed at six localities among which the most diverse with respect to fish fauna was in between Michini and Sardaryab main picnic spot. The reason for great diversity might be the neutral pH of water and the location of the site which is being slightly away from human population, thus the problem of pollution and hunt pressure are less.

CONCLUSION

River Kabul is a healthy aquatic system with respect to fish diversity. It is a home to a number of fish species such as *Carassius auratus, Barilius modestus, Barilius vagra, Tor macroplepis, Rasbora daniconius, Acanthocobitis botia, Glypthothrix punjabensis, Gagata cenia, Ompak pabda, Wallago attu, Clupisom anaziri, Channa strata, Channa punctatus, Mastacembelus armatus. Rita rita, Mystus bleekri*

The 2010 flood severely affected the region and perhaps the fish faunal structure of River Kabul. However the has stabilized itself after some time. Less diversity at some points shows the harmful effect of water pollution on fish fauna. Acidic pH might of water at this site might be a contribution of industries present in this region. The government should take steps to control this pollution in order to protect the fish fauna and its habitat i.e., River Kabul.

RECOMMENDATIONS

To insure the conservation of the fish fauna of River Kabul district Charsadda the following steps are recommended.

1. A research and training center for researchers of native fish species is recommended to be established in River Kabul.
2. Counseling of the local fisherman are necessary In order to ensure the catchment of only authorized fishes which is permitted by the concern area fisheries department.

3. Periodic judgment of endangers species like Swati Fish and addition of new commercially valuable fishes to River Kabul.

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CITATION OF THIS ARTICLE

M Khan, W Ur Rehman, Ghani Ur Rehman, Zulqurnain, S Ghaffar, S Fatima, S Afroz, Z Shamim, S Khan, I Aziz, W Ahmad, A Ali, R Shah, M Naeem, M A Babar. Ichthyofaunal Diversity of River Kabulat District Charsadda, KPK, Pakistan. Bull . Env. Pharmacol. Life Sci., Vol 9[2] January 2020 : 40-44