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Fish fauna of River Kabul Downstraeam Warsak Dam

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Abstract
The current study was conducted in River Kabul downstream at Warsak Dam, in order to find out the fish diversity of the area. The study time was from March to July, 2014. For fish survey, fishes were collected by using all legal means at every effort. Fishes were collected and identified belong to 4 Orders, 8 Families, 18 genera's and 22 Species. In the present research Cyprinidae was the richest Family which was represented by 11 Species; Isuridae 4, Channidae 2, Cobitidae, Siluridae, Schilbeidae, Mastacembelidae, Heteropneustidae comprising only one species each respectively. From the present research, it can be concluded that River Kabul Downstream is rich in ichthyofauna especially Cyprinidae species. The study will be very useful in future for taxonomic and conservation point of view.

Keywords: Fishes, Warsak dam, Peshawar, biodiversity

1. Introduction
River Kabul: Ancient Greek ropes, river in eastern Afghanistan and northwestern Pakistan 435 miles (700 km) long, of which 350 miles (560 km) are in Afghanistan. Rising in the Sangalakh Range 45 miles (72 km) west of Kabul city, it flows east past Kabul and Jalilabad, north of the Khyber Pass into Pakistan, and past Peshawar; it joins the Indus River northwest of Islamabad. The river has four major tributaries the Lowgar, the Panjshir, the Konar (Kunar), and the Alingar. The Kabul River crosses two major climatic belts. Its upper reaches have a continental warm-summer climate with a mean July temperature of about 77 °F (25 °C) and a mean January temperature below 32 °F (0 °C); annual precipitation there is less than 20 inches (500 mm), although precipitation is higher on the mountain slopes around its headwaters. In its lower reaches in Pakistan, the Kabul River crosses a region with a dry desert climate, with maximum daily temperatures in early summer that often exceed 104 °F (40 °C) and mean monthly temperatures in winter above 50 °F (10 °C). Fish show great biodiversity in their morphology and habitats they occupy and in their life, they are a very diverse group of all vertebrates [1]. Ichthyology refers to the variety of fish species, depending on the background and scales, it could refer to alleles or genotype within the fish population to species of life form with a fish society and to species or life form across aqua regimes [2]. The active features of the lotic ecosystem are the result of changes in water levels, due to difference of rainfall in water in the catchment areas [3]. This dynamic brings about changes in fish community structure which are frequently brought about by ecological aspects with the fluvial environment, food availability species connection and fish movements [4-7]. The diversity of the Ichthyofauna of tropical and subtropical basins [8] the study of fish and their stability is important. The Fish population of any given aquatic habitat can vary significantly from year to year. Consequently, it would be necessary for this experiment was carried out for several consecutive years if it is to be truly useful. The stability of fish is of profound importance due to the urgent need of environmental management to know how much fish population naturally changes over time [9].
Biodiversity is the quantity, variety and distribution across biological scales ranging through genetics and life forms of populations, species, communities and ecosystems [10]. Biodiversity affects the activity of living organisms to respond to changes in the environment, underpins ecosystem function and provides the ecosystem goods and services that support human well-being e.g., nutrient cycling, clean water [11]. The aim of the research work was to find out the fish fauna of river Kabul downstream Warsak dam.

2. Materials and Methods

2.1 Fish Collection

Fishes were collected from the River Kabul at Downstream with the help of a local fisherman using various types of catch-up instrument like hand nets, cast nets and hooks from March to July, 2014. After collection proper photographs were taken from different angles for proper identification and then preservation with 10% formalin, since formalin decolorizes the fish color on long preservation.

2.2 Fish Preservation and Identification

Collected fishes were preserved and after the preservation these fishes were brought to the Research laboratory for proper identification. Fishes were properly identified in the laboratory by using keys of fish's identification Jayaram [12], Mirza and Sadhu [13] and Mirza [14]. All the fishes were preserved for longer time off period in a kettle jar by using 10% of formalin solution.

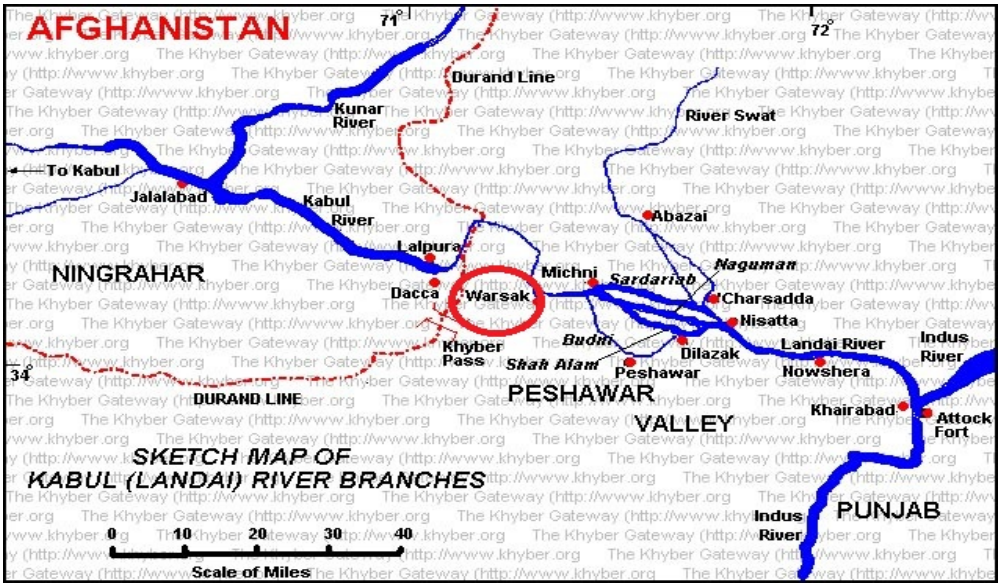

Fig 1: Map of River Kabul Downstream of Warsak Dam KP, Pakistan

Table 1: Taxonomic position of River Kabul Downstream Warsak dam.

S.No	Class	Order	Family	Genus	Species
1	Actinopterygii	Cypriniformes	Cyprinidae	*Barilius*	*vagra*
2	Actinopterygii			*Rasbora*	*daniconius*
3	Actinopterygii			*Cirrhinus*	*mrigala*
4	Actinopterygii			*Labeo*	*diplostomus*
5	Actinopterygii			*Punctius*	*ticto*
6	Actinopterygii				*sophore*
7	Actinopterygii			*Tor*	*macrolepis*
8	Actinopterygii			*Crossocheilus*	*diplocheilus*
9	Actinopterygii			*Garra*	*gotyla*
10	Actinopterygii			*Cyprinus*	*carpio*
11	Actinopterygii			*Carassius*	*auratus*
12	Actinopterygii		Cobitidae	*Botia*	*birdi*
13	Actinopterygii	Siluriformes	Siluridae	*Wallago*	*attu*
14	Actinopterygii		Schilbeidae	*Clupisoma*	*naziri*
15	Actinopterygii		Sisoridae	*Bagarius*	*bagarius*
16	Actinopterygii			*Glyptothorax*	*naziri*
17	Actinopterygii				*punjabensis*
18	Actinopterygii				*stocki*
19	Actinopterygii		Heteropneustidae	*Heteropneustes*	*fossilis*
20	Actinopterygii	Channiformes	Channidae	*Channa*	*gachua*
21	Actinopterygii				*punctata*
22	Actinopterygii	Mastacembeliformes	Mastacembelidae	*Mastacembelus*	*aramatus*
		Orders 4	Families 8	Genus 18	Species 22

3. Result

Fishes were collected and identified from River Kabul at Downstream of Warsak Dam belong to 4 orders, 8 families, 18 genera's and 22 Species as shown in the table 1. In the present research work Cyprinidae was the richest family, which was represented by 11 Species *Barilius vagra, Rasbora daniconius, Cirrhinus mrigala, Labeo Diplostomus, Punctius ticto, P. sophore, Tor macrolepis, Crossocheilus diplocheilus, Garra gotyla, Cyprinus carpio, Carassius auratus*; Sisuridae 4 species *Bagarius bagarius, Glyptothorax naziri, G. punjabensis. Stocki*; Channidae 2 species *Channa gachua C. Punctata*; Cobitidae, Siluridae, Schilbeidae, Mastacembelidae, Heteropneustidae comprising only one specie each *Botia birdi, Wallago attu Clupisoma naziri, Heteropneustes fossilis, Mastacembelus aramatus* respectively. From the current result, it shows that Family

Cyprinidae was the richest one over all the families recorded during the current study.

4. Discussion

During the current study in River Kabul, 22 fish species were found up to the species level and there proper systematic classification is given in the Table 1, respectively. The identified 26 species were belonged to 1 Class, 4 Orders, 8 Families, 18 Genera and 22 Species as shown in detail in table 1. In these 22 fish species family Cyprinidae was found the richest one over all the recorded families which comprising 16 species. Ali *et al*, conducted a study on River Indus its tributaries to find out their Ichthyo fauna. During the survey, 35 fish species were recorded from the Indus River and its tributaries which belong to different families. Family Notopteridae, Cyprinidae, Cobitidae, Sisoridae, Schilberidae, Channidae. Family Notopteridae was found consisting only one fish species *Notopterus notopterus*. Family Cyprinidae was the richest family, which consists of the following fish species, *Baralus vagra*, *Cyprinus carpio*, *Crossocheilus latius*, *Labeo dero*, *Garra gotyla*, *Danio devario*, *L*abeo *calbaso,* Shizothorax *esocinus*, *S. labiatus*, *S. plagiostomus*, *Tor putitora*. Family *Cobitidae* which consist of the following fish species. *Botia bridi. corica.* Family Sisoridae consist *Gagata cenia, Glyptothorax punjabensis* and *Glyptothorax stocki* fish species. Family Siluridae consist only one fish species *Ompok bimaculatus*. Family Schilbeidae also consist of only one fish species *Clupisoma murius.* Family Channidae consist of *Channa punctatus* and *C. gachua* respectively [15]. In the current study family Cyprinidae, Siluridae, Sisoridae, Schilbeidae, Channidae, Mastacembelidae, Cobitidae, Heteropneustidae were recorded. Family Cyprinidae, Sisoridae, Cobitidae, Schilbeidae, Channidae respectively. The closeness in the both results may be due the same climatic factors. It may be due to the same topography. Another study was conducted by Mirza on Allai Khoar Khyber Pakhtunkhwa, Pakistan during Summer. Three fish species were recorded which were *Schizothorax plagiostomus, Schistura naseeri* and *Glyptosternum reticulatum* respectively [16]. In the current study, 22 species were recorded so only one specie *Schizothorax plagiostomus* in the studies are common. Hence, from the current study we can say that River Kabul water habitat is quite suitable for Cyprinidae fish species. Another work was done by Mirza on Upper and lower River Swat and Reported 45 species. These fishes belong to order Salmoniformes, Cypriniformes, Nemacheilidae, Perciformes, Chaniformes, Siluriformes respectively [17]. In the current study only 22 fish species were identified. Similarly, study was carried out by Rafiq and Javed on the Upper Swat to find out Ichthyo fauna. The Endemic fish fauna recorded on Upper River Swat were *Glyptosternum reticulatum, Crossocheilus diplocheilus, Racoma Labiata, Schizothorax plagiostomus* respectively. The Migrant fish fauna found in Upper Swat were *Labeo dew, Tor putitora, Puntius ticto, Puntius sophore, Puntius chola, Garra gotyla Mastacembelus Armatus* respectively. Along the Endemic and Migrant fish fauna, some exotic fish species *Salmo trutta fario* and *Oncorhynchus mykiss* has been recorded from the Upper part of River Swat [18]. Some fish fauna of the both results founds to matching with each other while some are various. This variation is directly proportional with variation in water.

5. Conclusion

From the current it was concluded that fish fauna in the river Kabul Downstream Warsak Dam KP, Pakistan is rich and Cyprinidae species dominant in Warsak dam and will be provide useful information to an aquaculturists and increase food resources as well as attraction and income of local people of Warsak dam for refreshment.

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