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Fish Diversity of Sharki Dam, District Karak, Khyber Pakhtunkhwa, Pakistan

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Abstract: This study is focused on fish diversity in Sharki Dam, District Karak, Khyber Pakhtunkhhwa (KP). The study carried out from August to December (2013) identified a total of 10 fish species, which belonged to 3 families and 8 genera. Family cyprinidae was found to be the most abundant, represented by 8 species viz, *Cyprinus carpio, Cyprinion watsoni, Puntius sphore, Puntius ticto, Labeo rohita, Barilius pakistanicus, Barilius vegra* and *Crossocheilus diplocheilus.* Family Suliridae and Mastacembalidae both were represented by a single species each of *Ompok pabda* and *Mastacembalus armatus* respectively. The reservoir being large enough in water quantities has the potential to support even greater number of warm water fishes through better management practices and could contribute to jobs creation and food security for the local people of the area.

Keywords: Fish diversity, reservoir, management practices, food security

1. INTRODUCTION

Study of biodiversity of an area is very important as it gives vital information and creating innovative ideas about an entire ecosystem. In aquatic ecosystems, study of ichthyofaunal (fish) diversity is very important to get an insight of the general health and efficiency of that particular ecosystem. Although, other organisms like insects and crustaceans are also considered as biological indicators but human beings are more concerned with fish not only as a direct source of their food but also because of its role in boosting their economy. Another importance of studying fish diversity is that, it can generate ideas to identify new productive species for culture practices and for human consumption. Hence many researchers in different parts of the world are actively engaged in describing the ichthyodiversity of different countries and regions of the world.

Nelson (2006) has written a detailed account of the fishes of the world. Rankhamb (2011) studied the Ichthyofauna of Godavari River, India and reported 26 fish species. Similarly, fish diversity in the major Lagoons of Bundala National Park; A Ramsar wetland in Sri Lanka was studied by Chandana *et al* (2014) to describe its ichthyofauna.
In Pakistan, early work was done by Ahmad (1963) in which fish fauna of the West Pakistan was described. Mirza (2003) wrote a historic account of all the freshwater fish species 1present in the country. But (1986) described the fish fauna of the whole KP (N.W.F.P.) Mirza and Sandhu (2007) described the ichthyofauna of the Punjab. Hasan *et al* (2013) made a comprehensive study of the ichthyofauna of River Swat and described fifty species. Many researchers have worked on the fish fauna of other dams present in the surroundings of Sharki dam. Among them, Khan and Hasan (2011) worked on the fishes of Changhoz Dam, District Karak and reported seven fish species. Wazir (2009) worked on the fish fauna of Braganatu dam situated in FR Bunnu adjacent to District Karak and identified nine fish species. Ilyas (2004) worked on the fish fauna of Zebi dam, District Karak and identified 12 fish species whereas Shahjahan and Khan (2000) reported 26 fish species belonging to 8 families from Baran dam Bunnu.

Sharki dam is located on Teri Toi near Sharki village in District Karak some 22 Km west of Tehsil Banda Daud Shah. It was constructed on Shiesham Algada in 1995. Its dead, live and total storage capacity is 5748 and 9996, 15744 acre feet respectively. The dam has a total catchment area of 2918 acres (Source: Directorate of Small Dams, Irrigation Department, Kohat).

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2. MATERIAL AND METHODS

Fishes were collected from Sharki Dam, District Karak twice a month during the study period with the help of local fisherman using different types of nets. Collection was made from August to December, 2013. Fishes were sampled from different sites of the dam and were preserved either in 70% alcohol or 10% formalin solution in separate bottles according to size of the fish. The Meristics were counted and Morphometric characters were measured. Fishes were identified up to the species level with the help of the standard Keys.

3. RESULTS AND DISCUSSION

In this survey of Sharki Dam from August to December (2013), a total of 10 fish species were identified. Family cyprinidae was found to be the most abundant represented by 8 species, whereas Family Siluridae and Mastacembelidae was represented by a single species each.

Table 1: Systematic representation of ichthyodiversity of Sharki dam, Karak

S/No	Order	Family	Genus	Species
1	Cypriniformes	Cyprinidae	*Barilius*	*vagra*
2			*Barilius*	*pakistanicus*
3			*Puntius*	*sophore*
4			*Puntius*	*ticto*
5			*Crossocheilus*	*diplocheilus*
6			*Cyprinion*	*watsoni*
7			*Labeo*	*rohita*
8			*Cyprinus*	*carpio*
9	Siluriformes	Siluridae	*Ompok*	*pabda*
10	Mastacembeliformes	Mastacembelidae	*Mastacembelus*	*armatus*

Present investigation undertaken to study the fish diversity from Sharki dam was the first effort in this regard. Various commercial food fishes were found in the dam. Cyprinid fishes were one of the most important groups found in this area influencing the life of people in various ways.

As there is no river found in Karak, hence all the fish fauna is present in the small rain filled dams. Although, no detailed work is available regarding freshwater fishes of District Karak, still few researchers have worked on the ichthyofaunal diversity of different water bodies. Khan and Hasan (2011) worked on the fishes of Changhoz dam, District Karak and reported 7 species among which 5 species viz. *Cyprinus carpio, Labeo rohita, Mastacembelus armatus, Barilius vagra,* and *Barilius pakistanicus,* are also reported in the present survey. Two species which are not found in our study are *Crossocheilus latius* and *Hypophthalmichthys molitrix.* In comparison, the species which are reported in the present survey and are missing in Khan and Hasan (2011) collection are *Ompok pabda, Crossocheilius diplocheilus, Cyprinion watsoni, Puntius sophor* and *Puntius ticto.*

A Similar previous work was also carried out by Ilyas (2004) on Zebi dam, District Karak in which 12 species of fishes were reported and among which, 5 species *Cyprinus carpio, Barilius vagra, Labeo rohita, Puntius ticto* and *P. sophore* are common with the present survey. Seven species which are different are *Carassius auratus, Catla catla, Cirrhinus mrigala, Ctenopharyngodon idella, Hypophthalmichthys molitrix, Channa punctatus, and Channa striatus.* In comparison, the species which are reported in present survey and were missing in Ilyas' collection are *Ompok pabda, Crossocheilius diplocheilus, Cyprinion watsoni* and *Barilius Pakistanicus.*

Another notable work on the fish fauna of Braganatu dam, FR Bunnu, an adjacent area to Karak, was done by Wazir (2009) who reported 9 species of fish, among which, 4 species *Barilius pakistanicus, Cyprinus Carpio, Cyprinion watsoni and Labeo rohita* have been reported in present survey as well. Five species which he did not found are *Hypophthalmichthys molitrix, Cirrhinus mrigala,*

Table 2: Some morphometric measurements of the recorded species

Species	Total length	Fork length	Standard length	Body depth	Body width	Head length	Eye diameter
Barilius vagra	10.5cm	9.1cm	8.4cm	1.8cm	1.1cm	1.5cm	0.5cm
Barilius pakistanicus	7.4cm	6.8cm	6.2cm	1.4cm	0.1cm	1.1cm	0.4cm
Puntius sophore	6.2cm	5.6cm	5cm	1.5cm	0.8cm	1.2cm	0.5cm
Puntius ticto	6.5cm	6.1cm	5.3cm	1.5cm	1.1cm	1.1cm	0.4cm
Crossocheilus diplocheilus	7.5cm	6.9cm	6cm	1.5cm	1.1cm	1.4cm	0.4cm
Cyprinion watsoni	11.9cm	10.9cm	9.8cm	2.9cm	1.8cm	2.1cm	0.5cm
Labeo rohita	10cm	9cm	7.9cm	2.3cm	1.9cm	2cm	0.3cm
Cyprinus carpio	11.2cm	10.2cm	9.3cm	1.8cm	1.6cm	1.7cm	0.6cm
Ompok pabda	15.2cm	14.2cm	14cm	3cm	1.6cm	2.1cm	0.6cm
Mastacembelus armatus	25cm	-	23.8cm	1.8cm	1.5cm	2.8cm	0.5cm

Gara gotyla, Crossocheilius latius diplocheilus, and Schistura prashari. The species, which are missing in Wazir's (2009) collection and are reported in present survey, are *Barilius vagra, Crossocheilus diplocheilus, Mastacembelus armatus, Puntius sophore and Puntius ticto.* Hasan *et al* (2014) worked on the fishes of different streams of Bajaur Agency of and reported sixteen (16) fish species, in which, five species viz, *Puntius ticto, Barilius vagra, Barilius pakistanicus, Crossocheilus diplocheilus,* and *Mastacembelus armatus* were found in the present collection as well.

Results of the present study also match the findings of Ozulug et al (2005) who reported family cyprinidae as the most abundant in Lake Uznik, Turkey.

The present study contributes record of two species namely *Ompok pabda* and *Cyprinion watsoni* for the first time from this area. From the previous studies, it is revealed that some species like *Barilius vagra, Puntius sophore, Mastacembelus armatus and Cyprinus carpio* are distributed abundantly throughout District Karak and neighbouring districts as compared to the others species.

During the present study family *cyprinidae* has proved to be the most widespread and dominant family of fish represented by 8 species. Out of these species, *B. vagra* is the most abundant specie. Besides this, *Puntius sophore, Puntius ticto* and *Mastacembelus armatus* were also present in considerable numbers. *B. vagra, P. sophore C. carpio* may be considered as resident species because of their presence throughout the study period. Some species, which are not found in the Sharki dam and potentially can be introduced and cultured in it are *Cirrhinus mrigala, Tilapia, Hypophthalmichthys molitrix, Channa punctatus* and *Carassius auratus* because of their occurrence in other nearby dams of the District Karak.

To conclude, the Ichthyofauna of Sharki dam is richer as compared to other dams in the area. The fish species recorded from this dam in the present survey is comparatively high to the number of species reported from other dams of district Karak. Sharki Dam can support a greater number of fish species. It has also been observed that during rainy season, a large number of fries, fingerling and even adult fishes are swept away with overflowing water. Similarly, illegal, ruthless fishing has become a major threat for the fishes in the reservoir. The government should pay due attention to suitable management practices for the fisheries propagation in the reservoir. Fingerlings of culturable fish species should be introduced in the reservoir to enhance the fish production in the area. With these management practices including stocking and control on overfishing, this dam may constitute an important source of food best in terms of protein and create job opportunities, besides revenue for the government..

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