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Identification of fish fauna in River Harrow Hazara Division Khyber Pakhtunkhwa, Pakistan

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Abstract

The goal of the current investigation was to find out fish fauna in River Harrow Hazara Division Khyber Pakhtunkhwa, Pakistan. The present survey period was 4 years, i.e. from March, 2013 to February, 2017. For this purpose, the River was divided into 5 sampling sites. These sampling sites were Akhora, Dhara, Kharala, Pambala and Sarral. Collection of Ichthyofauna was done with the help of various fish gars. All the collected fish specimens were identified with the help of fish identification keys. The recorded Ichthyofauna belongs to 3 Orders, 6 Families, 13 Genera's and 15 Species. In the current survey maximum and minimum collection of fish species were carried out from Kharala (10) and Akhora (4) respectively. The current study revealed that family Cyprinidae was the richest one which was represented by 10 Species; Siluridae, Sisoridae, Bagridae, Schilbeidae and Mastacembelidae were represented by only one species each respectively.

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Introduction

Ichthyofauna contain half of the total number of vertebrates globally and having the ability to survive in every aquatic environment. Globally, a total of 8,411 freshwater fish species has been reported in which 930 fishes inhabiting in India freshwater water bodies (Shinde *et al.,* 2009). There are 180 fishes has been recorded from the freshwater of Pakistan, which comprising main groups like loaches, carps and catfish. There are 28 fishes recorded which inhabits in the cold water habitats of Pakistan. A large amount of the snow trout is limited to the Trans-Himalayan areas of the Indus system. Freshwater fish fauna of Pakistan comprises 179 species belonging to 82 genera, 26 families, 10 orders, 5 super orders and 3 cohorts (Mirza and Bhatti, 2009). Fish are cold blooded aquatic vertebrates typically with backbone, gills and fins and are mainly dependent onaquatic habitat. Fish are varying in shapes, habits and size. Some fishes prefer to parasitic mode of life while other inhabits in caves (Nicol, 1989). Fish diversity is usually called Ichthyo-diversity which is referred to the variety of fish species (Burton *et al.*, 1992). In Pakistan majority of fishes belongs to family Cyprinidae inhabitants, which inhabitant in the riverine environment. Fishes of the family Cyprinidae are considered highly valuable due it's commercially and economically important in Pakistan (Pervaiz, 2011; Rafique and Khan 2012). Globally, 20% of freshwater fishes are confirmed as either endangered or extinct (Postel, 2002). In water environment Ichthyofana are an efficient biological indicator being sensitive to the ecological variation and having the capacity of surviving in every habitat in a community (Vijaylaxmi *et al.*, 2010; Limburg *et al.*, 2011). Ichthyofauna Fishes play a main role in the stability of the water environment. Various types of proteins are provided by the fishes which are very useful for human being (Nagabhushan, and Hosetti, 2010). Economically and nutrition point of views fish provide way of income to the poor people's (Hossain *et al.*, 2015). Due to the use of highly toxic agricultural chemicals like (insecticide or pesticides) aquatic habitat are also destroy as a results fish population become declined (Azhar *et al.*, 2007; Ahmad *et al.*, 2004). Among 260 freshwater fish species, 56 species are critically endangered, endangered or vulnerable (IUCN, 2000).After independence of Pakistan, various scientists conducted research on Ichthyofauna of Pakistan and presented there have worked on the fish fauna of Pakistan and published their information. Dr. N. Ahmad (1963) has recorded 104 freshwater ichthyofana from West Pakistan whereas Mirza (1975) has published 156 freshwater ichthyofana which comprising 68 Genera, 22 Families, 9 Orders and 2 Classes in Pakistan (Mirza & Bhatti, 1999). The aim of the current research work was to find out the fish fauna in River Harrow Hazara Division Khyber Pakhtunkhwa, Pakistan.

Materials and methods

Study Area

The total length of River Harrow is 54 km, originating from the hills of Moshkpuri. The upper reaches of the catchment area are afforested with pines and thick undergrowth, while the lower reaches are covered by bushes, shrubs and small trees (IUCN, 2011). At Haripur, Khanpur dam has been constructed on Haro River. Down part of Haro River covers about 40 km area which is in Punjab province and has confluence with the main Indus River at Garyala site at Attock District. Major sites selected for sampling were Akhora, Dharra, Kharala, Pambala and Saral.

Fig. 1. Map of River Harow Khuber Pakhtunkhwa, Pakistan (Usman *et al.*, 2017).

Collection

Collection of Ichthyofauna was carried out from River Harrow with the help of a local fisherman using various types of catch-up instrument like hand nets,

cast nets and hooks from March, 2013 to February, 2017. 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.

Fish Preservation and Identification

Fishes after collection were preserved and after the preservation all 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, 1999; Mirza and Sadhu, 2007; Mirza, 1990). All the fishes were preserved for longer time off period in a kettle jar by using 10% of formalin solution.

Results and discussion

The present survey was conducted in River harrow to explore Ichthyofauna during March, 2013 to February, 2017. River Kunhar was divided into five sites. The selected sampling stations were Akhora, Dhara, Kharala, Pambala and Sarral. The recorded Ichthyofauna belongs to 3 Orders, 6 Families, 13 Genera's and 15 Species respectively. Maximum collection of Ichthyofauna was carried out from Kharala (10) and minimum from Akhora (4) respectively. From the present results it can be concluded that family Cyprinidae was the richest one which was represented by 10 Species; Siluridae, Sisoridae, Bagridae, Schilbeidae and Mastacembelidae were represented by only one species each respectively.

A research work was carried out by Akhtar *et al.* (2014) at Manglawar Valley of waterway Swat and recorded 18 fishes belongs to 3 requests and 3 families respectively. These species were *Barilius pakistanicus, Barilius vagra, Cirrhinus mrigala, Crossocheilus diplocheilus, Cyprinus carpio, Garra gotyla, Glyptothorax cavia, Glyptothorax punjabensis, Glyptothorax sufii, Labeo rohita, Mastacembelus armatus, Puntius sophore, Rasbora daniconius, Salmophasia bacaila, Salmophasia punjabensis, Schizothorax plagiostomus, Tor macrolepis* and *Tor putitora*. In another work conducted on stream Barandu area Buner by Saeed and his laborer (2013), who recorded 11 fishes comprising 3 orders and 4 families. These recorded Ichthyofauna was *Barilius pakistanicus, Triplophysa naziri, Tor putitora, Crossocheilus latius, Schizothorax plagiotomus, Channa gachua, Gara gotyla, Glyptothorax punjabensis, Matacembelus armatus, Puntius sophore* and *Schistura punjabensis*. Ullah and Hasan (2013) recorded 13 fishes from water bodies of Panjkora including *Schizothorax esocinus, Schizothorax plagiostomus, Racoma labiata, Cyprinion watsoni, Cyprinus carpio, Tor putitora, Channa punctata, Channa gachua, Tor macrolepis, Crossocheilus diplocheilus, Gara gotyla, Ctenopheringodon idella* and *Mastacembelus armatus*. Muhammad *et al.* (2014) identified 11 eleven fishes, among them 8 were valuable, like *Orienus plagiostomus, Oncorhynkus mykiss, Carassius auratus, Crossocheilus diplocheilus, Gara gotyla, Schizothorax esocinus (*now known as *Schizophyge esocinus), Channa punctata* and *Racoma labiata* from waterway Panjkora at District Dir Upper. Another investigation was performed by Hussain and Shah (1960) to explore ichthyofana in the stream Swat, they recorded 6 species from waterway Swat. Another work was led by Nisar (1998) on the ichthyofauna of Tanda Dam Kohat investigates the fish fauna by revealing 23 species. Shahjehan and Khan (2000) recorded 26 fishes which comprising 8 families from Baran Dam, Bannu. Another remarkable work was done by Ahmad and Mirza (1963) who record 8 types of fish from Swat, including two new Iocohes. Akhter *et al.* (2014) conducted research work to find out fish fauna of River Barandu District Buner Khyber Pakhtunkhwa, Pakistan. He recorded 10 animal groups having a place with 3 orders and 4 families.

These Species were *Barilius pakistanicus, Triplophysa naziri, Tor putitora, Crossocheilus latius, Schizothorax plagiotomus, Channa gachua, Gara gotyla, Matacembelus armatus, Puntius sophore* and *Schistura punjabensis*. In the current conducted on River harrow a total of 15 species of fishes were recorded which comprising to 3 Orders, 6 Families, 13 Genera respectively. There were dissimilarities in the present results and the previous literatures as well. The variation in the results might be due to climatic factors.

Table 1. Fish fauna in River harrow at Akhora site Khyber Pakhtunkhwa, Pakistan.

S. No	Order	Family	Genus	Species
1	Cypriniformes	Cyprinidae	*Labeo*	*caeruleus*
2	Cypriniformes	Cyprinidae	*Hypophthalmicthys*	*Molitrix*
3	Cypriniformes	Cyprinidae	*Puntus*	*Sophore*
4	Synbranchiformes	Mastacembelidae	Mastacembelus	Armatus
	Orders 02	Families 02	Genera 04	Species 04

Table 2. Fish fauna in River harrow Dhara site Khyber Pakhtunkhwa, Pakistan.

S. No	Order	Family	Genus	Species
1	Cypriniformes	Cyprinidae	*Labeo*	*rohita*
2	Cypriniformes	Cyprinidae	*Labeo*	*caeruleus*
3	Cypriniformes	Cyprinidae	*Schizothorax*	*plagiostomous*
4	Cypriniformes	Cyprinidae	*Gara*	*gotyla*
5	Suliriformes	Siluridae	*Wallago*	*attu*
6	Synbranchiformes	Mastacembelidae	Mastacembelus	armatus
	Orders 03	Families 03	Genera 05	Species 06

Table 3. Fish fauna in River harrow at Kharala site Khyber Pakhtunkhwa, Pakistan.

S. No	Order	Family	Genus	Species
1	Cypriniformes	Cyprinidae	*Cyprinus*	*Carpio*
2	Cypriniformes	Cyprinidae	*Catla*	*Catla*
3	Cypriniformes	Cyprinidae	*Cirrhinus*	*Mrigala*
4	Cypriniformes	Cyprinidae	*Labeo*	*Rohita*
5	Cypriniformes	Cyprinidae	*Hypophthalmicthys*	*Molitrix*
6	Cypriniformes	Cyprinidae	*Schizothorax*	*plagiostomous*
7	Cypriniformes	Cyprinidae	*Puntus*	*Sophore*
8	Suliriformes	Sisoridae	*Glyptothorax*	*punjabensis*
9	Suliriformes	Schilbeidae	*Clopisoma*	*naziri*
10	Synbranchiformes	Mastacembelidae	Mastacembelus	armatus
	Orders 03	Families 04	Genera 10	Species 10

Table 4. Fish fauna in River harrow at Pambala site Khyber Pakhtunkhwa, Pakistan.

S. No	Order	Family	Genus	Species
1	Cypriniformes	Cyprinidae	*Cyprinus*	*Carpio*
4	Cypriniformes	Cyprinidae	*Labeo*	*Rohita*
5	Cypriniformes	Cyprinidae	*Labeo*	*Caeruleus*
7	Cypriniformes	Cyprinidae	*Schizothorax*	*Plagiostomous*
8	Cypriniformes	Cyprinidae	*Gara*	*gotyla*
10	Cypriniformes	Cyprinidae	*Puntius*	*Ticto*
11	Suliriformes	Siluridae	*Wallago*	*Attu*
13	Suliriformes	Bagridae	*Rita*	*Rita*
15	Synbranchiformes	Mastacembelidae	Mastacembelus	Armatus
	Orders 03	Families 04	Genera 08	Species 09

Table 5. Fish fauna in River harrow at Sarral site Khyber Pakhtunkhwa, Pakistan.

S. No	Order	Family	Genus	Species
1	Cypriniformes	Cyprinidae	*Cirrhinus*	*mrigala*
2	Cypriniformes	Cyprinidae	*Labeo*	*rohita*
3	Cypriniformes	Cyprinidae	*Schizothorax*	*plagiostomous*
4	Cypriniformes	Cyprinidae	*Gara*	*gotyla*
5	Suliriformes	Siluridae	*Wallago*	*attu*
6	Suliriformes	Sisoridae	*Glyptothorax*	*punjabensis*
7	Synbranchiformes	Mastacembelidae	Mastacembelus	armatus
	Orders 03	Families 04	Genera 07	Species 07

Conclusion

The present survey revealed that River Harrow comprising plenty of Ichthyofauna population. This study will provide Ichthyofauna record for the future Ichthyologist. Illegal fishing and anthropogenic activities greatly effect on the aquatic environment of the River. For example, tourists thrown garbage's to the river which disturb the water quality.

Furthermore, Tourism activities and illegal fishing should be controlled otherwise the commercially important fishes will be declined.

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References

Ahmad ND, Mirza MR. 1963. Loaches of genus Noemacheilus Hasselt from swat state. West Pakistan Journal of Science **15,** 75-81.

Ahmed KKU, Hasan KR, Ahamed SU, Ahmed T, Mustafa G. 2004. Ecology of Shakla Beel (Brahmanbaria), Bangladesh. Bangladesh Fisheries Research Institute, Riverine station, Chandpur 3602, Bangladesh. Bangladesh Journal of Fisheries **9,** 101-110.

Akhtar N, Khan S, Saeed K. 2014. Exploring the Fish Fauna of River Swat, Khyber Pakhtunkhwa, Pakistan. World Journal of Fish and Marine Sciences **6(2),** 190-194.

Akhtar N, Saeed K, Khan S. 2014. Fresh water record on fish fauna of River Barandu District Buner Khyber Pakhtunkhwa, Pakistan.

Azher SA, Khanom F, Dewan S, Wahab MA, Habib MAB. 2007. Impacts of fish sanctuaries on macrobenthic organisms in a haor river, the Mohisherkandi Boranpur, Kishoregonj. Bangladesh Journal of Fish **30,** 11-22.

Burton PJ, Balisky AE, Coward LP, Cumming SG, Kneshwaw DD. 1992. The value of managing biodiversity. The Forestry Chronicle Vol **68(2),** pp. 225-237.

Hossain MA, Mian S, Ahter M, Rabby AF, Marine SS, Rahman MA, Iqbal MM, Islam MJ, Hassan MM, Hossain MM. 2015. Ovarian Biology of Spotted Snakehead (*Channa punctatus*) from Natural wetlands of Sylhet, Bangladesh. Annals of Veterinary and Animal Science **2(3),** 64-76.

Hussain KA, Shah SZA. 1960. Survey report of River Swat, Swat state with special reference to trout culture. Agriculture Pakistan **11,** 301-310.

IUCN, Bangladesh. 2000. Red book of threatened fishes of Bangladesh, International Union for Conservation of Nature (IUCN)- The world conservation union pp. 12-116.

IUCN. 2011. IUCN Red List of Threatened Species. Version 2011. 2.

Jayaram KC. 1999. The fresh water fishes of India Region. Narendra Publication House, Dheli 110006 (India).

Limburg KE, Hughes RM, Jackson DC, Czech B. 2011. Human population increase, economic growth, and fish conservation: collision course or savvy stewardship Fisheries **36,** 27-34.

Mirza MR, Bhatti MN. 1999. Biodiversity of the freshwater fishes of Pakistan and Azad Kashmir. In: Proc. Sem. Aquatic Biodiversity of Pakistan (eds. Q.B. Kazmi and M.A. Kazmi) pp. 136-144.

Mirza MR, Sandhu AA. 2007. Fishes of the Punjab Pakistan.Polymer Publications, Lahore, Pakistan.

Mirza MR. 1990. Pakistan ki Taazapaniki Machlia, (in Urdu), Urdu Science Board 32-35.

Mirza MR, Bhatti MN. 1999. Biodiversity of the freshwater fishes of Pakistan and Azad Kashmir. In: Proc. Sem. Aquatic Biodiversity of Pakistan pp. 136-144.

Mirza MR. 1975. Freshwater fishes and zoogeography of Pakistan. Bijdragen tot de Dierkunde (Amsterdam), Vol **45(2),** pp. 143-180.

Muhammad I, Hasan Z, Ullah S, Ullah W. 2014. Identification of Fish Fauna of River Panjkora District Dir Upper. Sarhad J. Agri. In press.

Nagabhushan CM, Hosetti BB. 2010. Diversity and Icthyo-fauna in relation to physico-chemical characters of Tungabhadara reservoir, Hospet. Wetland, Biodiversity and Climate change 1- 9p.

Nicol AC. 1989. The eyes of fish Oxford Science Publication Clarendon on press Oxford pp. 64-69.

Nisar M. 1998. Fish fauna of Tanda dam Kohat KPK Msc Thesis report, library, Dept, of Zoology, University of Peshawar 1998.

Pervaiz K. 2011. Some aspects of Biology of mahseer fish species from Attock region, Pakistan. Ph. D Thesis Department of Zoology, University of the Punjab, Lahore 194.

Postel S. 2002.Water and sustainability, dimensions of the global challenge, Global Water Policy Project, World Watch Institute, Amherst, Massachusetts.

Rafique M, Khan NUH. 2012. Distribution and status of significant freshwater fishes of Pakistan. Record of Zoological Survey of Pakistan **21,** 90-95.

Saeed K, Khan K, Haq F. 2013. Diversity and population status of fish fauna of river Barandu district Buner Khyber Pakhtunkhwa Province Pakistan Vol. **3,** No. 4, p. 83-88.

Shahjehan IA, Khan H. 2000. Ichthyofauna of Baran dam, Bannu, Kpk Pakistan. J sc. And Tech Univ. Peshawer **22,** 39-43.

Shinde SE, Pathan TS, Bhandare RY, Sonwane DL. 2009. Ichthyofaunal diversity of Harsool Savangi Dam, District Aurangabad, (M.S.) India. World J. of fish and Marine Sciences **1(30),** 141-143.

Ullah S, Hasan Z. 2013. The Edible Fishes of River Panjkora at District Dir Lower, Khyber Pakhtunkhwa. PUTAJ (Sciences). Accepted for Vol. **20**.

Usman K, Pervaiz K, Khan H, Rehman HU, Hussain SM, Sadia H, Akhtar MN, Rehman MU. 2017. Exploring of ichthyofauna in River Harrow Khyber Pakhtunkhwa, Pakistan. Journal of Entomology and Zoology Studies **5(2),** 1038-1040.

Vijaylaxmi C, Rajshekhar M, Vijaykumar K. 2010. Freshwater fishes distribution and diversity status of Mullameri River, a minor tributary of Bheema River of Gulbarga District, Karnataka. Journal of Systems Biology **2(2),** 1-9.