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Fish fauna in Hazara Region at River Dour, Khyber Pakhtunkhwa, Pakistan

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Abstract

A detailed study was carried out to explore, fish, fauna in Hazara region at River Dour KP, Pakistan from March, 2013 to February, 2017. Five sampling stations were selected for Ichthyofauna collection. These sampling sites were Dobandi, Jama, Makkhana, Mankarai and Sarai Saleh. Collection of Ichthyofauna was carried out with the different fish gars. Maximum numbers of fish species (6) were collected from the Jama point while minimum collection (4) was carried out from Makkhana sampling site. Overall fishes collected from the five sampling sites comprising 3 Orders, 4 Families, 9 Genera's and 9 Species respectively. The family Cyprinidae was found the most dominant which was represented by 6 Species; Siluridae, Bagridae and Mastacembelidae were represented by only one species each respectively.

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Introduction

The wellknown game fish Mahaseer and Schizothoracines are getting to be plainly uncommon due to over-fishing and the loss of breeding habitat, flooded by water bodies like Tarbela and the Ghazi Barotha (Ali *et al.*, 2010). As indicated by a study 39 fishes were recorded from bring down side of River Swat by Mirza, 2007. Around 54 fishes species have been recorded from River Kabul and its tributaries (Yousafzai *et al*, 2010, 2012, 2009; 2011). Maximun Ichthyofauna is found in the lower portion of river Swat as compared to the Upper portion, so share icthyofauna with River Kabul (Yousaf *et al.*, 2013). Due to flooding, changes occur in the water ecosystem as results all aquatic organisms are badly affected like microorganisms and fishes (Godlewska *et al.*, 2003). Lot of fishes died or lost during normal cyclic of flood in aquatic habitat with sensitive life stages (Nehring, and Miller, 1987). Early stages of the fish are more susceptible to flooding due to their small size and poor swimming ability (Harvey, 1987). Out of the cumulative 40,000 types of vertebrates, 21, 723 are fishes existing currently (Jayaram, 1999). Fish affects the life of man. Fish comprise the imperative part of the diet for many peoples and gives the most required supplements which are absent in cereal diets (Clucas and Sutcliffe, 1981). Fish is a critical wellspring of sustenance, assumes a noteworthy part in conquering the nutritious insufficiency particularly that of Proteins. When contrasted with different sources of protein like oats and vegetables, the fish gives very edible protein, which likewise has much development advancing an incentive for people. Along these lines fishes are considered also suited sources of protein for people. Current investigations have demonstrated that fish proteins are better than that of drain, meat and egg whites with respect to nourishing worth and absorbability, which is in the sort of 96% of the fish. These proteins include all the fundamental amino acids in required amount needed to human diet like Lysine, Arginine, Histidine, Leucine, Isoleucine, Valine, Threonine, Methionine, Phenylalanine and Tryptophan. Furthermore, 20% protein fish likewise contains fundamentals supplements required by the human body like Phosphorus, Iron, Calcium, Iodine, Vitamin A, Vitamin D, Vitamin B2 and Niacin for supplementation of human eating regimen. White flesh fish contains more nutrient sustenance estimation of 300 to 600 calories in one pound of fish. It likewise gives different results like fish paste and fish oil (Shaikh *et al.*, 2011). According to Mirza and Bhatti (1999) there are 179 fish species comprise 82 genera 26 families 10 requests, 5 superorders and 3 cohorts. There are more than 186 freshwater fish species existed in Pakistan (Mirza and Sandhu, 2007). Most recent and credible data were given by (Rafique and Khan, 2012). They recorded around 193 types of freshwater fishes from Pakistan, which comprising 13 Orders, 30 Families and 86 Genera. The aim of the research work was to find out the fish fauna in Hazara region at River Dour Khyber Pakhtunkhwa, Pakistan.

Materials and methods

Study Area

The total length of River Dor is 50 km, originates at the northern end of the Nathiagali range and enters to River Siran at Haripur. Its coordinates are 34°5'49" North and 72°52'19" East. The upper reaches of the watershed are covered in mixed temperate coniferous forests, the middle reaches in chir pine and the lower part with scrub forests. Grasslands are interspersed with forests and cropland to form a unique mosaic of land use patterns (IUCN, 2011). Major sites selected for sampling were Jama, Dobandi, Makkhana, Mankarai and Sarai Saleh.

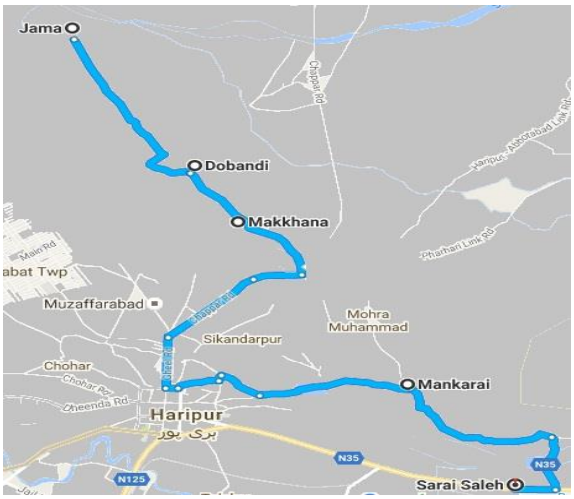

Fig. 1. Map of River Dor Khyber Pakhtunkhwa, Pakistan (Usman *et al.*, 2017).

Fish Collection

Collection of fish fauna was carried out from River Dor 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

For exploring of Ichthyofauna a brief research work was conducted on River Dor at Hazara region Khyber Pakhtunkhwa, Pakistan. Duration of the present research was 4 years i.e. March, 2013 to February, 2017. For this purpose 5 sites were selected for fish fauna collection. The selected Ichthyofauna points were sites were Dobandi, Jama, Makkhana, Mankarai and Sarai Saleh respectively. Majority collection of Ichthyofauna was carried out from Jama point (6) while minimum collection (4) was done from Makkhana point. The all the collected and identified fish species belongs to 3 Orders, 4 Families, 9 Genera's and 9 Species. Furthermore, the dominant family of the Ichthyofauna was found family Cyprinidae which was comprising by 6 Species while other families like Siluridae, Bagridae and Mastacembelidae were represented by only one species each. The present research work results reviled that River Harrow is very clean river free from anthropogenic activities. Furthermore, This River is a very suitable zone for the worm water survival which are too much important commercially. A study was conducted by Muhammad *et al.* (2004) in Panjkora at District Dir Upper and recorded 11 fishes, Out of the 11 species, 8 were valuable fishes like, *Orienus plagiostomus, Oncorhynkus mykiss, Carassius auratus, Crossocheilus diplocheilus, Gara gotyla, Schizothorax esocinus* (now known as *Schizophyge esocinus*), *Channa punctata* and *Racoma labiata*. A survey was carried out by Hasan *et al.* (2013) at River Swat and identified fifty fish species comprising of sixteen valuable fish species like. *Carassius auratus, Channa gachua, Channa puntatus, Crossocheilus diplocheilus, Clupisoma garua, Clupisoma naziri, Cyprinus carpio, Eutropiichthys vacha, Labeo diplostomus, Mastacembuls armatus, Mystus bleekeri, Oncorhynchus mykiss, Racoma labiata, Salmo truttafario, Schizothorax plagiostomus* and *Tor Macrolepis*. Another investigation was done by Hasssan *et al.* (2014) to explore the Ichthyofauna of River Barandu, District Buner from November 2012 to October 2013. During the survey a total of 13 fishes were collected which comprising 4 orders, 5 families and 10 genera. The most dominant group of the fish was Cyprinidae which consisting 8 species like *Barilius pakistanicus, Crossocheilus diplocheilus, Crossocheilus latius, Gara gotyla, Puntius sophore, Puntius ticto, Schizothorax plagiostomus, Tor macrolepis, Schistura punjabensis* and *Triplophysa naziri* from family Nemacheilidae, *Mastacembelus armatus* from family Mastacembelidae, *Channa gachua* from family Channidae and *Glyptothorax punjabensis* from family Sisoridae were likewise gathered from the waterway. Another research was conducted by Hassan *et al.* (2014) at Bajaur Agency from 2004 to 2010. A total of sixteen (16) fish species were recognized having comprising 4 orders, 5 families and 12 genera. Family Cyprinidae was the dominant family consisting nine species like, *Puntius ticto, Puntius conchonius, Barilius modestus, Barilius pakistanicus, Barilius vagra, Crossocheilus diplocheilus, Salmophasia punjabensis, Carassius auratus* and *Schizothorax plagiostomus*. Family Nemacheilidae was represented by three species *Triplophysa naziri, Schisturaa lepidota* and *Naemacheilus pakistanicus* though two species *Channa gachua* and *Channa punctatus* of Family Channidae were likewise recognized. Family Mastacembelidae and Sisoridae were represented by a single species each.

Mastacembelus armatus and *Glyptothorax punjabensis* separately. A study was carried out at Swat, Buner valleys and recorded 9 fishes (Ahmad (1969). Another work was conducted by Mirza (1973) to find out Ichthyofauna of river Swat and bordering regions including Buner. The recorded fishes were *Puntius ticto, Crossocheilus diplocheilus, Channa gachua, Tor macrolepis, Mastacembelus armatus,* and *Schizothorax plagiostomus*. Another study was carried out by Rafique and Javed (2002) on Buner Valley's and recorded 20 fishes. A survey was conducted by Yousafzai *et al.* (2013) on river Swat to explore fish fauna. During the study period 38 fishes species were recorded. Javed *et al.* (1996) collected 12 fishes like *Aspidoparia morar, Barilius pakistanicus, Puntius conchonius, Tor putitora, Crossocheilus diplocheilus, Schizothorax plagiostomus, Schisturaa lepidota, Schistura naseeri, Triplophysa naziri, Glyptothorax punjabensis, Channa gachua* and *Mastacembelus armatus* from the floods of Bajaur Agency. The present investigation was conducted on river Harrow Khyber Pakhtunkhwa, Pakistan during March 2013 to February 2017. A total of nine species of the fishes were recorded up to the species level.

These nine fish species belongs to 3 Orders, 4 Families and 9 Genera. The results of the current study conducted on river Harrow and previous studies shows similarities. Furthermore, in the present study the family Cyprinidae was found the most dominant family while same results were shown in the previous studies conducted in various areas.

Table 1. Exploring of fish fauna in River Dor at jama point Khyber Pakhtunkhwa, Pakistan.

S.NO	Order	Class	Family	Genus	Species
1	Cypriniformes	Actinopterygii	Cyprinidae	*Cyprinus*	*carpio*
2	Cypriniformes	Actinopterygii	Cyprinidae	Catla	Catla
3	Cypriniformes	Actinopterygii	Cyprinidae	*Cirrhinus*	*mrigala*
4	Cypriniformes	Actinopterygii	Cyprinidae	*Labeo*	*caeruleus*
5	Cypriniformes	Actinopterygii	Cyprinidae	*Hypophthalmicthys*	*molitrix*
6	Cypriniformes	Actinopterygii	Cyprinidae	*Schizotharax*	*Plagiostomous*
	Orders 01	Class 01	Families 01	Genus 06	Species 06

Table 2. Ichthyofauna in River Dor at Dobandi Hazara region Khyber Pakhtunkhwa, Pakistan.

S.NO	Class	Order	Family	Genus	Species
1	Actinopterygii	Cypriniformes	Cyprinidae	*Hypophthalmicthys*	*Molitrix*
2	Actinopterygii	Cypriniformes	Cyprinidae	*Schizotharax*	*plagiostomous*
3	Actinopterygii	Suliriformes	Siluridae	*Wallago*	*Attu*
4	Actinopterygii	Suliriformes	Bagridae	*Rita*	*Rita*
5	Actinopterygii	Synbranchiformes	Mastacembelidae	*Mastacembelus*	*Armatus*
	Class 01	Orders 03	Families 04	Genera 05	Species 05

Table 3. Fish fauna in Makkhanasite at River Dor Khyber Pakhtunkhwa, Pakistan.

S.NO	Order	Class	Family	Genus	Species
1	Cypriniformes	Actinopterygii	Cyprinidae	*Schizotharax*	*plagiostomous*
2	Suliriformes	Actinopterygii	Siluridae	*Wallago*	*Attu*
3	Suliriformes	Actinopterygii	Bagridae	*Rita*	*Rita*
4	Synbranchiformes	Actinopterygii	Mastacembelidae	*Mastacembelus*	*Armatus*
	Orders 03	Class 01	Families 04	Genera 04	Species 04

Table 4. Fish fauna in river Dor at Mankarai site Khyber Pakhtunkhwa, Pakistan.

S.NO	Order	Class	Family	Genus	Species
1	Cypriniformes	Actinopterygii	Cyprinidae	*Cyprinus*	*Carpio*
2	Cypriniformes	Actinopterygii	Cyprinidae	*Cirrhinus*	*Mrigala*
3	Cypriniformes	Actinopterygii	Cyprinidae	*Hypophthalmicthys*	*Molitrix*
4	Suliriformes	Actinopterygii	Siluridae	*Wallago*	*Attu*
5	Synbranchiformes	Actinopterygii	Mastacembelidae	*Mastacembelus*	*Armatus*
	Orders 03	Class 01	Families 03	Genera 05	05

Table 5. Fish fauna of SaraiSaleh (River Dor) Khyber Pakhtunkhwa Pakistan.

S.NO	Order	Class	Family	Genus	Species
1	Cypriniformes	Actinopterygii	Cyprinidae	*Cyprinus*	*Carpio*
2	Cypriniformes	Actinopterygii	Cyprinidae	Catla	Catla
3	Cypriniformes	Actinopterygii	Cyprinidae	*Hypophthalmicthys*	*Molitrix*
4	Cypriniformes	Actinopterygii	Cyprinidae	*Schizotharax*	*plagiostomous*
5	Synbranchiformes	Actinopterygii	Mastacembelidae	*Mastacembelus*	*Armatus*
	Orders 02	Class 01	Families 02	Genera 05	Species 05

Conclusion

This research work reviled that there were total 9 species collected from the 5 selected sites of the River Dor during March 2013 to February 2017. These 9 fish fauna belongs to 3 Orders, 4 Families, 9 Genera respectively. Furthermore, maximum collection of fish fauna was carried out from Jama sampling station while minimum from Makkhana sampling station.

The above results show that Jama sampling station was too much suitable because of water rich zone.

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