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Study on the diversity of fish fauna of River Etai of District Shangla KP, Pakistan

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Abstract
The present study was conducted to explore the fish fauna of river Etai district Shangla KP from June 2015 to June 2016. The exploration survey was conducted in six different localities namely Dherai, Serai, Gujar Banda, Jalkhanai, Gir and Kas of river Etai district Shangla. During the present study, 80fish specimens were collected. The collected 7 species of fish were classified under seven genera, four orders and four families have been reported from river Etai district Shangla. These species were *Mastacembelus armatus, Glyptothorax stocki, Garra gotyla, Tor putitora, Schizothorax plagiostomus, Barilius pakistanicus* and *Channa gachua*. The reported fish families were Mastacembelidae, Cyprinidae, Sisoridae, and Channidae. Family Cyprinidae was dominant in the study area and reported from all localities of river Etai district Shangla KP.

Keywords: Diversity, Fishfauna, River Etai, Shangla

1. Introduction
Fish are cold blooded aquatic vertebrates which breathe by means of pharyngeal gills, propelling and balancing themselves by means of fins [1]. Fisheries sector play a predominant role in the economy as well as provide employment to the people [2]. The freshwater fish fauna of Pakistan is represented by a minimum of 193 fish species. These species belong to class Actinopterygii, sub-class Teleostei, 3 cohorts, 6 super orders, 13 orders, 30 families and 86 genera. The rest of the indigenous species namely; *Danio rerio, Megaras boraelonga, Schizopygopsis stoliczkai, Triplophysa stoliczkai, Nandus nandus, Badis badis, Monopterus cuchia,* and *Macrognathus aral* are very rare in Pakistan [1].
As vast research work has been done of the diversity of fish fauna of Khyber Pakhtunkhwa province, Pakistan by several workers. Mirza *et al.* [3] reported more than 180 species of freshwater fishes from river Indus. Haseeb *et al*, in (2015) reported eleven fish species from Tanda dam, Kohat [4]. Hameed *et al*, recorded seven species from Darmalak Dam, District Kohat [5]. Haseeb *et al*, for the first time identified five fish species from Kandar dam District Kohat in 2016 [6].
Shangla District is located in the Khyber pakhtunkhwa province of Pakistan. The district headquarters are located at Alpuri. It was previously a subdivision of Swat District, but was upgraded to the status of a district on July 10, 1995.Shangla is bound on the east by district Batagram and tribal area of Tor ghar along which the river Indus flows for about 75 km on the west by district Swat, on the south by district Buner and tribal area on Kala Dhaka, and on the north by district Kohistan. Geographically it is located at 34, 31 to 33°, 08° north latitude and 72, 33 to 73°, 01° east longitudes, at an elevation of 3,164 meters above sea level with a total area of 1,586 square kilometers [7]. The Etai Riverlays in district Shangla and flow into the Indus River. On east it is bounded by Batagram district and Tor ghar and on west by Swat, on south by Buner and Tor ghar district on north by district Kohistan. The aim of the research work was to conducted study on the diversity of fish fauna of River Etai of District Shangla KP, Pakistan

Materials and Methods
Selected localities of River Etai District Shangla
River Etai was selected for the study for the first time because it was unexplored. The study was carried in the period of August 2016 to December 2016 to explore the fish fauna of river Etai.

The Etai River was divided into 6 sampling points in order to get the full description of fish fauna of each point are below.

1. **Point Dherai:** (34° 40' 56.5644" N and 72° 41' 38.85" E) is a small village surrounded by Tangor, Bella, and Qambarai.
2. **Point Serai:** (34° 40' 21.8172" N and 72° 42' 15.4656" E) is a small village surrounded by Dub and Sokar.
3. **Point Gojar Banda:** (34° 40' 9.966" N and 72° 43' 18.4584" E) is a small village surrounded by Meragai, Kankar and Dobb.
4. **Point Jalkhanai:** (34° 39' 29.0808" N and 72° 43' 43.914" E) is a small village surrounded by Jalatai and Kathoza.
5. **Point Gir:** (34° 38' 15.558" N and 72° 44' 53.2032" E) is a small village surrounded by Meragai and Kas.
6. **Point Kas:** (34° 38' 6.9324" N and 72° 45' 25.7724" E) is a small village surrounded by Gir, Maragai and Gadayo.

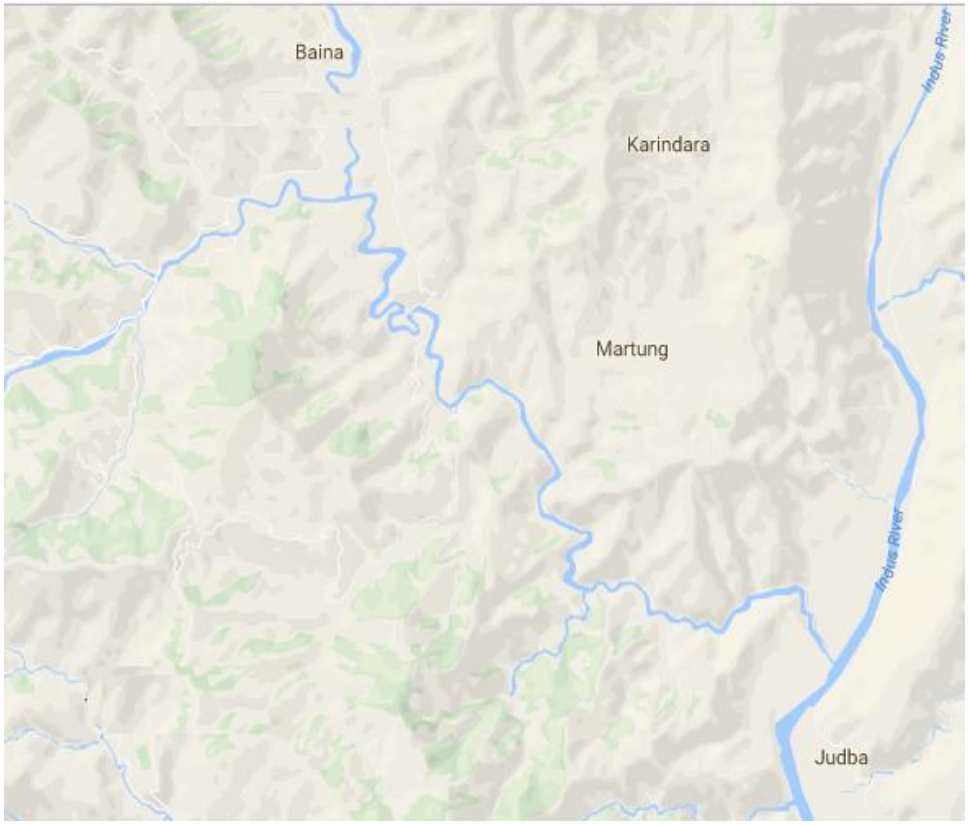

Fig 1: Map of River Etai district Shangla.

Fish sampling

The fishes were collected with the help of different nets, i.e. cast nets, hand nets, gill nets, hook, hook net, and dragon nets. The collection was made from different sites to avoid missing of species. Fish after collection were euthanized kindly and preserved in10% formalin solution. The larger fish were injected with formalin in their abdomen and other part of the body to avoid bacterial contamination. The same species were placed in a jar and labeled with name of locality and time of collection. The fishes after collection were brought to the laboratory of Abdul Wali Khan University Mardan (Buner campus). Identification and classification of fishes for scientific study were done through various taxonomic and systematic keys [3-5].

Results

During the present study, 80 specimens of fish were collected. The collected fishes were classified into 7 species under seven genera, four orders and four families have been reported from river Etai district Shangla. The reported fish families were belonging to Mastacembelidae, Cyprinidae, Sisoridae and Channidae. During the research family Cyprinidae was dominant and reported from all localities of river Etai district Shangla KP. Their detail systematic representation was recorded in the Table 1.

Table 1: Taxonomic position of species collection during study.

S. No.	Order	Family	Genus	Species
1	Synbranchiforms	Mastacembelidae	*Metacembalus*	*Mastacembelus armatus*
2	Cypriniformes	Cyprinidae	*Garra*	*Garra gotyla*
			Putitora	*Tor putitora*
			Schizothorax	*Schizothorax plagiostomus*
			Barilius	*Barilius pakistanicus*
3	Siluriformes	Sisoridae	*Glyptothorax*	*Glyptothorax Stocki*
4	Perciformes	Channidae	*Channa*	*Channa gachua*

Fig 2: *Mastacembelus armatus*

This species were collected from different points like Gojar Banda, Gir and Kas. Total three specimens were collected from these collection points.

Fig 3: *Garra gotyla*.

This species was collected from Gojarbanda, Gir, and Kas. A total of 25 specimens were collected. This species was abundant in Gir, and Kas collection point.

Fig 4: *Tor putitora*.

This species was collected from the Gojarbanda, Jalkhanai, Gir and Kas. A total of 15 specimens were collected, three from Gojarbanda, two from Jalkhanai, five from Gir, and five from Kas.

Fig 5: *Schizothorax plagiostomus*.

This species were widely distributed and abundant in all collection points like Serai, Dherai, Gojarbanda, Jalkhanai, Gir, Kas. Total 30 specimens were collected from these points. This species are famous for their delicious taste.

Fig 6: *Barilius pakistanicus*.

This species were collected from collection pointGir. Total 2 specimens were collected. This species have beautiful golden lines on their body.

Fig 7: *Glyptothorax Stocki*.

This species was collected from the collection pointGir. Total two specimens were collected. This species have black reddish color and was rare in river Etai.

Fig 8: *Channa gachua*.

A total two specimens of this species were collected fromGir and Kas. The local people of the area do not eat and hunt this species. *Channa gachua* have black body colour. This species was rare in river Etai.

Collection of fishes from each point

The maximum specimen richness was recorded at the collection point Jalkhanai and Kas because these points near to the Indus River and share most of its fauna with river Indus. The details of the collected fishes from different sites are given below in Table 2.

Table 2: Table showing percentage of fish species from each point in river Etai.

S. No.	Collection point name	Frequency	Percentage
1	Dherai	9	11.25%
2	Serai	12	15%
3	Gojarbanda	8	10%
4	Jalkhanai	20	25%
5	Gir	15	18.75%
6	Kas	16	20%
	Total	80	100%

Dominant species of each collection point in river Etai

During the study the dominant species was *Schizothorax plagiostomus.* This species was collected from all collection points. While *Tor putitora* and *Garra gotyla* are dominant species of Gojarbanda, Jalkhanai, Gir and Kas. The detail of the fishes collected from each collection points are given in Table 3.

Table 3: Dominant fish species of each point in river Etai District Shangla.

S. No.	Collection point name	Latitude	Longitude	Dominant species
1	Dherai	34° 40' 56.5644"N	72° 41' 38.85" E	*Schizothorax plagiostomus*
2	Serai	34° 40' 21.8172" N	72° 42' 15.4656" E	*Schizothorax plagiostomus*
3	Gojarbanda	34° 40' 9.966" N	72° 43' 18.4584" E	*Schizothorax plagiostomus, Tor putitora, Garra gotyla,*
4	Jalkhanai	34° 39' 29.0808" N	72° 43' 43.914" E	*Schizothorax plagiostomus, Tor putitora,*
5	Gir	34° 38' 15.558" N	72° 44' 53.2032" E	*Schizothorax plagiostomus, Garra gotyla, Tor putitora,*
6	Kas	34° 38' 6.9324" N	72° 45' 25.7724" E	*Schizothorax plagiostomus, Garra gotyla, Tor putitora,*

Discussion

During the current study, seven species were reported from river Etai district Shangla. These species belonging to four orders, four families, seven genera and seven species. These species are *Mastacembelus armatus, Garra gotyla, Tor putitora, Schizothorax plagiostomus, Barilius pakistanicus, Glyptothorax Stocki, Channa gachua.* In this study family Cyprinidae was dominant. The most abundant species were *Garra gotyla, Tor putitora* and *Schizothorax plagiostomus.* Saeed *et al* reported 11 species which belong to 3 orders and 4 families from the River Barandu. Minimum fish species collected belong to family Channidae while maximum fish species collected belong to the family Cyprinidae [2]. Akhtar *et al* worked on the fish fauna of River Barandu and reported 10 fish species which belonging to 3 orders and 4 families [8]. Ishaq *et al* study the fish biodiversity of River Swat from Madyan to Chakdara and reported 18 species which belonging to 5 orders and 6 families. The richest family was family Cyprinidae represented by 10 species [9]. Akhtar *et al* worked on the fish fauna of river Arunai Matta Swat and reported 20 fish species belonging to 3 orders and 4 families. The dominant family was family Cyprinidae [10]. Haseeb *et al* conducted a study on fish biodiversity of Tanda damdistrict Kohatwith new records and reported13 fish species which were belonging to four orders, five families and twelve genera. The richest family was family Cyprinidae in which 9 species were recorded and the rest of four species belonging to the families Cobitidae, Anguillidae, Siluridae, and Belonidae respectively [11]. Hameed *et al*, conducted studies on Dargai dam and reported 5 species [12]. Hameed *et al* study the current status of fish diversity of Barganat dam and documented 10 species [13]. Hameed *et al* in 2015, conducted survey on the biodiversity of Ghandiali dam fishes and reported 6 species [14]. Hameed *et al* in 2015 reported 7 species from Darwazai dam as well as reported 13 species from Gomalzam dam, 7 species [15-16]. Haseeb *et al* reported seven species from Naryab dam district Hangu i.e. *Labeo rohita*, *Hypophthalmichthys molitrix*, *Hypophthalmichthys nobilis*, *Catlacatla*, *Tor khudree*, *Anguilla anguilla*, *Ompokpabda*. The first five species belongs from family Cyprinidae, while *Anguilla Anguilla* from family Anguillidae and *Ompokpabda* belongs to family Siluridae [17]. Some points have more suitable for fish because of no anthropogenic activities. While at some points the population of fish fauna is very low due to anthropogenic activities and illegal hunting.

Conclusion

From the current study, it was concluded that the fish fauna of River Etai was rich.

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