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ICHTHYO-DIVERSITY OF RIVER ZHOB, DISTRICT ZHOB, BALOCHISTAN

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ABSTRACT

The present study aimed to evaluate the fish fauna of River Zhob, Balochistan. During the study, 200 fish specimens were collected. The collected fish were comprised of one order (Cypriniformes), one family (Cyprinidae) five genera (*Schizothorax, Cyprinion, Garra, Crossocheilus, Barilius*) and six species. Species-wise relative abundance was; *Schizothoraxplagiostomus* (30, 15%), *Cyprinionwatsoni* (159, 79.5%), *Bariliuspakistanicus* (1, 0.5%), *Bariliusvagra* (6, 3%), *Crossocheilusdiplocheilus* (1, 0.5%) and *Garragotyla* (3, 1.5%). The Simpson's biodiversity index (1-D = 0.346) shows that the river has low ichthyic diversity. It is an intense need to prevent illegal and nasty fishing, assess water quality regularly and stock fish in the river to improve and enhance the diversity.

Key words: Biodiversity Index,Checklist, Fish fauna, Relative Abundance, River Zhob.

INTRODUCTION

Fish is one of the major groups of vertebrates. Fish has a great influence on the life of man. Fish being an important source of food, plays a major role in overcoming the nutritional deficiency especially that of Proteins. It also provides several by products like fish meal; fish glue and fish oil (Shaikh *et al.* 2011). Fish not only provide food but could also improve and strengthen the economic conditions of a country (Khanand Hasan, 2011).

Fish fauna plays a prime role in the aquatic system nourishment. It also affects the aquatic system status and composition. Fish fauna provides momentum for the sustainable management of the aquatic systems (Prusty *et al.*, 2007). According to Jayaram, (1999) out of the total 40,000 species of vertebrates, 21, 723 are fishes. According to Mirza and Sandhu, (2007) there are more than 186 freshwater fish species found in Pakistan.

Fisheries are one of the most rapidly growing sectorsfor providing employment opportunities to a number of people (Nagabhushan and Hosetti, 2010). Fishplays a major role in stabilizing aquatic ecosystems (Dubey *et al.* 2012).The Ichthyo-faunais animportant feature of fishery prospective of a water body.For evaluating the fish fauna, a lot of work has been carried out in various aquatic systems throughout Pakistan. The distribution of fish species differsdue todifferent geographical and geological surroundings (Shaikh *et al.* 2011).

The current study was carried out on River Zhob, District Zhob, Balochistan, Pakistan. River Zhob is a large river of Balochistan. It originates from KunderMountain in between Muslimbagh and Kanmehtarzai. After five kilometers, it flows northward to Zhob city. Then it flows eastwards and takes a turn toward north near GawalHaiderzai. Here it is joined by river Ghazali. Another stream Sawara falls into River Zhob from the Kandil junction. Near Dera, about 29 miles north-east of Sawara Junction, it enters the hills. Sir ToiRiver joins it about two miles to the south of Mir Ali Khel. The total length of the River Zhob from its origin to its junction with the River Gomal is about 240 miles (Kakarabdullahzai and Kakarsulemankhel, 2004).

MATERIALS AND METHODS

Fish were collected using various types of nets of different mesh sizes. The collected specimens were preserved in 10% formalin and brought to laboratory of Department of Zoology, University of Peshawar for identification and confirmation. Fish were identified with standard keys including Fishes of the Punjab (Mirza and Sandhu, 2007), Inland fishes of India and adjacent countries (Talwar and Jhingran, 1991) and Freshwater fishes of the Indian Region (Jayaram, 1999).

RESULTS AND DISCUSSION

The present survey of fish fauna confirms the presence of 6 species of only one orderCypriniformes and a single family Cyprinidae and 5 genera (*Schizothorax, Cyprinion, Garra, Crossocheilus, and Barilius*) mentioned in the checklist (Table 1).

Table 1.Checklist of fish species of River Zhob (Fig. 2-7)

S. No	Order	Family	Genus and Species	Local names
1	Cypriniformes	Cyprinidae	*Schizothorax plagiostumus*	Swati
2			*Cyprinion watsoni*	Sabzug
3			*Barilius pakistanicus*	Pepal
4			*Barilius vagra*	Pepal
5			*Crossocheilus diplocheilus*	Butten
6			*Gara gotyla*	Kanesatt

The important morphometric measurements of the collected fish specimens were also recorded (Table 2).

Table 2. Morphometric measurements of the largest specimens collected (cm)

S. No	Fish Species	T.L	F.L	S.L	H.L	E.D	P.O.L	B.D
1	*Schizothoraxplagiostomus*	14.5	13	12.3	3	0.6	10.5	2.3
2	*Cyprinionwatsoni*	13.7	11	12.8	2.5	0.8	1.5	4.0
3	*Bariliuspakistanicus*	7.6	6.5	5.8	1.2	0.4	7.0	1.2
4	*Bariliusvagra*	12.4	11.2	10.2	2.5	0.6	11.6	2.0
5	*Crossocheilusdiplocheilus*	12.1	11.0	8.6	1.6	0.5	11.1	2.1
6	*Garragotyla*	13.8	12.5	12.6	2.7	0.4	12.8	3.0

T.L = Total length, F.L= Forked length, S.L= Standard length, H.L = Head length, E.D= Eye diameter, P.O.L= Post orbital length, B.D = Body depth.

Simpson's Biodiversity Index was also applied to the collected fish species (Table. 3).

Table 3. Diversity of the collected fish specimens

S. #	Species	Total (n*)	n-1	n(n-1)
2	*Schizothoraxplagiostomus*	30	29	870
6	*Cyprinionwatsoni*	159	158	25122
9	*Bariliuspakistanicus*	1	0	0
10	*Bariliusvagra*	6	5	30
20	*Crossocheilusdiplocheilus*	1	0	0
21	*Garagotyla*	3	2	6
Total		N** = 200		∑n(n-1) = 26028
		N-1 = 199		D = ∑n(n-1)/ N(N-1) = 0.654
		N(N-1) = 39800		1-D***= 0.346
		1/D****= 1.529		

n=* number of species, N=**Total number of specimens, 1-D= *** Simpson's Biodiversity Index, 1/D = **** Simpson's reciprocal index

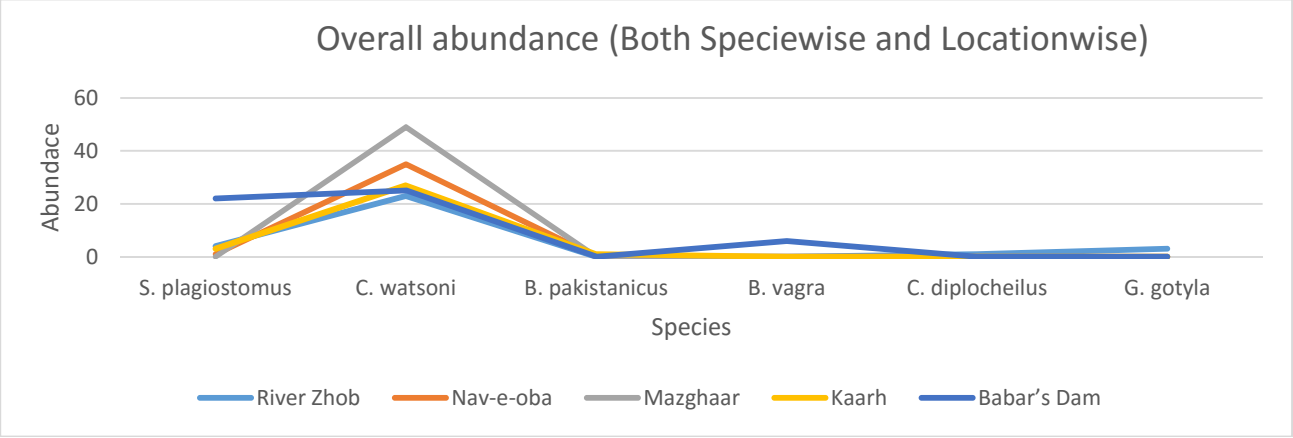

Fig. 1. Overall relative abundance of fish species.

Present work is a continuation of the work done on fish fauna of River Zhob. *Cyprinionwatsoni* (Fig.6) was the most abundant fish species with 159 specimens, which comprised 79.5% of the total fish diversity. It was present in all locations in quite even number, which is in accordance with the results of Kakarabdullahzai and Kakarsulemankhel, (2004) who also reported this fish as the most abundant one. It is very surprising that *Bariliuspakistanicus* (Fig.3) and *Crossocheilusdiplocheilus* (Fig.4) were least diverse fish species (Fig.1) represented by only one specimen each, representing only 0.5% of the total diversity, because these fishes are generally very common in all freshwater bodies of Pakistan. It seems that *Cyprinionwatsoni* has out competed these fishes in River Zhob and its tributaries. All the fishes we have collected were reported by Mirza *et al.* (1994) but Kakarabdullahzai and Kakarsulemankhel, (2004) have reported only three species. They were not able to collect *Bariliusvagra* (Fig.2), *Garragotyla* (Fig.5) and *Schizothoraxplagiostomus* (Fig.7), which are present in our collection. Absence of many species in our collection which were reported earlier is alarming as it shows the loss of diversity which is also confirmed by the small value of Simpson's index of diversity (1-D = 0.346) which ranges between 0 and 1.

Fig.2.*Bariliusvagra*

Fig.3 *Bariliuspakistanicus*

.

Fig.4 *Crossocheilusdiplocheilus*

Fig.5 *Garragotyla*

Fig.6 *Cyprinionwatsoni*

Fig.7 *Schizothoraxplagiostomus*

Conclusion: Ichthyo-diversity of River Zhob is represented by only six fish species with a low biodiversity Index representing that District Zhob has got a low fish diversity. The diversity can be improved by regularly monitoring the fish fauna, assessing water quality of the river, stoking new fish in the river, prohibiting illegal fish catch, allowing the people to catch only marketable size fish and other management measures by Balochistan fisheries department.

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