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Ichthyodiversity of Bahawal Garh River, district Kohat Khyber Pakhtunkhwa (KP), Pakistan

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Abstract

Fishes are the aquatic cold blooded animals, respire by gills, swimming by fins and body is covered by scales. The current study was conducted with the main aim to investigate the fish biodiversity of Bahawal Garhriver in district Kohat. Present survey was conducted from October 2017 to March 2018 and total of 06 species belonging 06 genera, 05 families and 05 orders with a total catch of about 70 specimens were collected from Bahawal Garh river district Kohat. The cyprinidae family was most abundant represented by 03 species, belonidae, sisoridae and mastacembelidae were represented by 01 species. The percentile values of *Pethiaconchonus*, *Labeodyocheiluspakistanicus*, *Ctenopharyngodon idella*, *Xenentodon Cancila*, *Glyptothorax cavia* and *Mastacembelus armatus* were 30%, 15%, 30%, 07%, 22% and 26% respectively. The fingerlings of new fish species should be introduced in the river and to enhance the fish production in the region to provide cheap and best quality proteins to the people of the area.

Keywords: ichthyodiversity, Bahawal Garh River, district Kohat

Introduction

Kohat district is located on the north by Peshawar and Now shera districts, on the east by Attock, on the south by Mianwali of the Punjab province and Karak district and on the west by Hangu district and Orakzai agency. The total area of the district Kohatis about 2545 km. In Kohat, various dams such as Tanda dam, Gandiali dam, Darmalak dam, Darwazai dam, Chanda Fateh Khan dam, Kandar dam and rivers such as Bahawal Garh river, Sheen Dand and Bado Ziarat Dand and lakes such as like Shahida Banda and Jauzara lake are found [1]. Biodiversity is significant for maintenance of ecology and guard of overall ecological quality for understanding the essential work of all species on the ground. Biodiversity is most generally used to replace the more obviously defined and long recognized terms, diversity and species abundance. Biologists may explain as the sum of genes, species and ecology of the area [2-3]. Biodiversity is not regularly dispersed, but it varies significantly across the world as well as within areas. Among other features, the variety of all living things (biota) depend on temperature, rainfall, height, soil, topography and the presence of other species. The study of the three-dimensional dispersal of the organism, species and ecology is the science of biogeography. Diversity steadily trials higher in the tropics and in other local areas [4-5]. Fish show the highest biodiversity of the vertebrates (animals with backbones) with over 22,000 species. Of which 58 percent are marine species, 41 percent are fresh water and 1 percent are between salt and freshwater. As predictable, marine fishes are the most different because saltwater covers 70 percent of the ground. Only 1 percent of the ground is covered by freshwater. This small region is household for 8,000 fish species of freshwater [6-7]. Maximum of the fish species of the fresh water have precise common dispersal [8-9]. Due to this common dispersion and human actions, as a result the fish fauna of fresh water are under simple pressure around the earth [9]. The common deliveries of the fresh water fishes are very different from the mammal and birds fauna [8]. Fish biodiversity, which have presented in new surroundings and itself adopted with food or they alter their food according to the surroundings where obtainability of food occur. Dams and reservoirs are the important incomes of water, which are enormously numerous in range and fisheries organization [10]. The current study was aimed to determine the fish biodiversity of Bahawal Garh river, district Kohat Khyber Pakhtunkhwa (KP), Pakistan.

Materials and Methods

Study site description

Bahawal Garh river is situated near Dhoda Sharif towards the south at a distance of about one mile. Cultivators use this water for irrigation purposes. They irrigate their vegetables & cereal crops from this water. The water of this river is the combination of different canals, rain and springs therefore the water is not enough pure as compared to other dams in which the fishes live and grow fully (Figure 1).



Fig 1: Short view of Bahawal Garh river district Kohat

Results

Present survey was conducted from October 2017 to March 2018 and a total of 06 species belonging 06 genera, 05 families and 05 orders with a total catch of about 70 specimens were collected from Bahawal Garh river district Kohat. The cyprinidae family was most abundant represented by 03 species, belonidae, sisoridae and mastacembelidae were represented by 01 species (Table 1). The higher and lower body weight of *Mastacembelus armatus* and *Pethiaconchoni* were documented with a range of 65

Collection, preservation and identification of fishes

Fishes were caught from different sites of Bahawal Garh river in district Kohat by the local fisherman using different sources like angling and nets. Small fishes were conserved directly in 10% formalin solution in the bottle, while large fishes were cut their abdomen and preserved. The fish were identified up to species level according to related literature and key [11] available in the department of Zoology, Govt Post Graduate College (GPGC) Kohat.

and 11 respectively, while the higher and lower body length was also recorded of the above said families. The head length of the *Pethiaconchoni* was also recorded with 1.8 respectively, while higher head length was 9.5 of *Xenentodon Cancila*. The higher trunk length was 24.5 of *Mastacembelus armatus*, while lower was 4.8 of *Pethiaconchoni*. The lower tail length was 01 of *Ctenopharyngodon idella* and *Mastacembelus armatus*, while higher was 03 of *Glyptothorax cavia* (Table 2).

Table 1: Fish biodiversity collected from river Bahawal Garh district Kohat.

| S NO | Orders | Families | Scientific names | Common/local names |
|------|--------------------|-----------------|------------------------------------|----------------------|
| 1 | Cypriniformes | Cyprinidae | <i>Pethiaconchoni</i> | Rosy barb/ Mashy |
| 2 | | | <i>Labeodyocheiluspakistanicus</i> | Boalla/ Taska |
| 3 | | | <i>Ctenopharyngodon idella</i> | Gras carp/ Toory |
| 4 | Belinoformes | Belonidae | <i>Xenentodon Cancila</i> | Needle fish/ Dolphin |
| 5 | Siluriformes | Sisoridae | <i>Glyptothorax cavia</i> | Cat fish/ Pepra |
| 6 | Mastacembliiformes | Mastacembelidae | <i>Mastacembelus armatus</i> | Spiny eel/ Marmae |

Table 2: Morphometric features of fish species collected from river Bahawal Garh district Kohat

| S. No | Species | BW (gram) | BL (cm) | HL (cm) | TL(cm) | TL(cm) |
|-------|------------------------------------|-----------|---------|---------|--------|--------|
| 1 | <i>Pethiaconchoni</i> | 11 | 8.5 | 1.8 | 4.8 | 1.9 |
| 2 | <i>Labeodyocheiluspakistanicus</i> | 36 | 14 | 04 | 7.5 | 2.5 |
| 3 | <i>Ctenopharyngodon idella</i> | 30 | 11.7 | 1.7 | 09 | 01 |
| 4 | <i>Xenentodon Cancila</i> | 31 | 28.5 | 9.5 | 16.4 | 2.6 |
| 5 | <i>Glyptothorax cavia</i> | 28 | 15.2 | 3.5 | 8.7 | 03 |
| 6 | <i>Mastacembelus armatus</i> | 65 | 30 | 4.5 | 24.5 | 01 |

BW: Body weight; BL: Body length; HL: Head length; TL: Trunk length; TL: Tail length



Pethiaconchoni (Rosy barb)



Labeodyocheilus pakistanicus (Boalla)



Ctenopharyngodon idella (Gras carp)



Xenentodon Cancila (Needle fish)



Glyptothorax cavia (Cat fish)



Mastacembelus armatus (Spiny eel)

Fig 2: Images of fish species collected from river Bahawal Garh district Kohat

The percentile values of *Pethiaconchoni*us, *Labeo dyocheilus* Pakistani cus, *Ctenopharyngodon idella*, *Xenentodon Cancila*, *Glyptothorax cavia* and *Mastacembelus armatus*

were 30%, 15%, 30%, 07%, 22% and 26% respectively (Figure 3).

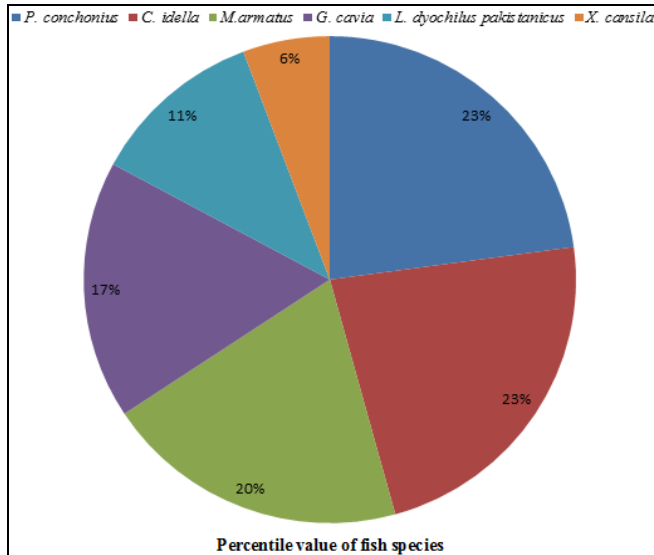


Fig 3: Percentage distribution of different species of fishes in Bahawal Garh river.

Discussion

In present study total of 06 species belonging 06 genera, 05 families and 05 orders were collected from Bahawal Garh river district Kohat. The cyprinidae family was most abundant represented by 03 species, belonidae, sisoridae and mastacembelidae were represented by 01. The percentile values of *Pethiaconchonius*, *Labeodyocheiluspakistanicus*, *Ctenopharyngodon idella*, *Xenentodon Cancila*, *Glyptothorax cavia* and *Mastacembelus armatus* were 30%, 15%, 30%, 07%, 22% and 26% respectively.

A study was conducted by the [11] on same district and collected 11 fish species from Tanda dam district Kohat. Among these four orders, five families and eleven genera but the cyprinidae family was dominant. A study was conducted on the same district by the district by the [12] on Darwazai Dam Tehsil Lachi district Kohat and collected 06 species belonging to two orders, two families, five genus and six species. Among these five species were belonging to family cyprinidae and only one specie belongs from hypophthalmidae. During the survey of Ghandiali Dam about six species were identified by the [13] which were belonging to two orders, two families, five genus and six species. But [14] reported 62 species from northern Waziristan agency. In the adjacent country like India conducted by the [15] total of 15 species belonging 12 different genera 04 families and 3 orders were reported from a Harsool-savangi reservoir. Total of 5 species belonging 05 different genera 02 different families and 03 orders were collected from Karaabdal stream by the [16]. Akhtar [17] who collected 10 species from the river Barandu District Buner Pakistan, of which 10 different genera, 4 families and 3 orders were recorded. From the Changhoz Dam district Karak, reported totalof 7 species belonging 2 orders, 2 families and 5 different genera. The collected species were *Bariliusvagra*, *Bariliuspakistanicus*, *Crossocheiluslatius*, *Labeorohita*, *Cyprinuscaurio*, *Hypopethelmicmolitrix* and *Mastacembelus armatus* respectively [18]. 12 fish species were collected from Zebi dam namely *Cyprinuscaurio*, *Bariliusvagra*, *Labeorohita*, *Carassiusauratus*, *Catlacatla*, *Cirrhinusmirgala*, *Ctenopharyngodonidella*, *Puntiusticto*, *Puntiussophore*, *Hypopethelmic* and *Channastraitus* by the [19].

Conclusion

The current study was concluded to investigate the fish biodiversity of Bahawal Garh river district Kohat. The river is located in the hilly area and far away from the access of people, so the water body is still safe from heavy pollution and other human activities. But unfortunately the river was not so rich due to the introduced species and rain filled lentic habitats. The river can support a greater number of fish species if proper stocking and care is done. It is also observed that during the rainy season a large number of fries, fingerling and adult fishes are swept away with overflowing water. Government should pay attention for the fisheries development in the river. The fingerlings of new fish species should be introduced and to enhance the fish production in the region to provide cheap and best quality proteins to the people of the area. From the obtained study it may be concluded that environmental conditions were favorable for cyprinidae species.

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