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# Current Status of the Fish Fauna of River Jhelum, Kashmir, J&K

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## Abstract

Fish fauna form an integral part of aquatic ecosystems, and any changes taking place in the medium in which they live can affect their productivity, diversity and distributions. In order to assess the current status of the fsh fauna of the river Jhelum, study was undertaken from June 2011 to January 2012. Monthly samplings were carried out at the three study sites – Marval, Zero Bridge and Tengpora, covering a total river length of about 60 km (about 29% stretch of the river Jhelum through the Valley). During the study period, six species of fsh were recorded - Schizothorax curvifrons Heckel 1838, Schizothorax esocinus Heckel 1838, Schizothorax plagiostomus Heckel 1838, Schizothorax labiatus McClelland 1842, Schizothorax niger Heckel 1838, and Cyprinus carpio Linnaeus 1758. Earlier studies carried out by Yousuf et al. [1] on this river at Butengoo (Khanabal) and Zero bridge (Srinagar) report the occurrence of eleven species of fsh which include the above mentioned six species and a further of following fve species – Carassius carassius Linnaeus 1758, [holbrooki] Girard 1859, Puntius conchonius Hamilton 1822, Bangana diplostoma Heckel 1838 and Triplophysa sp. Mean fshing effort M ვ dn ean

external infuences which are altering the health of this vital economic-ecologic lotic waterbody.

**Keywords:** Fish fauna; Schizothorax; Fishing e ort; Catch composition; Population decline; River Jhelum; Kashmir

## Introduction

Fish plays an important role in the development of a nation. Besides being a cheap source of highly nutritive protein, it also contains essential nutrients required by the human body (Sikoki and Otobotekere) [3]. Fish forms an important item in the food of the Kashmiris, and those who dwell near the lakes; and the oating population of boatmen depend for a considerable part of their sustenance on the prey of their nets or lines [4]. Jammu & Kashmir has enormous potential resources in the inland sector teeming with sh. e country is endowed with vast and varied resources possessing river ecological heritage and rich biodiversity. e valley of Kashmir is famous throughout the world for its fresh waters, and has tremendous potential for the development of sheries especially in the cold water sector. e sh fauna of the Jhelum River is one of the earliest local sh faunas known to science. e rst collection was made by the Austrian Carl Alexander Anselm von Hügel at the end of a long trip through Eurasia over the period 1831-1836, and deposited in the Naturhistorisches Museum in Vienna, Austria. Heckel (1838, 1844) [5,6] published two well illustrated taxonomic accounts of the sh collection based on Hügel's specimens, summing to 16 species all of which he considered to be new to science. Ten of the species belong to the group of cyprinid shes now commonly referred to as oreinins, schizothoracines, mountain barbels, snow trout, or snow barbels. In the minds of ichthyologists and others interested in sheries, the Kashmir Valley is forever e Snow Barbel Place. Several studies have been conducted in the past on the sh and sheries of the Valley. Yousuf et al. [1] reported 19 species of sh belonging to Cypriniformes, Siluriformes, Cyprinodoniformes and Salmoniformes from river Jhelum and its tributaries. ere is need to have many more studies, so as to develop a strategy for the overall improvement of the shery resources of the region. e present study provides an updated status of the sh fauna of River Jhelum so as to assess the possible management strategies that need to be implemented.

## Materials and Methods

### Study area

e Kashmir valley, nested in the north western folds of the Himalaya, enjoys a continental climatic condition with marked seasonality resembling sub-Mediterranean type characterized by the varying rainfall occurring throughout the year. e valley is mainly drained by river Jhelum and its tributaries and has passed through various geological successions ranging from the oldest Archean to the recent Alluvium.

Jhelum, the major river of Kashmir, originates from the spring Verinag located in the foot of the Panjal mountains in the district Islamabad/ Anantnag. e river runs a course of 203 kms through the valley. e river ows across the main valley of Kashmir in Northwest direction up to Bonyari in Bandipora district where it joins the Wullar lake. It then reemerges from the lake near Sopore in Baramulla district taking southwestern direction leaving the valley near Gantamulla. From there it assumes torrential nature and ows through the Uri town before entering over to Pakistan administered Kashmir. On its course through the valley, it carries the waters of a host of streams that ow down from the bordering mountain slopes. Unfortunately, all along its course through the valley of Kashmir the river is loaded with large quantities of sewage and agricultural runo from the catchment.

### Study sites

A total of three study sites (Figure 1 and Table 1) markedly di erent

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diplostoma, Cyprinus carpio communis, Cyprinus carpio specularis and Carassius carassius in the main river with the maximum number of 11 species recorded at the Zero bridge site in Srinagar. Khan [8] opined that the anthropogenic pressure along the catchments has adversely a ected the sh density in the lentic and lotic water systems of Kashmir.

Fishing e ort calculated at three di erent sites showed variation and on the whole the mean shing e ort was about 130.26 - 290.46 g/man-hour (Table 5). Sunder and Subla [2] and Yousuf et al. [1] reported the shing e ort in the river Jhelum at 261 – 829 g/man-hour and 173.2 - 360.1 g/man-hour respectively. Since shing e ort is an index of sh population structure in a water body, it appears that the sh population in the river has comparatively got lowered over the past few decades, probably because of overexploitation, habitat destruction, disturbance of breeding grounds, increasing level of pollution, etc. According to Dudgeon et al. [9] the major threat to riverine ecosystems of India is the intense human interventions resulting in habitat loss and degradation and as a consequence many fresh water sh species have become endangered. e good catch composition in the winter months can be attributed to low water level during the winter months.

## Conclusion

e present study partially re ects that the sh catch as well as the diversity has apparently got reduced in the river Jhelum. Most probably the river ecosystem is not getting the adequate time to recover its natural community structure. E orts need to be oriented to preserve this important lotic sh habitat which has tremendous economic and ecological signi cance.

## Suggestions

Since over- shing is one of the main concerns for the depletion of shery resources in the river, therefore, monitoring needs to be carried out regularly. e shermen reportedly are not adhering to the mesh size standards, as prescribed under the rules. In order to manage sheries, especially *Schizothorax* species in the river, immediate steps need to be undertaken, for example, shing in the river need to be regulated so to avoid over exploitation of this vital resource. e entry of sewage, agricultural wastes and solid wastes into the river needs to be controlled and properly managed. Regulating the sand excavation especially during the breeding season forms the utmost priority. Similarly, river sections need to be identi ed and marked were sand excavations can be banned on the basis of a hydrological study because it is an acknowledged understanding that the river adjusts itself according to the mass eroded and the extra quantity that it can transport. Certain river sections like the meanders which assume di erent hydrodynamic properties than the usual river sections can a ect a larger area of the river and thus also its biota. A separate authority needs to be established to monitor the physico-chemical and biological characteristics of the River Jhelum water body.

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