DOI: http://dx.doi.org/10.18782/2320-7051.2314

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. 4 (4): 159-166 (2016)





International Journal of Pure & Applied Bioscience

Study of Fish Fauna, Species Diversity and Relative Abundance of Fishes in River Asan in Western Dehradun, Uttrakhand

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Received: 14.06.2016 | Revised: 23.06.2016 | Accepted: 25.06.2016

ABSTRACT

During the present investigation a total of 10 genera, 4 families and 3 orders were reported from the Asan River. Tor pituitoria was the most abundant fish it has 18.6 percentage compositions, it constitutes 0.169 and 18.65 percentage relative abundance. Tor tor was least abundant with percentage composition of 1.20, it constitutes 0.011 abundance and with 1.21 percent as relative abundance. The fish species diversity during study period was 0.889 which indicates the good diversity of the River Asan during study period.

Key words: Realtive abundance, species diversity, percentage composition

INTRODUCTION

Uttrakhand is rich in terms of fish diversity due to two major important perennial rivers of India i.e. Ganga and Yamuna supported by many other tributaries. it has also many fish production seed and farms like Bhimal and Dakhrani where culturing of many species like Mahasheer and common crap is practiced in order to enhance the fish productivity in the state. Doon valley acts as connective link between the plains and hill stream fishes. Geographically Dehradun district can be divided into Eastern and Western Doon valley. Eastern part is supported by Ganga with number of tributaries and western part is supported by Yamuna with number of tributaries as Asan and tons etc. however the western part of the Doon valley remains less

explored as compared to eastern Doon valley as the accessibility in western Doon valley. As per the review of literature, the research work on fishes was carried out on Eastern Doon valley^{3,4,5,6,7,8,9,12,16,17,18,20,21,22,23,24} Whereas Western Doon Valley (Yamuna drainage) remains less Explored due to tough terrain and poor accessibility of roads Singh¹⁸ for the first time surveyed the western Doon Valley Recently by some researchers 1,25,26,27,28. They conducted the survey of western Doon valley and worked on the taxonomy, ecology, food and feeding, breeding habitat, hydro-biology, fishing methods, GIS and Remote sensing application and conservation and management approach related to the fish and fisheries of the

Cite this article: Bhatt, B.J., Nissa, K.U. and Awaz, F., Study of Fish Fauna, Species Diversity and Relative Abundance of Fishes in River Asan in Western Dehradun, Uttrakhand, *Int. J. Pure App. Biosci.* **4(4):** 159-166 (2016). doi: http://dx.doi.org/10.18782/2320-7051.2314

ISSN: 2320 - 7051

In the present study attempt has been made to find out the fish fauna, fish species diversity and relative abundance in River Yamuna.

MATERIALS AND METHODS

The study is carried out from February, 2015 to February, 2016. For the collection of fishes, cast net of 1-2 m diameter with mesh size of 0.05 cm knot to knot with heavy sinkers, which allow rapid settling of the net at the bottom is used. At the each study site, at a time 10-15 throws were casted at different sites of the lake mid-morning and late between afternoon fixed day month. on every Representative specimens of different species were preserved fish in 10 % formaldehyde solution and identified in the laboratory using standard references ^{2,19,10}.

RESULTS

Total 166 fishes were collected from Asan River during February 2015 to February 2016. During the present investigation a total of 10 genera, 4 families and 3 orders werereported from the Asan River. Tor pituitora was the most abundant fish it has 18.6 percentage compositions, it constitutes 0.169 and 18.65 percentage relative abundance. Tor pituitora was followed by Barilius bendelisis with percentage composition 17.47, abundance was 0.158 and with 17.44

percentage relative abundance. Of all the fishes Tor tor was least abundant with percentage composition of 1.20, it constitutes 0.011 abundance and with 1.21 percent as relative abundance. Chagunius chagunio with percentage composition 10.24, abundance 0.093 and 10.26 percent relative abundance. Danio devario with percentage composition, 0.142 abundance and relative abundance 15.67 percent, Puntius ticto with 10.24 percentage composition, 0.093 abundance and 10.26 relative abundance, Mastacembalus armatus with 5.24 percent composition, 0.049 abundance and 5.40 percent relative abundance, Mystus bleekeri with 3.61 percent composition, abundance and 3.53 percentrelative abundance, Glyptothorax pectinopterus with 7.23 percent composition, 0.065 abundance and 7.17 percentage of relative abundance, *Puntius* sophore with 4.22 percentage composition, 0.038 abundance and 4.19 percentage of relative abundanceand Garra lamta with 6.02 percentage composition, 0.055 abundance and 6.07 percentage of relative abundance. As per the commercial values of the fishes are concerned the fishes like genus Barilius, Puntius and Tor are food fishes. As per the conservation status is concern Tor putitora and Mastacembalus armatus are endangered. The fish species diversity during study period was 0.889 which indicates the good diversity of the River Asan during present investigation.

Table: Diversity Index, Percentage Composition, Abundance and relative Abundance of fishes in River Asan

S. No.	Fish Species	(%)	Abundance	Relative Abundance
01	Chagunius chagunio	10.24	0.093	10.26 %
02	Barilius bendelisis	17.47	0.158	17.47 %
03	Danio devaria	15.66	0.142	15.67 %
04	Puntius ticto	10.24	0.093	10.26 %
05	Tor putitora	18.67	0.169	18.65 %
06	Tor tor	1.2	0.011	1.21 %
07	Mastacembalus armatus	5.42	0.049	5.40 %
08	Mystus bleekeri	3.61	0.032	3.53 %
09	Glyptothorax pectinopterus	7.23	0.065	7.17 %
10	Puntius sophore	4.22	0.038	4.19 %
11	Garra lamta	6.02	0.055	6.07 %

^{*}Shannon-Wiener (H') = 0.952



Fig. 1: Chagunius chagunio



Fig. 2: Barilius bendelisis



Fig. 3: Danio devaria



Fig. 4: Puntius ticto



Fig. 5: Tor putitora



Fig. 6: Tor tor



Fig. 7: Mastacembalus armatus

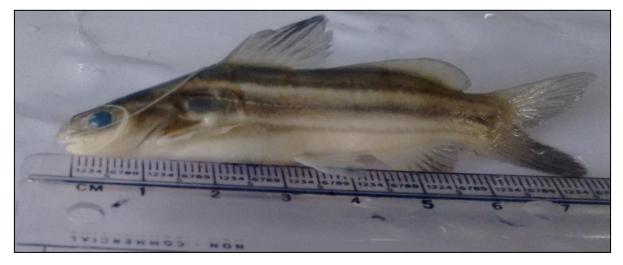


Fig. 8: Mystus bleekeri

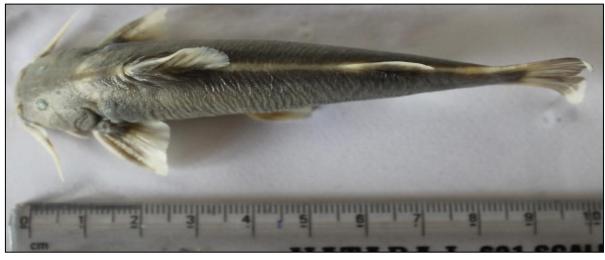


Fig. 9: Glyptothorax pectinopterus

Fig. 10: Puntius sophore



Fig. 11: Garra lamta

DISCUSSION

The study depicted presence of 10 species contributing about 20.58% of total fish diversity published from western Doon Valley¹¹ and about 14.89 percent of total fish species from an entire Doon Valley¹⁸. During the present investigation order cypriniformes has emerged as the most abundant group. This finding was in accordance to the finding of workers^{8,13} who earlier reported cypriniformes as the most abundant group with the total fish catch of 35 percent and reported the cypriniformes the most abundant group. Similar results have been reported by other researchers^{14,15}. They reported 13 fish species from the Nainital Lake in which order Cypriniformes was abundant. The result was in accordance to another ichtyologists²⁹. They have studied 12 high altitude lakes of Jammu

and Kashmir to obtain information on the status of limnology and fish stocks and reported the dominance of Cypriniformes order among the all fish population. Similar observations were reported from the Asan River where the order Cypriniformes was the dominant among the fish population.

CONCLUSION

Species diversity in different sampling sites indicated that altered habitat support less fish species while variety habitat like shallow pool and deep pools are the primary habitats contributing to the maximum diversity, order Cypriniformes emerged as the most dominant group therefore, protection of these particular habitats is recommended for conservation and management of the fish biodiversity.

Ackowledgements

Authors are highly thankful to the authorities of Dolphin (PG) Institute of Biomedical and Natural Sciences for financial assissance. Author expresses their sincere thanks to Sri Nain Singh, Fisherman who helped during the study period.

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