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Research Paper

A SURVEY OF FISH FAUNA OF RAPTI RIVER, BALRAMPUR (U.P.), INDIA

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Abstract: An initial survey was under taken to study the occurrence and diversity of fishes in Rapti River flowing through Balrampur district of Uttar Pradesh, India. The present survey was conducted from January, 2018 to December, 2018 to find out the fish fauna of Rapti River at Balrampur district. A total of 27 species of fishes belonging to 19 genera, 14 families and 7 orders were identified as a preliminary survey and observation. This was the first systematic survey on the fish diversity of this River. Order Siluriformes was found most dominant represented by 10 species, followed by Cypriniformes with 7 species; Perciformes and Ophiocephaliformes with 3 species each; Osteoglossiformes with 2 species while Clupeiformes and Beloniformes with only one species each.

Keywords: Cypriniformes, Fish Diversity, Rapti River, Siluriformes.

INTRODUCTION

Rivers are vital and vulnerable freshwater ecosystems that are critical for the sustenance of all life. However, the declining quality of the water in these systems threatens their sustainability and is therefore a cause for concern. Rivers are waterways of strategic importance across the world, providing main water resources for domestic, industrial, and agricultural purposes. River water is useful both for sustainable and unsustainable agriculture although latter has multiple effects (Verma

2017a) and disturbs the ecological balance (Verma 2018a). India is gifted with a river system comprising more than 20 major rivers with several tributaries and more than 50% of water resources of India are located in various tributaries of these river systems. River ecosystems (rivers capes) encompass ecological, social and economic processes (ecosystem functions) that interconnect organisms (ecosystem structure) including humans, over some time period.

An ecosystem needs three kinds of diversity *namely* biological, genetic and functional. Biological diversity refers to the richness of species in a particular area; genetic diversity refers a way for a particular species to adapt itself to changing environments while functional diversity equates to the biophysical processes that happen within the area. The genetic diversity acts as a buffer for biodiversity (Verma 2017b). Biological diversity means the variability among living organisms from all sources including '*inter alia*', terrestrial, marine and other aquatic ecosystem. Biodiversity of inland water is important to sustain health of the ecosystem. Biodiversity of inland water is also important for its economic value as habitat for species of commercial value. The biodiversity helps in maintaining the ecological balance. There is a necessity of ecological balance for widespread biodiversity (Verma 2017c). The ecological balance is an indispensable need for human survival (Verma 2018b). The climate change has a huge impact on biodiversity (Prakash and Srivastava, 2019) and the biodiversity has different levels and values (Verma 2016a).

The Rapti River originates from the Siwalik Himalaya of Nepal at an elevation of 3600m. After flowing through Nepal for 152 km, it enters Eastern Uttar Pradesh in Chanda Pargana, east of the Kundwa village of Shravasti district. It flows in a very sinuous course with shallow depth and causes heavy flooding in the districts of Eastern Uttar Pradesh. It flows through the districts of Shravasti, Balrampur, Siddharthnagar, Maharajganj, Sant Kabir Nagar and Gorakhpur and joins the Ghaghara on its left bank near Barhaj town of Deoria district. The total length of the river is 566 km.

Many researchers have studied taxonomy, biodiversity and distribution of freshwater fishes from various rivers of India. For example David (1963) from Godavari and Krishna river, Menon (1992) from Himalayan rivers, Jayaram (2010) from Cauvery river, Jadhav *et al.*, (2011) from Koyana river, Kharat *et al.*, (2012) from Krishna river, Venugopalan (2012) from Krishna river, Sheikh (2014) from Pranhita river and so on.

Verma *et al.*, (2011 and 2019), Prakash *et al.*, (2015a, 2015b) and Prakash and Verma (2015, 2016), Verma and Prakash (2016), Verma *et al.*,

(2016) performed the limnological and ichthyological studies of Alwara Lake of Kaushambi (U.P.) while Verma and Prakash (2017a, 2017b and 2018) and Prakash and Verma (2017, 2019a, 2019b) studied the Khanwari pond and Baghel Taal for factors, distribution and conservation of fishes and other chordates. Verma (2016b, 2016c, 2016d, 2016e, 2017d, 2017e, 2018c, 2019a, 2019b, 2019c and 2020) and Prakash (2020a, 2020b) studied the limnological parameters as well as biodiversity and conservation status of fishes in the various lentic fresh water bodies of U.P. However, no attempt has been made so as far to explore the freshwater fish fauna of Rapti River.

MATERIALS AND METHODS

The fish diversity of Rapti River was studied at Balrampur district of Uttar Pradesh (fig. 1 and 2), India. The river was surveyed and studied in detail for fishes twice in a month along the period of one year from January 2018 to December 2018. In order to study the fish diversity, fishes were collected from different sites of Rapti River (fig. 3) at Balrampur district. The fishes were caught and collected by hand-nets, gill nets, cast nets, hooks, drag nets with the help of local people and animal catchers.

The collected fish specimens were preserved in 10% formaldehyde solution at the sampling sites. Identification of fish specimens was done up to species level with the help of standard literature



Fig. 1: Map of U.P. showing Location of Balrampur District



Fig. 2: Satellite View of Rapti river in Balrampur District

given by Datta Munshi and Srivastava (1988), Day (1989), Menon (1992), Srivastava (1998) and Jayaram (2010).

RESULTS AND DISCUSSION

For the present survey, different types of fishes were collected from different sites of Rapti River



Fig. 3: Rapti River, Balrampur (U.P.), India.

and identified in the laboratory. The results are presented in table1. The table indicates the occurrence of 27 species of freshwater fishes belonging to 7 orders, 14 families and 19 genera. The collected fish species including their order, family and zoological names are shown in the table given.

Table 1: Fish diversity of Rapti river from January to December 2018.

S.No.	Zoological name of fish	Family	Order
1.	<i>Catla catla</i>	Cyprinidae	Cypriniformes
2.	<i>Labeo rohita</i>	Cyprinidae	Cypriniformes
3.	<i>Labeo calbasu</i>	Cyprinidae	Cypriniformes
4.	<i>Cirrhinus mrigala</i>	Cyprinidae	Cypriniformes
5.	<i>Cirrhinus reba</i>	Cyprinidae	Cypriniformes
6.	<i>Puntius ticto</i>	Cyprinidae	Cypriniformes
7.	<i>Amblypharyngodon mola</i>	Cyprinidae	Cypriniformes
8.	<i>Mystus seenghala</i>	Bagridae	Siluriformes
9.	<i>Mystus cavasious</i>	Bagridae	Siluriformes
10.	<i>Mystus vittatus</i>	Bagridae	Siluriformes
11.	<i>Mystus aor</i>	Bagridae	Siluriformes
12.	<i>Wallago attu</i>	Siluridae	Siluriformes
13.	<i>Ompak pabda</i>	Siluridae	Siluriformes
14.	<i>Clarias batrachus</i>	Clariidae	Siluriformes
15.	<i>Heteropneustes fossilis</i>	Saccobranchidae	Siluriformes
16.	<i>Ailia coila</i>	Schilbeidae	Siluriformes
17.	<i>Pangasius pangasius</i>	Schilbeidae	Siluriformes
18.	<i>Channa gachua</i>	Ophiocephalidae	Ophiocephaliformes

19.	<i>Channa punctatus</i>	Ophiocephalidae	Ophiocephaliformes
20.	<i>Channa marulius</i>	Ophiocephalidae	Ophiocephaliformes
21.	<i>Glossogobius giuris</i>	Gobiidae	Perciformes
22.	<i>Anabas testudeni</i>	Anabantidae	Perciformes
23.	<i>Colisa fasciatus</i>	Osphronemidae	Perciformes
24.	<i>Notopterus notopterus</i>	Notopteridae	Osteoglossiformes
25.	<i>Notopterus chitala</i>	Notopteridae	Osteoglossiformes
26.	<i>Gudusia chapra</i>	Clupeidae	Clupeiformes
27.	<i>Xenentodon cancila</i>	Belonidae	Beloniformes

Fish fauna of the Rapti River studied belong to 7 orders namely Cypriniformes, Siluriformes, Ophiocephaliformes, Perciformes, Osteoglossiformes, Clupeiformes and Beloniformes. In present survey, Siluriformes order was found most dominant group representing 10 species followed by Cypriniformes order representing 7 species. The order Perciformes and Ophiocephaliformes were represented by 3 species each; Osteoglossiformes was represented by 2 species while Clupeiformes and Beloniformes by only one species each. Thus, authors recorded 27 different species during preliminary survey of Rapti River at Balrampur.

According to International Union for Conservation of Nature (IUCN) Red List (2020), most of the above fish species recoded are either least concern (LC) or not evaluated (NE) so far from conservation point of view. However, *Wallago attu* is vulnerable (VU) while *Ailia coila* is near threatened (NT). This rich fish fauna of the river studied at Balrampur district also support the livelihood of several economic classes. Besides, the Rapti River hosts a large number of other aquatic plant and animal species. Authors recommend a complete survey of this river for biodiversity and conservation point of view.

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REFERENCES

1. **Datta Munshi J. and Srivastava S.** (1988). Natural history of fishes and systematic of freshwater fishes of India. Narendra Publishing House New Delhi-110006.
2. **David A.** (1963). Studies on fish and fisheries of the Godavari and Krishna river systems. Part-1. *Proceeding of the National Academy of Science India*. 33(2): 263-293.
3. **Day F.** (1989). The fauna of British India including Ceylon and Burma. Fishes Taylor and Francis, London.
4. **IUCN** (2020). The IUCN Red List of Threatened Species. Version 2020-1. <https://www.iucnredlist.org>. Downloaded on 19 March 2020.
5. **Jadhav B. V., Kharat S.S., Raut R. N., Paingankar M. and Dahanukar N.** (2011). Freshwater fish fauna of Koyana river, Northern Western Ghats, India. *J. Threatened Taxa*. 3(1):1449-1455.
6. **Jayaram K.C.** (2010). The freshwater fishes of the Indian Region. 2nd edition. Narmada Publishing House, Delhi, India.
7. **Kharat S.S., Paingankar M. and Dahanukar N.** (2012). Freshwater fish fauna of Krishna River at Wai, northern Western Ghats, India. *J. Threat. Taxa*. 4(6): 2644-2652.
8. **Menon A. G. K.** (1992). The fauna of India and adjacent countries. Pisces 4 (Part-I). Homalopteridae, Zoological Survey of India, Calcutta.

9. **Prakash S.** (2020a). Fish diversity of Semara Taal, a wetland of district Siddharthnagar (U.P.), India. *International Journal of Fisheries and Aquatic Research*. 5(2):07-09.
10. **Prakash S.** (2020b). Conservation status of fishes reported from Semara Taal of District Siddharthnagar (U.P.). India. *International Journal of Fauna and Biological Studies*. 7(3): 21-24.
11. **Prakash S., Verma A.K. and Prakash S.** (2015a). Limnological Studies of Alwara Lake of Kaushambi (U.P.). *International Journal on Biological Sciences*. 6 (2): 141-144.
12. **Prakash S., Verma A.K. and Prakash S.** (2015b). Seasonal variation of Zooplankton and Zoobenthos Population in Alwara lake of District Kaushambi (UP) India. *The Journal of Zoology Studies*. 2(5):13-16.
13. **Prakash S. and Verma A.K.** (2015). Studies on different fish genera in Alwara lake of Kaushambi. *Bioherald: An International Journal of Biodiversity & Environment*. 5(1-2): 60-62.
14. **Prakash S. and Verma A.K.** (2016). Conservation status of fresh water fishes reported in Alwara Lake of District Kaushambi (U.P.). *International Journal of Zoology Studies*. 1(5): 32-35.
15. **Prakash S. and Verma A.K.** (2017). IUCN Conservation Status of Fishes of Khanwari Pond of District Kaushambi (U.P.) *Proceedings of The Zoological Society of India*. 16 (1): 81-84.
16. **Prakash S. and Verma A.K.** (2019a). Biodiversity Assessment of Khanwari Pond of District Kaushambi (U.P.). *International Journal on Environmental Sciences*. 10(1): 24-28.
17. **Prakash S. and Verma A.K.** (2019b). Length-Weight Relationships and Condition Factors of Fresh Water Fishes of Baghel Taal of Bahraich (U.P.). *Journal of Experimental Zoology, India*. 22 (1): 343-345.
18. **Prakash S. and Srivastava S.** (2019). Impact of Climate Change on Biodiversity: An Overview. *International Journal of Biological Innovations*. 1(2): 60-65. DOI: <https://doi.org/10.46505/IJBI.2019.1205>
19. **Sheikh S.R.** (2014). Studies on Ichthyofaunal diversity of Pranhita river, Sironcha, Dist-Gadchiroli, Maharashtra, India. *IJEAS*. 1(5):144-147.
20. **Srivastava Gopalji.** (1998). Fishes of U.P. and Bihar, Vishwavidalaya Prakashan Chowk, Varanasi, India.
21. **Venugopalan N.M.** (2012). Ichthyo-Faunal depletion in Mahe river a case study. *J. Adv. Zool.* 33(2):141-144.
22. **Verma A.K.** (2016a). Biodiversity: Its Different Levels and Values. *International Journal on Environmental Sciences*. 7(2): 143-145.
23. **Verma A.K.** (2016b). Hydrobiological Studies of Muntjibpur Pond of Allahabad (U.P.). *International Journal on Agricultural Sciences*. 7 (2): 164-166.
24. **Verma A.K.** (2016c). Dominancy of Cypriniformes fishes in Alwara Lake of District Kaushambi (U.P.). *International Journal on Agricultural Sciences*. 7 (1): 89-91.
25. **Verma A.K.** (2016d). Distribution and Conservation Status of Catfishes in Alwara lake of District Kaushambi (U.P.). *International Journal on Environmental Sciences*. 7 (1): 72-75.
26. **Verma A.K.** (2016e). A Preliminary Survey of Fresh Water Fishes in Muntjibpur Pond of Allahabad (U.P.). *Indian Journal of Biology*. 3(2): 99-101.
27. **Verma A.K.** (2017a). Multiple effects of Unsustainable Agriculture. *International Journal on Agricultural Sciences*. 8(1): 24-26.
28. **Verma A.K.** (2017b). Genetic Diversity as Buffer in Biodiversity. *Indian Journal of Biology*. 4 (1): 61 - 63. DOI: <http://dx.doi.org/10.21088/ijb.2394.1391.4117.9>
29. **Verma A.K.** (2017c). Necessity of Ecological Balance for Widespread Biodiversity. *Indian Journal of Biology*. 4(2): 158-160. DOI: <http://dx.doi.org/10.21088/ijb.2394.1391.4217.15>

30. **Verma A.K.** (2017d). A study on ichthyo-diversity of Muntjibpur Pond of Allahabad (U.P.). *Flora and Fauna*. 23(1):220-224.
31. **Verma A.K.** (2017e). Distribution and Conservation Status of Fishes reported from Muntjibpur Pond of Allahabad (U.P.): *International Journal of Scientific World*. 5(1): 50-53.
32. **Verma A.K.** (2018a). Unsustainable Agriculture, Environmental Ethics and Ecological Balance. *HortFlora Research Spectrum*. 7 (3):239-241.
33. **Verma A.K.** (2018b). Ecological Balance: An Indispensable Need for Human Survival. *Journal of Experimental Zoology, India*. 21 (1):407-409.
34. **Verma A.K.** (2018c). A Biodiversity Survey of Muntjibpur Pond of District Allahabad (U.P.). *International Journal on Environmental Sciences*. 9(1):56-59.
35. **Verma A.K.** (2019a). Biodiversity of Higher Chordates at Khanwari village of Kaushambi (U.P.). *International Journal of Fauna and Biological Studies*. 6(3):48-50.
36. **Verma A.K.** (2019b). Studies of Hydrobiological Properties of Balapur Pond of Prayagraj (U.P.). *Hortflora Research Spectrum*. 8(1):9-11.
37. **Verma A.K.** (2019c). A Study of Fish Distribution in Balapur Pond of Prayagraj (U.P.). *International Journal on Biological Sciences*. 10(1):7-10.
38. **Verma A.K.** (2020). Conservation status of Anamniotes reported from Balapur Pond of District Prayagraj (U.P.). *Uttar Pradesh Journal of Zoology*. 61(6):42-46.
39. **Verma A.K. and Prakash S.** (2016). Fish biodiversity of Alwara Lake of District Kaushambi, Uttar Pradesh, India. *Research Journal of Animal, Veterinary and Fishery Sciences*. 4(4):5-9.
40. **Verma A.K., Kumar S. and Prakash S.** (2016). Seasonal Correlation between physico chemical factors and phytoplankton density in Alwara taal of Kaushambi, U. P., India. *International Research Journal of Biological Sciences*. 5(3):40-45.
41. **Verma A.K. and Prakash S.** (2017a). Fish Biodiversity of Khanwari Pond of district Kaushambi (U. P.), India. *The Journal of Zoology Studies*. 4(1): 37-40.
42. **Verma A.K. and Prakash S.** (2017b). Dominancy of Cat fishes in Khanwari Pond of District Kaushambi (U. P.). *Life Science Bulletin*. 14(1):85-87.
43. **Verma A.K. and Prakash S.** (2018). Qualitative and Quantitative Analysis of Macrozoobenthos of Baghel Taal, A Wetland of U.P. *Indian Journal of Biology*. 5(2): 127-130. DOI: <http://dx.doi.org/10.21088/ijb.2394.1391.5218.3>
44. **Verma D.R., Prakash S., Ahmad T. and Singh P.** (2019). Microzoobenthic invertebrate diversity in Rapti river at Balrampur (U.P.). *CIBTech. Journal of Zoology*. 8(3):34-37.
45. **Verma D.R., Singh U.B. and Prakash S.** (2011). Bacteriological analysis of water of Rapti River at Balrampur. *Aquacult.* 12(2):253-256.