

Study of Ichthyofaunal Biodiversity and Limnological Parameters in Lath River of Sarangarh District – Raigarh, Chhattisgarh, India

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(Received 27 August, 2023; Accepted 30 October, 2023)

ABSTRACT

Lath River is a tributary of Mahanadi River; it is mainly flows in Mahasamund and Raigarh Districts of Chhattisgarh. This study was conducted from February 2020 to January 2021, during the study period, Samples of river water and fishes were collected with the help of sampling bottle and various types of fish nets. The limnological parameters of the river water were studied as per the standard methods. Limnological parameters of river water showed variation according to different seasons. The collected fish were photographed and preserved in 10% formalin solution, and identification of fishes were done with the help of standard keys and books. During the entire study period, a total numbers of 24 fish species were recorded, from this study it was found that most of the river water limnological parameters was under permissible limit and Lath river water quality is suitable for Piscean biodiversity and agriculture purpose.

Key words: Limnological parameters, Biodiversity, Ichthyofaunal, Nets, Raigarh District.

Introduction

Limnology is the study of inland waters like lakes, reservoirs, rivers, streams, and wetlands. Water is an important abiotic component for the life of all aquatic organisms. Water quality affects to the life of aquatic organism. Now a days the Quality of water getting changed due to environmental conditions, industrialization and different human activities, due to which the life and biodiversity of aquatic organ-

ism are directly or indirectly affected. The investigation was under taken during February 2020 to January 2021 in Lath River of Sarangarh, District Raigarh.

Materials and Methods

Study area: The present study deals with the investigation of Ichthyofaunal Biodiversity and Limnological Parameter in Lath river of Sarangarh area, Dis-

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- (V) D.O. – The dissolved oxygen was measured by wrinkle sidometric method.
- (VI) Total alkinity – Total alkinity of river water was determined by titration method.
- (VII) Total hardness – The total hardness of the water samples were measured by EDTA titimetric method.
- (VII) C.O.D.- Chemical oxygen demand was estimated by dichromate titration method.



Fig. 4. Collection of water sample

- (VIII) Calcium – The calcium of dam water samples are estimated by titrimetric method using standard solution of EDTA.
- (X) B.O.D.- Biochemical oxygen demand of River water was measured by five daysincubation methods with the help of B.O.D. incubator.
- (XI) Atmosphere temperature – Atmosphere temperature was measured with the help of thermometer.

Collection of Fish sample: The fishes samples were collected by the help of local fishermen around Lath River of Sarangarh, fishermen generally use different types of nets like gill nets. Cast nets drag net etc. for collection of fishes.

Photography of fishes: The collected fishes were



Fig. 5. Collection of fish samples

Table 1. List of fishes recorded in Lath River

Order	Family	Genus and species	Local Name	IUCN Status	Commercial importance
Cypriniformes	Cyprinidae	<i>Labeorohita</i>	<i>Rohu</i>	LC	FF
		<i>Labeogonius</i>	<i>Rohia</i>	LC	FF
		<i>Labeocalbasu</i>	<i>Kalbaz</i>	LC	FF/OR
		<i>Labeoboggut</i>		LC	FF
		<i>Labeo funbriatus</i>		LC	FF
		<i>Labeopangusia</i>		LC	FF
		<i>Catlacatla</i>	<i>Bhakhur</i>	VU	FF
		<i>Cyprinus carpio</i>	<i>Komalkar</i>	VU	FF
		<i>Cirrhinus mrigala</i>	<i>Miragal</i>	LC	FF
Cypriniformes	Siuridae	<i>Ompakbimaculatus</i>	<i>Baliya</i>	VU	FF
		<i>Wallago attu</i>	<i>Padhina</i>	NT	FF
Cypriniformes	Bagridae	<i>Mystusseenghala</i>	<i>Singhitengna</i>	LC	FF
		<i>Mystusaor</i>	<i>Singhi</i>	LC	FF
		<i>Mystus vittatus</i>	<i>Desi tengna</i>	LC	FF
		<i>Mystus bleekeri</i>	<i>Desi Tengna</i>	LC	OR
		<i>Rita rita</i>	<i>Kokia</i>	LC	FF
Perciformes	Centropomidae	<i>Chandaranga</i>	<i>Chandari</i>	LC	OR
		<i>Chandanama</i>	<i>chandeni</i>	LC	OR
Clupelformes	Notopteridae	<i>Notopterus chitala</i>	<i>Chital</i>	LC	FF/OR
		<i>Notopterus notopterus</i>	<i>Chital</i>	LC	FF/OR
Beloniformes	Belonidae	<i>Xenentodon cancila</i>	<i>Sodhi</i>	LC	OR
Mastacemaliformes	Mastacembelidae	<i>Macrognathus aculatus</i>	<i>Bami</i>	LC	FF
Mastacemaliformes	Mastacembelidae	<i>Mastacembelus armatus</i>	<i>Bamhar</i>	LC	FF
Mastacemaliformes	Mastacembelidae	<i>Mastacembelus pancalus</i>	<i>pataya</i>	LC	FF

LC = Least concern, OR = ornamental fish, VU = Vulnerable, NT = near threatened, FF = Foodfish

photographed and preserved in 10% formalin and brought into the laboratory for further studies.

Identification of fish: The collected fishes were identified with the help of standard books of Francis.

Results and Discussion

Water PH – pH value of water provides information about the acidity, alkalinity and productivity of the River water and aquatic environment, the pH value during the study shows variation according to seasons of the year. While the study was going on pH range was observed between 6 to 8 with a mean value 7.

Water Temperatures (°C) – Water temperature is an

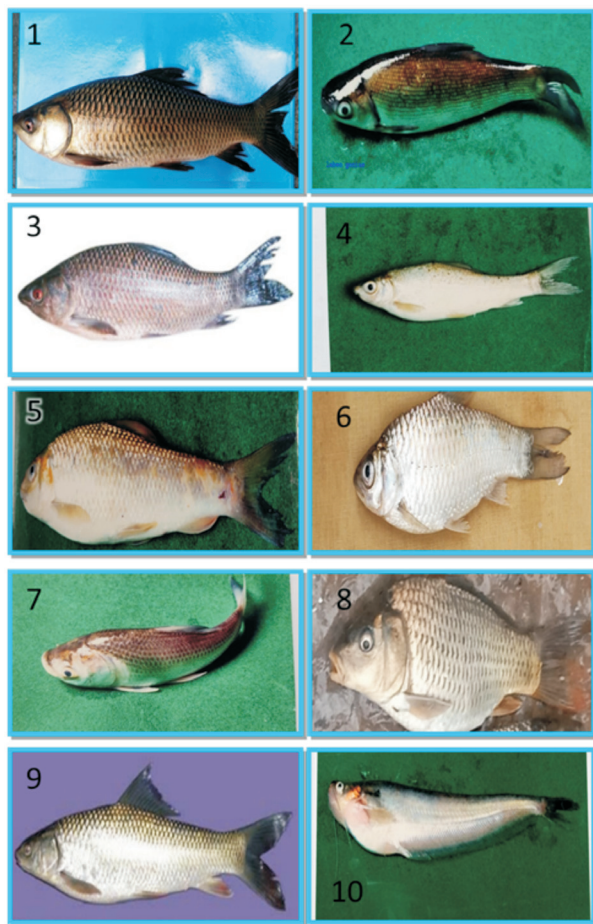


Fig. 4a. Name of the collected Fishes in Lath River 1. *Labeorohita*, 2. *Labeo gonius*, 3. *Labeocalbasu*, 4. *Labeo boggut*, 5. *Labeo fiMbriatus* 6. *Labeopangusia*, 7. *Catla catla*, 8. *Cyprinus carpio*, 9. *Cirrhinnus mrigala*, 10. *Ompakbimaculatus*.

important parameter that affect the growth and various Biological Process of aquatic organism. Temperature varies according to different times of the day and different seasons of the year. The average annual temperature of riverwater varies in between 18 °C to 40 °C the highest temperature of River water was recorded (40 °C) in month of May and lowest during month of January (18 °C) with mean value 29 °C.

Turbidity – Turbidity is an important limnological Parameter that affects sunlight penetration in into the River water as well as photosynthesis during the study period, The detected turbidity values varied between 18 NTU (minimum March) to 309 NTU (maximum in July) the mean value of 101 NTU.

Dissolved Oxygen - Oxygen is major gas found in dissolved form in water, aquatic animals obtain oxygen by absorbing it from the atmosphere and through photosynthesis from aquatic plant, and During the study D. O. of Lath River water was recorded in the range Between 6.6 to 8.3 with mean value 8.2.

Biochemical Oxygen Demand – The minimum B. O. D. Was recorded 3 mg/l in the month of January and maximum B.O.D. recorded 12 mg/l in April month with an average value of 7.5 mg/l.

Water Depth: The average depth of River water was recorded 13 meters.

Total alkinity: Highest total alkinity value was recorded 147 mg/l in the month of December and minimum total alkinity value was recorded 120 mg/l in the month of August.

Total hardness: Total hardness values ranged from 75 mg /l (minimum in April) to 133 mg/l (maximum in December) with average value of 107 mg / l.

C.O.D.: C.O.D. was found to be ranging from 11 mg/l (minimum in the month of June) to 31 mg/l (maximum in January) with average value of 23 mg/l.

Table 2. Fish Biodiversity of Lath River

S. No .	Order	Families	Genera	Species
01	Cypriniformes	03	08	16
02	Perciformes	01	01	02
03	Clupeiformes	01	01	02
04	Beloniformes	01	01	01
05	Mastacembeleformes	01	01	03
Total	05	07	12	24

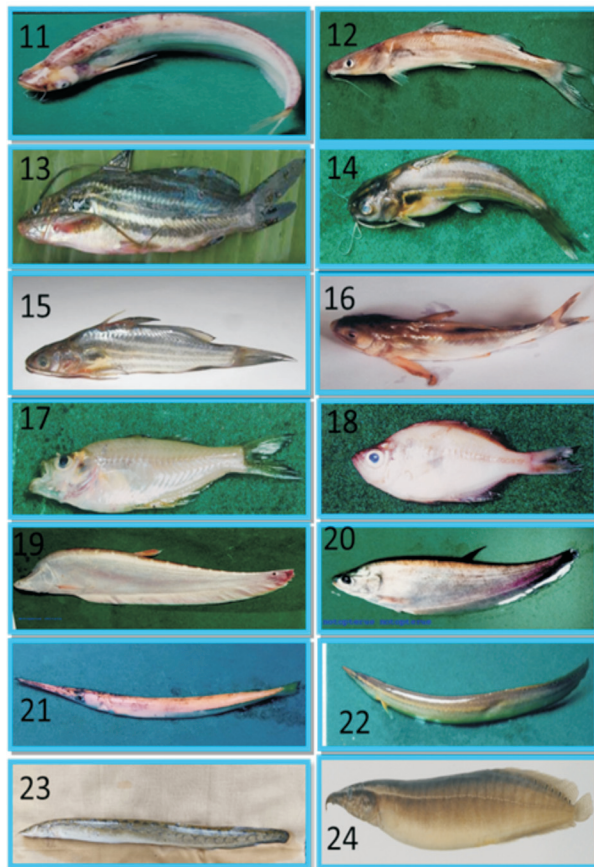


Fig. 4b. Name of the collected Fishes in Lath River - 11. *Wallagoattu*, 12. *Mystus seenghala*, 13. *Mystus oar*, 14. *Mystus vittatus*, 15. *Mystus bleekeri*, 16. *Rita rita*, 17. *Chanda ranga*, 18. *Chanda nama*, 19. *Notopterus chitala*, 20. *Notopterus notopterus*, 21. *Xenentodon cancila*, 22. *Macrognathus aculatus*, 23. *Mastacembelus armatus* 24. *Mastacembelus pancalus*

Calcium: The hardness of river water depends on the amount of calcium, during the study period calcium concentration was recorded to be varying from 14 mg/l (minimum in November) to 50 mg/l (maximum in April) with an average value, of 27 mg/l. **Atmosphere temperature:** The minimum atmosphere temperature was recorded value 13 in the month of December and maximum value 47 was recorded in the month of May with mean value 30.

In this study a total numbers of 24 fish species of 12 genera have been identified which are included in 07 families of 05 orders, namely cypriniformes, Perciformes, Clupeiformes, beloniformes and mastacembeliformes. The order Cypriniformes was the most dominant group representing 16 species. Out of the 22 species, 16 species are belonging to Cypriniformes (09 species of family cyprinidae, 02 of

siluridae, 05 of Bagiridae) 02 species are belonging to order perciformes, 01 species of order beloniformes and 02 species are belonging to Clupeiformes and 03 Mastacemaliformes.

Conclusion

From this study, it was found that most of the Lath River Limnological parameter was under Acceptable ranged and Lath River's water quality is suitable for fish biodiversity, irrigation, drinking and bathing purpose.

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