

Preliminary survey of fish migration in left minor tributaries of river Mahanadi during monsoon in Janjgir-Champa district, Chhattisgarh, India

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Abstract: *Biodiversity conservation and sustainable development are inter-related. It is necessary to protect the biodiversity in their natural habitat. In the last decade the left minor tributaries of river Mahanadi were perennial but presently they are almost in seasonal form. The water flows only during the monsoon period up to the February. During the March to June the water becomes shallow and remains only in ditches of the rivers. Due to irrational fishing practices, sand mining, sewage water discharge and other anthropogenic activities practiced over the year, the fish diversity of these rivers is mostly lost. During monsoon the fishes migrate from river Mahanadi to these tributaries and restructure the aquatic diversity. River Sheonath, Arpa, Leelagar, Hasdo, Sone, Borai, Mand, Kelo are the left tributaries of river Mahanadi. River Leelagar, Sone and Borai are the minor tributaries and were selected for study of migratory behavior of fishes. The survey was conducted during September 2020 to February 2021. Species diversity of fishes were observed and recorded regularly. During the course of present study total 31 species of fishes were identified in river Leelagar, 23 in Sone and 25 in Borai. An attempt has been made to find out the fish migration and fish diversity of three minor tributaries of river Mahanadi and its proper documentation for future reference.*

Keywords: *Migration, fish diversity, Leelagar, Sone, Borai.*

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I. Introduction

The district Janjgir-Champa is located in the center of the Chhattisgarh state and was established on 25 May 1998. The district is blessed with rich freshwater resources in the form of rivers, seasonal streams, canals, reservoirs and tanks having good number of fish species. The Hasdo-Bango project has been considered as life supporting canal for the district Janjgir-Champa. The Janjgir-Champa district is a major producer of Food Grains in the state Chhattisgarh. River Mahanadi is one of the major river passing through Janjgir-Champa district and many other small rivers join it at various places. Leelagar, Sone and Borai are the main minor tributaries of the left bank of Mahanadi. Leelagar river originates from eastern hilly area of Korba and runs towards south direction making the border of Bilaspur and Janjgir-Champa district and finally merged into the Sheonath river. Total length of the Leelagar river is 235 km. River Sone originates from Kartala block of Korba district and join the Borai river near Bhedikona village. River Borai originates from Korba plateau and flows towards south direction and merges into Mahanadi and its total drainage area is about 1810 sq. km. During monsoon the fisherman and villagers collect the variety of fishes and brooders by using various types of nets including jhara jaal, gears and other local contrivances. After post monsoon period the river becomes gradually shallow and during the period of March to June the water remain only in ditches of the rivers. The study and documentation of migratory fishes in minor rivers are significant for their conservation.

II. Material And Methods

For the study of migration of fishes during monsoon from Mahanadi to its minor tributaries five sampling stations were selected from confluence to upstream at a regular interval of about 5 to 8 km. in study area depending upon the approachability. Fishes were collected from half km. up and downstream from the right, left bank and middle stream of the sampling station during morning, noon and evening in every fifteen days. During the course of present study the fishes were collected from each sampling station of the study area by netting operations, conducted by local expert and professional fisherman. The collected fishes were photographed with NIKON DSLR 3200 by using macro lens and preserved in 10% formalin. A pinch of boric acid also added to preserve the natural color of the fishes. The fishes were brought into the lab for studies. The taxonomic character, morphometric and meristic counts were studied and fishes were identified with the help of standard books i.e., Francis Day, Ken Schultz, K.C. Jayaram, Qureshi & Qureshi and Gopalji Shrivastava.

III. Study Area And Sampling Sites

For the study of fish migration in minor rivers, five sampling sites were selected in each river depends on the approachability. The fishes were collected from with the help of professional fisherman during morning and afternoon. Table -1)

Table -1: Sampling stations in minor tributaries of study area

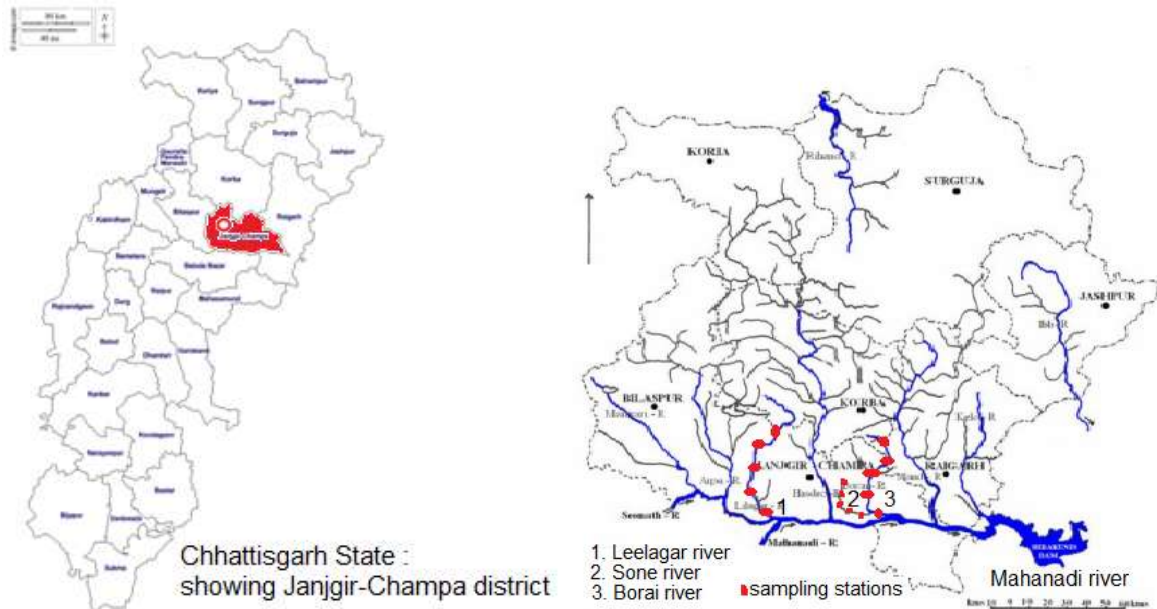
Sampling station No.	River name and Discription		
	Leelagar	Sone	Borai
1	Seepat-Baloda road, near bridge	Birra-Baradwar road, near bridge	Sakti-Botalda road,near Sakti
2	Kotmisonar near railway bridge	Near Kaitha village	Temar area, Sakti-Raigarh road
3	Koharanda-Bilaspur road, Arasmeta	Birra-Jamdi road, near bridge	Janjgir-Malkharoda road, near bridge
4	Loharsi-Donga Koharanda road	Ghivra-Sandri road	Dabhra road area
5	Near Bhuiagaon road	Saragaonroad,-Baradwar road, near Navagaon	Nariyara-Ghoghri road area

Table-2: List of migratory fishes studied in river Leelagar, Sone and Borai during September 2020 to February 2021

S.No.	Family & Fish species	Leelagar	Sone	Borai
1	Family-Clupeidae 1. Gudusia chapra (Ham.)	+	+	+
2	Family – Notopteridae 2. Notopterus notopterus (Pallas)	+	-	-
3	Family-Cyprinidae 3. Amblypharyngodon mola (Ham.)	+	-	+
	4. Danio devario (Ham.)	+	+	+
	5. Esomus danricus (Ham.)	+	+	+
	6. Labeo bata (Ham.)	+	+	-
	7. Labeo calbasu (Ham.)	+	-	-
	8. Labeo gonius (Ham.)	+	-	+
	9. Labeo rohita (Ham.)	+	+	+
	10. Oxygaster bacaila (Ham.)	+	+	+
	11. Puntius chola (Ham.)	+	-	+
	12. Puntius sarana (Ham.-Buch)	+	-	+
	13. Puntius sophore (Ham.)	+	+	+
	14. Puntius ticto (Ham.)	+	+	+
15. Rasbora daniconius (Ham.)	+	+	+	
4	Family – Cobitidae 16. Lepidocephalichthys guntea (Ham.)	+	+	+
5	Family – Bagridae 17. Mystus tengara (Bloch)	+	+	+
	18. Rita rita (Ham.)	+	-	-
6	Family – Saccobranchidae 19. Heteropneustes fossilis (Bloch)	+	+	+
7	Family – Clariidae 20. Clarius batrachus (Linn.)	+	+	+
8	Family – Belonidae 21. Xenentodon cancila (Ham.)	+	+	+
9	Family – Channidae 22. Channa gachua (Ham.)	+	+	-
	23. Channa punctatus (Bloch)	+	+	+
	24. Channa striatus (Bloch)	+	+	+
10	Family – Centropomidae 25. Chanda nama(Ham.)	+	+	+
	26. Chanda ranga (Ham.)	+	+	+
11	Family – Nandidae 27. Nandus nandus (Ham.)	+	-	-

12	Family – Anabantidae 28. Anabas testudineus	+	+	+
13	Family – Gobiidae 29. Glossogobius giuris (Ham.)	+	+	+
14	Family – Mastacembelidae 30. Mastacembelus armatus (Lacepede)	+	+	+
	31. Mastacembelus punctalus (Ham.)	+	+	+
	Total	31	23	25

+ Present, - Absent



River Leelagar



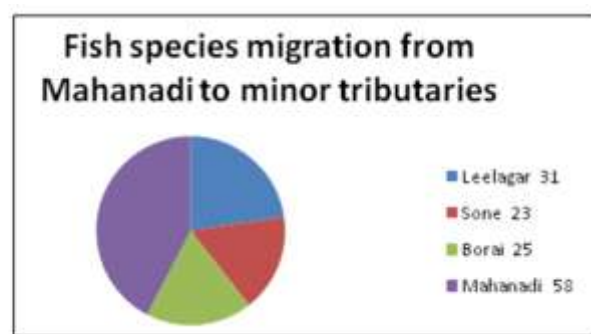
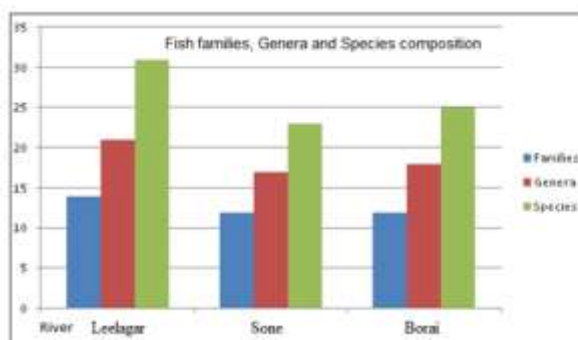
River Sone & Borai

IV. Result And Discussion

River Leelagar is perennial but very shallow aquatic status during February to June. River Sone and Borai become almost dried during this period. They only recharged during the monsoon period. During the rainy season large number of fishes migrated from River Mahanadi to its minor tributaries for feeding and breeding. The fishes collected from the river Leelagar represent 14 families, 21 genera and 31 species. The fishes representing the families are Clupeidae, Notopteridae, Cyprinidae, Cobitidae, Bagridae, Saccobranchidae, Clariidae, Belonidae, Channidae, Cetropomidae, Nandidae, Anabantidae, Gobiidae, Mastacembelidae. The genus are Gudusia, Notopterus, Amblypharyngodon, Danio, Esomus, Labeo, Oxygaster, Puntius, Rasbora, Lepidocephalichthys, Mystus, Rita, Heteropneustes, Clarias, Xenentodon, Channa, Chanda, Nandus, Anabas, Glossogobius, Mastacembelus. The species are G. chapra, N. notopterus, A. mola, D. devario, E. danricus, L. bata, L. calbasu, L. goni, L. rohita, O. bacaila, P. chola, P. sarana, P. sophore, P. ticto, R. daniconius, L. guntea, M. tengara, R. rita, H. fossilis, C. batrachus, X. cancila, C. gachua, C. punctatus, C. striatus, C. nama, C. nama, C. ranga, N. nandus, A. testudineus, G. giuris, M. armatus, M. punctalus.

The fishes collected from the river Sone represent 12 families, 17 genera and 23 species. The fishes representing the families are Clupeidae, Cyprinidae, Cobitidae, Bagridae, Saccobranchidae, Clariidae, Belonidae, Channidae, Ceteropomidae, Anabantidae, Gobiidae, Mastacembelidae. The genus are Gudusia, Danio, Esomus, Labeo, Oxygaster, Punctius, Rasbora Lepidocephalichthys, Mystus, Heteropneustes, Clarias, Xenentodon, Channa, Chanda, Anabas, Glossogobius, Mastacembelus. The species are G. chapra, D. devario, E. danricus, L. bata, L. rohita, O. bacaila, P. sophore, P. ticto, R. daniconius, L. guntea, M. tengara, H. fossilis, C. batrachus, X. cancila, C. gachua, C. punctatus, C. striatus, C.nama, C. ranga A. testudineus, G. giuris, M. armatus, M. puncalus.

The fishes collected from the river Bori represent 12 families, 18 genera and 25 species. The fishes representing the families are Clupeidae, Cyprinidae, Cobitidae, Bagridae, Saccobranchidae, Clariidae, Belonidae, Channidae, Ceteropomidae, Anabantidae, Gobiidae, Mastacembelidae. The genus are Gudusia, Amblypharangodon, Danio, Esomus, Labeo, Oxygaster, Punctius, Rasbora Lepidocephalichthys, Mystus, Heteropneustes, Clarias, Xenentodon, Channa, Chanda, Anabas, Glossogobius, Mastacembelus. The species are G. chapra, A. mola, D. devario, E. danricus, L. gonous, L. rohita, O. bacaila, P. chola, P. sarana, P. sophore, P. ticto, R. daniconius, L. guntea, M. tengara, H. fossilis, C. batrachus, X. cancila, C. punctatus, C. striatus, C.nama, C. ranga A. testudineus, G. giuris, M. armatus, M. puncalus.



V. Conclusion

The physical status of minor rivers were observed during the March to June and found that due to soil erosion, natural dumping of sand and agricultural practices inside the river and other anthropogenic activities, ecological succession the river changed into almost lifeless system. Construction of check dams across the river interrupt the migration and movement of fishes specially bottom dwelling forms. Industrial, city, village and agricultural wastes are directly thrown into river making the aquatic life more difficult. During the monsoon the fishes from Mahanadi river migrate in to Leelagar, Sone and Bori river for shelter, feeding and breeding. After monsoon 31 fish species were sampled from Leelagar, 23 from Sone and 25 from Bori river. River Leelagar is semi-perennial and maximum number of fishes were observed. Minimum number of fishes species were observed in river Sone.

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