

Biodiversity and Conservation Status of Fishes of order Cypriniforms of River Daha, Siwan District, Bihar, India

Kumar Ranjan

Ph. D Research Scholar

Department of Zoology, Jai Prakash University

Dr. Reeta Kumari

Associate Professor

Department of Zoology

D A V P. G. College, Siwan

drreeta2309@gmail.com

Abstract:

A survey was conducted on biodiversity of order Cypriniforms and their conservation status of a freshwater river, Daha in Siwan District of Bihar, India with an objective to make a complete inventory of freshwater fishes and assess their conservation status. Regular bi-monthly sampling was conducted from January 2018 to December 2020 by using different nets with the help of fishermen. We have collected 32 fish species. According to CAMP (1998) conservation status, 1 species are endangered, 7 vulnerable, 16 at lower risk near threatened, 2 at lower risk least concern and 6 not evaluated. According to the IUCN List 1 species are endangered, 2 vulnerable, 1 Near threatened, 1 at lower risk near threatened, 21 Least Concerned and 6 not evaluated.

Keywords: Biodiversity, CAMP, conservation, IUCN, Daha River

The freshwater environment gives the territory of rich, sensitive, endemic biota and harbors around 6% of the complete species. India is considered as a focal point of freshwater fish diversity and contributes countless the world's endemic natural assets. Likewise, 11.7% of fish species on the planet have been recorded from Indian waters and 295 endemic fish species which are solely found in India are recorded under IUCN. Stream Daha upholds broad aquatic biodiversity and assumes a significant part in keeping up with work and dietary security. The riverine environment has encountered living space corruption of fish fauna because of anthropogenic exercises like modern tension, contamination, overexploitation, illegal fishing exercises, abuse of assets bringing about fast biodiversity misfortune bringing about many compromised fish species. Legitimate consideration is required for endemic fish diversity explicitly those which are acclimated under confined dissemination, any other way,

Received: 29 July, 2022

Revised: 13 Aug. 2022

Final Accepted for publication: 28 Aug 2022

Copyright © authors 2022

modification of their natural surroundings could prompt their vanishing. In the current study, a few fish species have been recorded under IUCN Red-list classification during a review from 2016 to 2020. As these are monetarily valued fish, powerful preservation and feasible administration plans ought to be executed to re-establish the germplasm of fish species.

Study Area

The District Siwan is situated in the north-western piece of Bihar in the interfluvial area of the waterway Ghaghara and Gandak. This area reaches out from 25°22' N to 26°22' scope and 84°E to 84°47' E longitude. It has a most extreme length of 85 km from east to west and width of 52 km from north to south. Three destinations chose is set apart in the guides in the pictures. Each site was delineated for one hectare region, half hectare on both the sides of the Daha River. The ebb and flow study was finished for multiple times in a year at a similar area for grasping the seasonal variety.





Methodology

The study was directed the entire month, somewhere in the range of 6.00 and 812.00 a.m. The fish samples were caught with the assistance of neighbourhood talented anglers in three preselected examining destinations. Trawl, Castanet, Scoop net, Basket trap, etc were utilized

Received: 29 July. 2022

Revised: 13 Aug. 2022

Final Accepted for publication: 28 Aug 2022

Copyright © authors 2022

for catching fish. Fish markets were observed consistently for business fish assortment Fish species accessible at the neighbourhood market and got by nearby anglers from Daha waterway were additionally bought.

The gathered specimens were preserved in 5-10% formalin as per the size and brought to lab. The fishes were related to the assistance of taxonomic literatures. The recognizable proof of the species was done principally founded on the variety design, explicit spots or checks on the outer layer of the body, state of the body, construction of different balances, mouth shapes and so forth.

Results & Discussion

In the present ichthyofaunal study, of order Cypriniforms a total of 32 fish species were recorded. The data were accessed on the basis of IUCN listing and CAMP Category 1998 presented in Table 1 & Table II below as per the code: IUCN, International Union for Conservation of Nature; CAMP, Conservation Assessment and Management Plan; EN, Endangered; VU, Vulnerable; NT, Near threatened; LRnt, Low risk near threatened; LRlc, Low Risk least concerned; LC, Least Concerned; NA/NE, Not assessed/Not Evaluated.

International Union for Conservation of Nature Listing	
Endangered	1
Vulnerable	2
Near Threatened	1
Low Risk Near Threatened	1
Least Concerned	21
Not Evaluated / Not Assessed	6

Conservation Assessment and Management Plan Category 1998	
Endangered	1
Vulnerable	7
Low risk near threatened	16
Low Risk least concerned	2
Not Evaluated / Not Assessed	6

All the species found during the study found has been enlisted in Table III below along with their IUCN and CAMP Category 1998.

Name of the Fish	IUCN Category	CAMP Category 1998
<i>Amblypharyngodon mola</i>	NE	VU
<i>Catla catla</i>	LC	LRnt
<i>Chela cachius</i>	VU	VU
<i>Chela laubuca</i>	NE	NE
<i>Cirrhinus mrigala</i>	NE	NE
<i>Cirrhinus reba</i>	LC	LRnt
<i>Ctenopharyngodon idella</i>	LC	LRnt
<i>Cyprinus carpio</i>	LRnt	LRnt
<i>Danio devario</i>	LC	LRnt
<i>Esomus barbatus</i>	LC	LRnt
<i>Esomus danricus</i>	LC	LRnt
<i>Labeo bata</i>	NE	NE
<i>Labeo boga</i>	NT	LRnt
<i>Labeo calbasu</i>	NE	LRnt
<i>Labeo fimbriatus</i>	LC	VU
<i>Labeo rohita</i>	LC	LRnt
<i>Labeo pangusia</i>	LC	NE
<i>Labeo gonius</i>	LC	VU
<i>Labeo dero</i>	LC	LRnt
<i>Osteobrama cotio</i>	LC	LRnt
<i>Oxygaster bacaila</i>	LC	VU
<i>Puntius chola</i>	LC	LRnt
<i>Puntius conchonius</i>	LC	VU
<i>Puntius gelius</i>	LC	NE
<i>Puntius sarana</i>	LC	LRlc
<i>Puntius sophore</i>	LC	LRlc
<i>Puntius terio</i>	LC	LRnt
<i>Puntius ticto</i>	LC	NE
<i>Puntius vittatus</i>	LC	LRnt
<i>Rasbora daniconius</i>	NE	LRnt
<i>Schizothorax richardsonii</i>	EN	EN
<i>Tor putitora</i>	VU	VU

References:

1. Chakraborty, A., Shaw, R. and Ghosh, K., An inventory of endemic fish species in India with notes on state-wise distribution and conservation measures. *Int. J. Fish. Aquat. Stud.*, 2017, 5, 253–264.
2. Dahanukar, N., Raut, R. and Bhat, A., Distribution, endemism and threat status of freshwater fishes in the Western Ghats of India. *J. Biogeogr.*, 2004, 31, 123–136.

Received: 29 July, 2022

Revised: 13 Aug, 2022

Final Accepted for publication: 28 Aug 2022

Copyright © authors 2022

3. Das, M. K., Samanta, S. and Saha, P. K., Riverine health and impact on fisheries in India. Policy Paper No. 01, Central Inland Fisheries Research Institute, Barrackpore, Kolkata, 2007.
4. Day, F., The fishes of India: being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma, and Ceylon, 1888.
5. Dudgeon, D., Arthington, A. H., Gessner, M. O., Kawabata, Z. I., Knowler, D. J., Lévêque, C. and Sullivan, C. A., Freshwater biodiversity: importance, threats, status and conservation challenges. *Biol. Rev.*, 2006, 81, 163–182.
6. Ghatge, S. S., Shelke, S. T., Jadhav, S. S., Pawar, N. A. and Chaudhari, A. K., Inventory of endemic freshwater fish fauna of Maharashtra state: India. *Rec. Zool. Surv. India*, 2013, 113(3), 79–92.
7. IUCN 2020. The IUCN Red List of Threatened Species version 2020–21; <https://www.iucnredlist.org> (accessed on 22 July 2020).
8. Jayaram, K. C., The Freshwater Fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka, Zoological Survey of India, Calcutta, 1981.
9. Jha, B. C. Floodplain fishery of the Gandak basin Bihar. In: Howes J. R., (Ed.), 1995, Conservation and sustainable use of floodplain wetlands, Asian Wetland Bureau, Kuala Lumpur, A WB Publication, 1995, 113 : 89-97.
10. Kottelat, M. and Whitten, T., Freshwater biodiversity in Asia with special reference to fish. World Bank Technical Paper, Washington, USA, 1996, p. 343.
11. Lakra, W. S., Sarkar, U. K., Gopalakrishnan, A. and Kathirvelpandian, A., In Threatened Freshwater Fishes of India, National Bureau of Fish Genetic Resources, Lucknow, 2010, pp. 1–20.
12. Linke, S., Pressey, R. L., Bailey, R. C. and Norris, R. H., Management options for river conservation planning: condition and conservation re-visited. *Freshw. Biol.*, 2007, 52, 918–938.
13. Mishra, S. K., Sarkar, U. K., Gupta, B. K., Trivedi, S. P., Dubey, V. K. and Pal, A., Pattern of freshwater fish diversity, threats and issues of fisheries management in an unexplored tributary of the Ganges basin. *J. Ecophysiol. Occup. Health*, 2011, 11, 149–159.
14. Molur, S. and Walker, S., Workshop on Conservation assessment and management plan (CAMP) for freshwater fishes of India, Zoo Outreach Organization/CBGS, Coimbatore, 1998, pp. 1–158.

15. Murugan, A. S. and Prabakaran, C., Fish diversity in relation to physico-chemical characteristics of Kamala Basin of Darbhanga District, Bihar, India. *Int. J. Pharm.*, 2012, 3, 211–217.
16. Nelson, J. S., *Fishes of the World*, Wiley, New York, USA, 2006, 4th edn.
17. P.K. Srivastava. *Fish Diversity and Conservation Perspectives of Gandak River, India; / Our Nature*, 2013, 11(1):7
18. Roshith, C. M., Sharma, A. P., Manna, R. K., Satpathy, B. B. and Bhaumik, U., Ichthyofaunal diversity, assemblage structure and seasonal dynamics in the freshwater tidal stretch of Hooghly estuary along the Gangetic delta. *Aquat. Ecosyst. Health Manage.*, 2013, 16, 445–453.
20. Sarkar, U. K., Pathak, A. K., Sinha, R. K., Sivakumar, K., Pandian, A. K., Pandey, A. and Lakra, W. S., Freshwater fish biodiversity in the River Ganga (India): changing pattern threats and conservation perspectives. *Rev. Fish Biol. Fish.*, 2012, 22(1), 251–272.
21. Sunderesan, B. B., Subrahmanyam, P. V. R. and Bhinde, A. D., An overview of toxic and hazardous waste in India. *UN Environment Programme (Special Issue)*, 1983, pp. 70–73.
22. Sharma, R., Protection of an endangered fish *Tor tor* and *Tor putitora* population impacted by transportation network in the area of Tehri Dam project, Garhwal Himalaya, India. *ICOET Proceedings*, 2003.
23. Talwar, P. K. and Jhingran, A. G., *Inland Fishes of India and Adjacent Countries*, Vol. I & II, Oxford and IBH Publishing Co Pvt Ltd, New Delhi, 1991.