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Present scenario of culture and capture fisheries of the Ambedkar Nagar district, Uttar Pradesh: a note

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Introduction

Our earth is presently facing unprecedented environmental and societal alterations that are having dramatic effects on the fish and fisheries (Dwivedi 2009, Arthington *et al*. 2016, Waters *et al*. 2016, Gordon *et al*. 2018, Tiwari *et al*. 2024, Tripathi *et al*. 2024). Fishes are important natural source of protein, minerals and providing certain other useful products as well as economic sustenance to many nations (Tiwari *et al*. 2024, Mayank *et al*. 2018, 2011, Kumar *et al*. 2023). Riverine fishes are important and valued property (Dwivedi *et al*. 2011, 2019, 2017a, Nautiyal & Dwivedi 2019, Kumar *et al*. 2023).

Fish populations and fish biodiversity are excellent indicators of river health because they are sensitive to changes in habitat, water quality, and other environmental factors. Changes in fish species diversity, abundance, and community composition can signal pollution, habitat degradation, or other stressors affecting the river ecosystem (Tiwari *et al*. 2014, 2024, Tripathi *et al*. 2017, Dwivedi 2009). Fish dwell in various trophic levels in the food web, integrating the health of lower trophic levels like invertebrates and plankton (Mishra & Dwivedi 2022, Pal *et al*. 2024). Changes at lower levels can affect fish populations, making them a good indicator of overall ecosystem health (Nautiyal *et al*. 2024). Overexploitation occurs around the world with the use of more and more refined fishing equipment, and the decrease of many fish stocks has been documented as a result of expanding fisheries (Montana *et al*. 2011, Dwivedi *et al*. 2023, Mishra *et al*. 2021a, 2021b). Water pollution is the other major cause for decline of fishes in the riverine ecosystems (Tiwari & Dwivedi 2015, 2016, Dwivedi *et al*. 2015, Pal *et al*. 2024). An increase in the abundance of pollution-tolerant fish species can indicate degradation of the river ecosystem.

Ponds get their energy from the sun light and build up own ecological phenomena with the help of substratum texture (Pal *et al*. 2023). Freshwater resources (Example villages pond) are frequently declining due to humans activities, industrialization and urbanization (Mishra *et al*. 2007, Jha *et al*. 2015, Pal *et al*. 2023) but commercial ponds (for scientific fish farming) are regularly constructing by fish farmers on own lands/fields (Maurya *et al*. 2018, Dwivedi *et al*. 2018, 2017b). *Catla catla, Labeo rohita, L. calbasu* and *Cirrhinus mrigala* fishes are forms the backbone of Indian aquaculture with other fast growing exotic fish species (Jha *et al*. 2015, Dwivedi *et al*. 2018, Kumar & Upadhyay 2023). In this paper an attempt has been made to present a general ecological picture of the exiting fish and fisheries of river (capture) and ponds (culture) of Ambedkar Nagar district, Uttar Pradesh, India. Based on this it may perhaps be possible to plan further research which may lead ultimately to more scientific management (in culture and culture sectors) and exploitation of their waters.

The essential information was collected from the fish farmers and fishermen in culture and capture division, respectively. General aspect of capture fishery development in the river stretches and culture fishery in ponds are explained. Overall, *L. rohita* (Rohu) is the most dominant fish species in culture system while catfishes in capture system. The Indian major carps and few large size catfishes are commercially important groups in riverine division in the Ambedkar Nagar district, Uttar Pradesh. The species combination was also considered by some fish farmers.

In culture sector, Indian major carp and exotic carp (*Cyprinus carpio, Ctenopharyngodon idella*) are mostly cultured in the pond ecosystem. Fish farming practice is done with traditional system and in some cases on scientific line.

In the Ambedkar Nagar district, the fishing activities were done throughout the year with help of cast net, drag net, mahajal, gill net and hooks and line in the Sarayu river. The fishermen community is being employed in netting, angling and trapping from the Sarayu river. However, extremely specialized and sophisticated gears and crafts are not used in the river and only the traditional methods are employed for exploitation of fishes or fishing. There are no hard and fast rules for catching of fishes in the river. The freshwater fisheries resources of Ambedkar Nagar district exclusively consist of culture fishery from seasonal, perennial in the culture ponds.

In this region, mostly three combinations of fishes were used in culture practices namely 3 species, 4 species and 6 species. Species composition or culture type is undertaken depending upon the availability of their seeds and status of fish farmers. In culture system, mainly three Indian major carps (*Catla catla, Labeo rohita* and Cirrhinus mrigala) and four exotic carps (*Ctenopharyngodon idella, Hypophthalmichthys molitrix, Cyprinus carpio*) in most of culture ponds combinations of fishers are similar as like using From the Faizabad, Chitrakoot, Prayagraj and Azamgarh districts (Dwivedi *et al*. 2004, 2018, Jha *et al*. 2015, Kumar & Upadhyay 2023).

The principal capture fishes from the Ambedkar Nagar, Uttar Pradesh, India (riverine division) in order of importance and abundance was observed as- Indian Major Carp (*C. catla, L. rohita* and *C. mrigala*), Exotic Major Carp: *C. carpio, C. idella, H. molitrix*, Important Catfishes: *Sperata aor, S. seenghala, Rita rita, Wallago attu, Bagarius bagarius, Eutropiichthys vacha* and *Clupisoma garua*, Live fishes: *Clarias batarachus, Heteropneustes fossils, Channa punctatus, C. striatus* and *C. marulius*, Feather backs: *Chitala chitala* and *Notopterus notopterus* and Eels: *Anguilla begalensis, Mastacembelus panchalus, M. armatus and Amphipnous cuchia*.

The above mentioned species are economically and commercially important. Their importance is judged from their size and weight attained or the bulk contributed by their abundance and market values. *C catla, L. rohita, L calbasu, C. mrigala* and *C. carpio* were the commonly reported carp species throughout the waters. *Sperata* species, *R. rita Wallago attu Eutropiichthys vacha, Clupisoma garua* and *Anguilla begalensis* were frequently found in river water. Similar findings were recorded by Mayank & Dwivedi (2015), Tripathi *et al*. (2024) from the Yamuna and Ganga rivers. Different fish species have specific habitat requirements (e.g., spawning grounds, feeding areas). Changes in these habitats (e.g., due to dam construction, channel modification) can impact fish populations.

Fish communities differ from head to tell of the river ecosystem (Dwivedi *et al*. 2017a, 2017b, Tripathi *et al*. 2017, Mayank & Dwivedi 2015, 2017, Nautiyal & Dwivedi 2019, Mishra & Dwivedi 2020). In case of capture fishery, fishes were captured from rivers, irrigation channels and nullas of the district. Fishing methods of fishers are more or less similar as like using in the Ganga and Yamuna rivers (Dwivedi 2013, Dwivedi & Mayank 2013, Mayank *et al*. 2015, 2017, Gopesh *et al*. 2021, Mishra *et al*. 2023). Fish generally have longer life spans than other aquatic organisms like macroinvertebrates, allowing for a longer-term assessment of environmental conditions. Certain fish species or groups, such as sensitive or tolerant species, also serve as indicators of the ecological health of river systems in response to changes in instream water chemistry and riparian land use (Tiwari & Dwivedi 2014, Mayank & Dwivedi 2017. Jargal *et al*. 2024).

Conclusion

It may be concluded that the riverine fishing centers do not exist because at any occasion bulk production is not assured. Fish culture is not practiced on scientific lines (Example pond management and feeding nature). Most important factors for improving the production of ponds and capture fisheries is by adopting conservation measures in rivers and by providing training to fish farmers and other financial help.

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