
Threatened Freshwater Fishes of Prayagraj district, Uttar Pradesh

Dr. Anju Verma¹ and Dr. Ajay Kumar²

^{1&2}Assistant Professor, Department of Zoology, Kashi Naresh Govt. P G College, Gyanpur, Bhadohi (U.P.)

Received: 20 Jan 2025 Accepted & Reviewed: 25 Jan 2025, Published : 31 Jan 2025

Abstract

Biodiversity is essential for the stabilisation of the ecosystem. In the era of globalisation, global warming and climate change, it is necessary to save biodiversity in a positive way, whether animals, plants or even micro-organisms. The present study was conducted in the Prayagraj district Uttar Pradesh for one year, from May 2021 to April 2022, to know the threatened ichthyofauna. A total of 07 species of fish were documented during the period, which belongs to a threatened category. After the study, it is found that a total 03 species are in the Cyprinidae family, which are in the IUCN-LC category, whereas in NBFGR list of these fishes shows in the VU Category then further 01 species of each Sisoridae and Siluridae are in IUCN-NT Category where in NBFGR and CAMP these species are also in NT Category whereas 01 species of each Cobitidae and Heteropneustidae are in IUCN-LC Category. In contrast, NBFGR and CAMP are in VU-Category.

Keywords- Biodiversity, Prayagraj, Conservation, CAMP, IUCN, NBFGR

Introduction

The Indian National Biological Variety Act of 2002 defines biological diversity as "the variability among living creatures from all sources and the ecological complexes of which they are part and encompasses diversity with species and ecosystems" (Ministry of Environment and forest, 2013). A biodiversity is a subset of the more general term "biological diversity." It is a general phrase that encompasses all creatures that are part of the living world (Singh et al., 2013). A flood plain, habitat degradation, dam building, over-exploitation, climate change, and the introduction of alien species are key factors contributing to the decrease of fish species in the world's riverine systems. Riverine fishes suffer anthropogenic hazards such as these. Fishes are among the most important animals when it comes to the functioning of the aquatic system. These creatures are the primary source of protein for the body, and they are also an excellent indication of the ecological health of the water in which they live (C. Pranjali et al., 2012). The protection of species is accomplished via the use of red lists (M. G. Bender et al., 2012). H. S. Moglekar and colleagues 2017 conducted research on the variety of freshwater fish and the condition of their protection. In West Bengal, they found 20 different species of fish that were classified as vulnerable by the IUCN. A.K. Patra et al., 2011 conducted research that found thirty different species of fish to be in a threatened category. Saha M.K et al., 2013 published research that found a total of seven species to be in a threatened status.

Materials and methods

Fishes were collected from different collecting sites with the help of local fishermen and the market. Then much information was also discussed with the fisherman. Fishing was carried out by local fishermen using gill nets, castanets, dragnets, and scoop nets, including hooks and lines (Bose et al., 2013)

Preservation

Fishes were preserved in 10% formalin solution

Identification

The sample was identified by using keys for fishes of the Indian subcontinent (Day,1996; Talwar and Jhingran,1991) and fish base, and then classification has done with the help of Jayaram,1999

Fish Photography

After collecting fish, they were first washed and photographed in new condition.

Recording of morphometric and non-morphometric data

All the morphometric and non-morphometric data were recorded for the identification purpose

Morphometric/Meristic character

By using the Vernier calliper, Total length, Standard length, Body depth, Head length, Eye diameter, Snout length Pre dorsal length, Post dorsal length Pectoral, Pre and Post Pectoral length, Post pelvic length, Pre Pelvic Length, Post anal length, Pre anal length, Caudal Peduncle length, Caudal Peduncle Depth, Dorsal fin length, Dorsal fin base length, Ventral fin length, Pectoral fin length etc. were measured.

Non- morphometric / non- meristic character-

The body's shape, colour, Snout, lips, Mouth, Barbels, Lateral line, Types of scale, the position of paired and unpaired fins, and Presence and absence of adipose fin.

Results

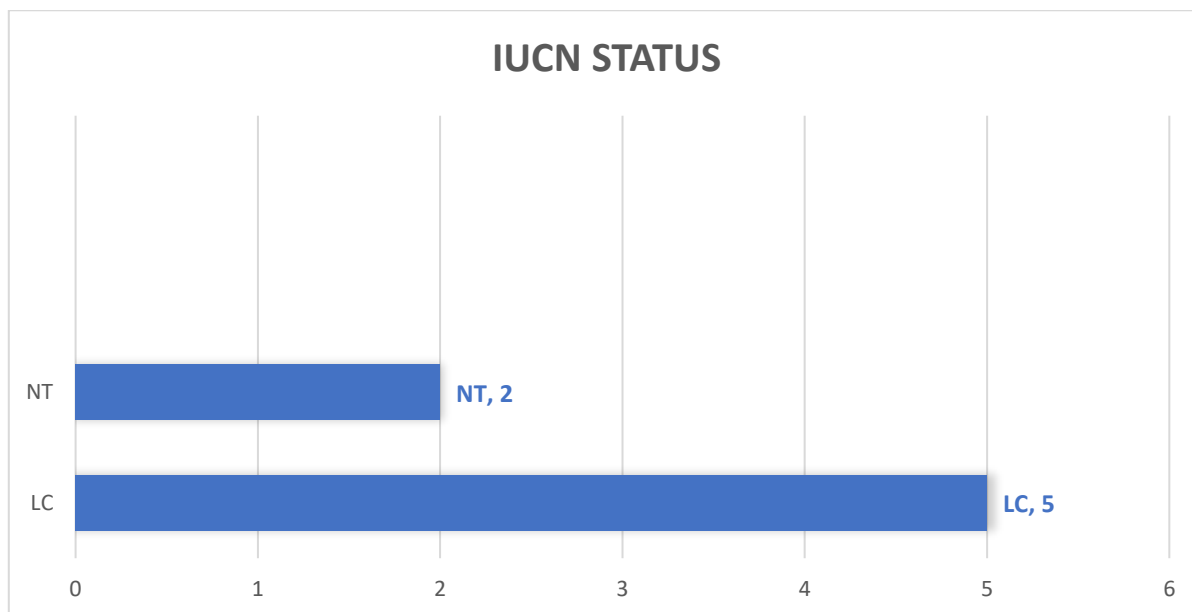
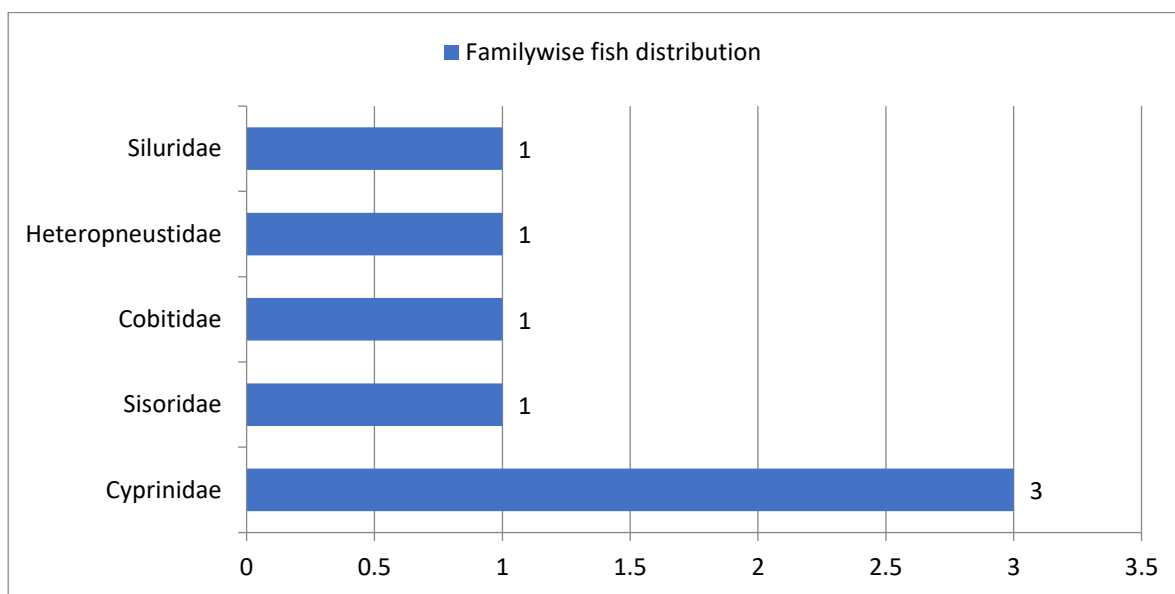
During the time period under review, a total of seven species of fish were discovered, all of which fall under the category of being threatened. Three of the seven species belong to the Cyprinidae family, which is the most numerous and widespread family of fishes. In contrast, just one species each belongs to the families of the Siluridae, Heteropneustidae, Cobitidae, and Sisoridae. Comparative research into the dangers faced by these fishes reveals that according to the IUCN status, five species of fishes—namely Botia Dario, Heteropneustus fossils, Garra lama, Crossocheilus latius, and Puntius sarana—are in the LC Category, while two species—namely Bagarius bagarius and Wallago attu—are in the NT category. Additionally, according to the According to the CAMP status, there are a total of five species that fall into the VU category. These species are referred to as Garra lamta, Crossocheilus latius, Puntius sarana, Bagarius bagarius, and Botia dario. One species, Heteropneustus fossils, is in the LC category, and one species, Wallago attu, is in the NT category. In addition, in order to maintain a healthy equilibrium in our environment, we need to devise an appropriate plan for the preservation of these fish species so that they may continue to thrive over the long term.

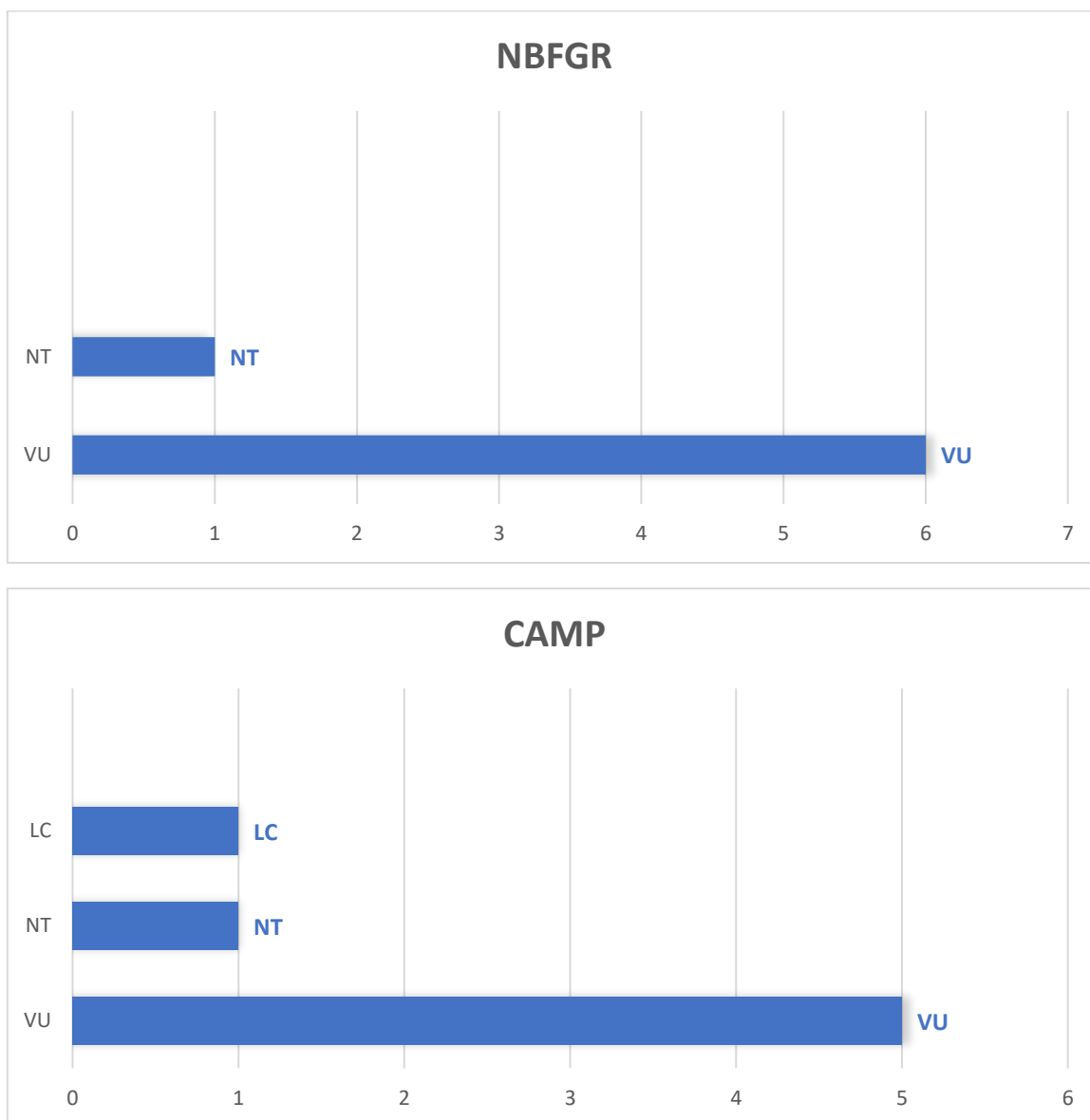
Status of fish and their conservation

SL.No	Family	Scientific name	Local name	IUCN	NBFG R	CAMP
01	Sisoridae	Bagarius bagarius (Hamilton)	Kana	NT	VU	VU
02	Cobitidae	Botia dario (Hamilton)	Naitai	LC	VU	VU

03	Heteropneustidae	Heteropneustus fossilis (Bloch)	Singhi	LC	VU	LC
04	Siluridae	Wallago attu (Bloch & Schneider)	Buwar	NT	NT	NT
05	Cyprinidae	Garra lamta (Hamilton)	Gaitai	LC	VU	VU
06	Cyprinidae	Crossocheilus latius (Hamilton)	Not Known	LC	VU	VU
07	Cyprinidae	Puntius sarana (Hamilton)	Pothi	LC	VU	VU

(NT-Near Threatened-Vulnerable-Least Concern)





Discussion

The extinction of species is one of the most pressing problems facing the world today, and there is widespread anxiety about the state of the biological resources upon which so much of human existence is dependent. The pace at which biodiversity in freshwater systems is being lost is higher than that of the terrestrial system. The presence of freshwater fish is the primary sign of this catastrophe. According to Sreenivasan N. et al., 2021, eight of the species that live in the Cauvery Wildlife Sanctuary are endangered. The current state of the climate presents a serious risk to the world's plant and animal life. The evaluation of climate change has, for the most part, disregarded freshwater fishes in recent years (Valerio et al., 2021). There is a disproportionate risk to freshwater ecosystems posed by human activities owing to environmental changes that have resulted in significant drops in the amount of freshwater biodiversity that has been seen over the course of the last several decades (Dudgeon D., 2006). Both Paul B et al., 2019 and Saha S. et al., 2021 conducted research and concluded that the species of freshwater catfish known as *Bagarius bagarius* are threatened with extinction.

One of the most active species of loach, *Botia dario*, also known as Queen loach or Necktie loach, is an important indigenous species that has both culinary and decorative benefits. It has been determined that Bangladesh poses a danger to it (Majumder N et al.,2020).

Wallago Attu is a type of catfish that grows quickly and is in great demand as a food fish due to its high nutritional content. In addition to its popularity as a sport fish and decorative fish, Wallago Attu has only lately entered the market for ornamental fish. It is a catfish species that is endangered in Indian seas (Gupta S,2015, Hossain M.Y.,2008).

The Garra lamta, a characteristic indigenous fish found in highland streams, plays an important part in the preservation of ecological equilibrium (Kanwal B.P.S.,2017). Therefore, research into its preservation and administration is very necessary. *Crossocheilus latius* is a specialised hillstream fish that is extensively dispersed in the upper watershed of the Krishna river basin in the Western Ghats. This fish may also be found in the Ganga, Brahmaputra, and Mahanadi river basins (Atkore V,2010). It is really difficult to get food that is extremely rich in nutrients (Sharma S and Singh D.,2020). Ghosh D et al. and Hossain M.A.R. et al. (2010) came to the conclusion that the *Puntius Sarana* was an endangered species.

References

- Atkore V;2010; An observational note on Gangetic latia *Crossocheilus latius latius* in Khoj River:Uttarakhand, India; J.Bombay.Nat.Hist.Soci.;107(1)
- Bose. A.K., Jha, B.C., Suresh, V.R., Das, A.K. Parasar, A.and Ridhi (2013); Fishes of middle stretch of River Tawa, MP, India; Journal of Chemical, Biological and Physical Science,3(1):706-716
- Bender, M.GS.R. Floeter, C.E.L. Ferreira, N. Hanazaki;2012; Mismatch between global, national and local red list and their consequences for Brazilian reef fish conservation, Endangered species research; Vol.18;247-254; doi:10.3354/esr0049
- B. Valerio et al,2021;2021; Threats of global warming to the world's freshwater fishes, Nature communication, http://doi/10.1038/541467-021
- C. Pranjal, C. Mitali and S. Subrata;2012; A survey on the fish diversity with special reference to the classified ornamental fishes and their conservation in the Kapla Beel of Barpeta district; The science Probe; Vol.1 No.2,12-21; ISSN-2277-9566
- Day F., fauna of British India including Ceylone and Burma, fishes, 1 and 2, Taylor and Francis, London (1889)
- Dudgeon D.et al;2006; Freshwater biodiversity: importance, threats, status and conservation challenges, Biol.Rev.81,163.
- Dey A et al;2015; Spawning biology, embryonic development and captive breeding of Vulnerable loach *Botia dario* (Hamilton); Journal of Entomology and Zoology Studies;3(6);183-188
- Ghosh D, Roy S.K. and Bhattacharjee U;2005; *Puntius Sarana*: An Endangered species: A case study on its Present status. Fishing Chimes;25(4):39-42
- Gupta S;2015; Wallago attu (Bloch and Schneider,1801); a threatened catfish of Indian watets; International Journal of Research in Fisheries and Aquaculture; 5(4);140-142
- HS, Mogalkar, J. Canciyal, Ansar, D. Bhakta, I. Biswas and Kumar D;2017; Freshwater fish diversity of West Bengal, India; Journal of Entomology and Zoology Studies;5(2):37-45; ISSN(E)-2320-7078; ISSN(P)-2349-6800

- Hossain M.A.R., Nahiduzzaman M and Saha D;2010; Threatened fishes of the world: *Puntius sarana* (Hamilton,1822) (Cyprinidae); *Enviro.Bill. Fish*;86;197-198
- Hossain M.Y. et al; Threatened fishes of the world: *Wallago attu* (Bloch and Schneider,1801) (Siluriformes: Siluridae); *Environ. Bill. fish.*;82;277-278; DOI10.1007/s/10641-007-9281
- Jayaram K. C.,1999 The freshwater fishes of the Indian Region, Narendra Publishing House, New Delhi
- Kanwal B.P.S.;2017; Environmental impact on morphology of *Garra lamta* (Hamilton-Buchanan) of Kumaun Himalaya; *International Journal of Fisheries and Aquatic Studies*; 5(3);45-48
- Mojumdar N et al;2020; Biology of the endangered Queen loach (*Botia dario*) collected from wild sources in Bangladesh; *AACL Bioflux*;13(5).
- Ministry of Environment and forest, Government of India,2013,Available at [http://envfor.nic.in/modules/rules-regulation/biodiversity\(2013\)](http://envfor.nic.in/modules/rules-regulation/biodiversity(2013)).
- Patra, A.K, S. Suman and Datta T.;2011, Physio-Chemical Properties and Ichthyofaunal Diversity in Karala River, A Tributary 'of Testa River at Jalpaiguri District of West Bengal, India; *International Journal of Applied Biology and Pharmaceutical Technology*. **Volume:2**: Issue 3: July-Sep-2011; ISSN-0976-4550
- Paul B, Kundu G.K., Islam M.M. and Mondal G;2019; Evaluation of the status of threatened catfish *Bagarius bagarius* (Hamilton,1822) from the Padma and Magna river stretches of Bangladesh, Dhaka University; *J.biol.Sci.*,28(1):111-120.
- Sreenivasan N et al;2021; Freshwater fishes of Cauvery Wild Life Sanctuary, Western Ghats of Karnataka, India; *Journal of Threatened Taxa*; <http://doi.org/jot.6778>. 13.1.17470
- Singh T., Guru.C. and Swain S.K.,2013; Review of the research on the fish diversity in the River Mahanadi and identifying of the probable potential Ornamental fishes among them with reference to Threats and conservation measures., *Research Journal of Animal Science*; ISSN-2320-6535, **Vol.1(3)**,16-24
- Saha, M.K., Patra C. Bidhan;2013; Present status of Ichthyofaunal diversity of Damodar River at Burdwan district, West Bengal, India; *International Journal of Scientific and Research Publication*; **Vol.3**, Issue 6, ISSN-2250-3153
- Sharma S and Singh D;2020; Nutritional status of *Crossocheilus latius latius* (Hamilton, 1822) and *Garra lamta* (Hamilton,1822) from Alaknanda River of central Himalaya; *Journal of aquatic food Product Technology*; 29(4);1-10; doi:10.1080/10498850.2020.1737999
- Saha Nasreen S,Pandit D and Mian S;2021;An overview of Biological feature, Distribution and Conservation of critically Endangered Riverine catfish *Bagarius bagarius* (Hamilton,1822)in the Natural water of Bangladesh; *Conservation*;1(4);350-367;doi:<https://doi.org/10.3390/conservation10400027>.
- SubhB.R.;2008; Abnormality in *Bagarius bagarius* (Ham.) (Cypriniformes: Sisoridae) from Nepal; *Our Nature*;6;26-29
- Talwar P.K and Jhingran K.C., Inland fishes of India and adjacent Countries, 3(1 and 2), Oxford and IBH Co. Pvt.Ltd., New Delhi (1991).
- www.fishbase.org.in
- www.iucnredlist.org.in