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Conservation status of fresh water fishes reported in Alwara Lake of District Kaushambi (U.P.)

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Abstract
An attempt was made to study the conservation status of the fishes naturally occurring in Alwara Lake, located in Kaushambi district of Uttar Pradesh. The survey was undertaken during all the 12 months of year 2014. During exploration, a total of 89 species of fishes belonging to 45 genera, 23 families and 9 orders were identified. As per latest version of IUCN Red List, out of 89 species of fishes identified, 2 species come under EN (Endangered), 2 under UV (Vulnerable), 5 under NT (near threatened), 56 under LC (least concern) and 24 species are NE (not evaluated) so far.

Keywords: Pisces, Fish species, Conservation status, Sarus crane, Alwara Lake

1. Introduction
Fishes are cold-blooded, gill-bearing aquatic craniate vertebrates that include both the bony and the cartilaginous fishes but sometimes jawless fishes too. They belong to phylum: Chordata, subphylum: Vertebrata and super class: Pisces. The fishes are not only used as good source of food for mankind, having economic importance from medicinal point of view but also play a crucial role in the second tropic level of the aquatic ecosystem.

The lake under exploration is situated in the Yamuna basin of district Kaushambi, Uttar Pradesh which is a part of Gangetic Plain of India (northern region). The annual floods of adjacent river Yamuna bring about the wide range of fish fauna and establish vast openness of agricultural land after rainy season.

A review of literature revealed that this lake had been studied for sarus crane by some researchers like Verma *et al.*, [1-5] and Prakash *et al.*, [6-8]. A limnological, zooplanktonic and phytoplanktonic study of this lake was done by Prakash *et al.*, [9-11] and Verma *et al.*, [12-13] while Prakash *et al.*, [14] and Verma *et al.*, [15] conducted the study of fish biodiversity of this lake.

2. Study Area
The Alwara Lake (Fig 1) is a natural lake (Fig 2) and a part of perennial wetland. It is surrounded by agricultural fields and connected to the river Yamuna and covers more than 1750 hectares. It is located in Sarsawan block of Manjhanpur tahsil of Kaushambi district of Uttar Pradesh. This lake is surrounded by Ranipur, Dundi, Hatwa and Bhawansuri in east, Paur Kashi Rampur, Alwara and Gaura in the north, Shahpur, Umrawan in the south and Mawai, Tikra and Dalelaganj in the west. It is situated between the latitude $25^0$24'05.84"S – $25^0$25'10.63"N and longitude $81^0$11'39.49"E-$81^0$12'57.95"W with altitude MSL – 81.08 meter.

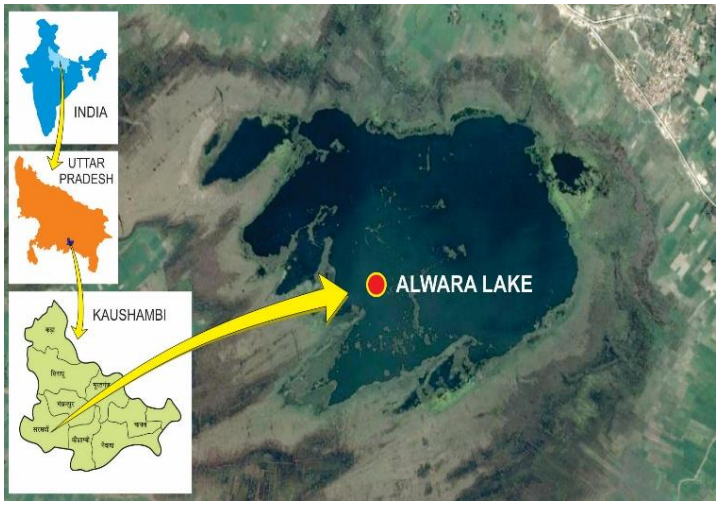

Fig 1: Location of study area in Kaushambi (U.P.)

Fig 2: A view of Alwara Lake in Kaushambi (U.P.) showing sarus cranes

3. Materials and Methods

Fishes were caught and collected for the present study from few sites of Alwara lake by hand-nets, gill nets, cast nets, hooks, drag nets with the help of local people and fisherman mainly during the time of fishing. Investigations regarding fish capture and collection were conducted twice in a month for the period of one year from January 2014 to December 2014.

Fishes were identified using the standard keys of Mishra (1959) [16], Day (1989) [17], Jhingran (1991) [18], Jayaram (1999) [19] and Srivastava (1998) [20]. Local people and fishermen also helped the author in various ways to complete the survey programme.

4. Results and Discussion

Prakash *et al.*, [14] and Verma *et al.*, [15] recorded and collected a total of 89 species of freshwater fishes belonging to 9 orders, 23 families and 45 genera from the sampling sites during the study period. Zoological names of these 89 different species of freshwater fishes recorded, with family, order and conservation status are shown in the table given.

Table 1: Different fish species with conservation status recorded from Alwara Lake in 2014

S. No.	Zoological name of fish	Family	Order	Conservation status
1.	*Catla catla*	Cyprinidae	Cypriniformes	NE
2.	*Labeo rohita*	Cyprinidae	Cypriniformes	LC
3.	*Labeo calbasu*	Cyprinidae	Cypriniformes	LC
4.	*Labeo bata*	Cyprinidae	Cypriniformes	LC
5.	*Labeo boga*	Cyprinidae	Cypriniformes	LC
6.	*Labeo(Bangana) dero*	Cyprinidae	Cypriniformes	LC
7.	*Labeo gonius*	Cyprinidae	Cypriniformes	LC
8.	*Labeo angra*	Cyprinidae	Cypriniformes	LC
9.	*Labeo pangusia*	Cyprinidae	Cypriniformes	NT
10.	*Cirrhinus mrigala*	Cyprinidae	Cypriniformes	LC
11.	*Cirrhinus reba*	Cyprinidae	Cypriniformes	LC
12.	*Cirrhinus chaudhryi* (*Cirrhinus cirrhosus)*	Cyprinidae	Cypriniformes	VU
13.	*Cyprinus carpio*	Cyprinidae	Cypriniformes	VU
14.	*Aspidoparia (Cabdio) morar*	Cyprinidae	Cypriniformes	LC
15.	*Aspidoparia jaya*	Cyprinidae	Cypriniformes	LC
16.	*Chela atpar*	Cyprinidae	Cypriniformes	NE
17.	*Chela laubuca*	Cyprinidae	Cypriniformes	NE
18.	*Amblypharyngodon mola*	Cyprinidae	Cypriniformes	LC
19.	*Amblypharyngodon microlepis*	Cyprinidae	Cypriniformes	LC
20.	*Tor tor*	Cyprinidae	Cypriniformes	NT
21.	*Tor putitora*	Cyprinidae	Cypriniformes	EN
22.	*Tor (Hypselobarbus) mussullah*	Cyprinidae	Cypriniformes	EN
23.	*Tor ishudree*	Cyprinidae	Cypriniformes	NE
24.	*Barilius bama*	Cyprinidae	Cypriniformes	NE
25.	*Barilius modestus*	Cyprinidae	Cypriniformes	NE
26.	*Barilius bendelisis*	Cyprinidae	Cypriniformes	LC
27.	*Barilius bota*	Cyprinidae	Cypriniformes	NE
28.	*Puntius sophore*	Cyprinidae	Cypriniformes	LC
29.	*Puntius conchonius*	Cyprinidae	Cypriniformes	LC
30.	*Puntius (Pethia) ticto*	Cyprinidae	Cypriniformes	LC
31.	*Puntius (Systomus) sarana*	Cyprinidae	Cypriniformes	LC
32.	*Puntius chola*	Cyprinidae	Cypriniformes	LC
33.	*Rasbora elanga*	Cyprinidae	Cypriniformes	NE
34.	*Rasbora daniconius*	Cyprinidae	Cypriniformes	LC
35.	*Chaguius chagunio*	Cyprinidae	Cypriniformes	NE
36.	*Danio devario*	Cyprinidae	Cypriniformes	NE
37.	*Esomus danricus*	Cyprinidae	Cypriniformes	LC
38.	*Garra gotyla*	Cyprinidae	Cypriniformes	LC
39.	*Osteobrama cotio*	Cyprinidae	Cypriniformes	LC
40.	*Oxygaster (Samophasia) bacaila*	Cyprinidae	Cypriniformes	LC
41.	*Oxygaster (Securicula) gora*	Cyprinidae	Cypriniformes	LC
42.	*Lepidocephalichthys guntea*	Cobitidae	Cypriniformes	LC
43.	*Botia dario*	Botiidae	Cypriniformes	LC
44.	Mystus seenghala	Bagridae	Siluriformes	NE
45.	*Mystus cavasious*	Bagridae	Siluriformes	LC
46.	*Mystus bleekeri*	Bagridae	Siluriformes	LC
47.	*Mystus (Hemibagurus) menoda*	Bagridae	Siluriformes	LC
48.	*Mystus tengara*	Bagridae	Siluriformes	LC
49.	*Mystus vittatus*	Bagridae	Siluriformes	LC
50.	*Mystus (Sperata) aor*	Bagridae	Siluriformes	LC
51.	*Rita rita*	Bagridae	Siluriformes	LC

52.	*Wallago attu*	Siluridae	Siluriformes	NT
53.	*Ompak pabda*	Siluridae	Siluriformes	NE
54.	*Bagarius bagarius*	Sisoridae	Siluriformes	NT
55.	*Clarias batrachus*	Clariidae	Siluriformes	LC
56.	*Clarias gareipinous*	Clariidae	Siluriformes	NE
57.	*Heteropneustes fossilis*	Saccobranchidae	Siluriformes	LC
58.	*Ailia coila*	Schilbeidae	Siluriformes	NT
59.	*Clupisoma garua*	Schilbeidae	Siluriformes	LC
60.	*Eutropiichthys murius*	Schilbeidae	Siluriformes	LC
61.	*Eutropiichthys vacha*	Schilbeidae	Siluriformes	LC
62.	*Channa punctatus*	Ophiocephalidae	Ophiocephaliformes	NE
63.	*Channa gachua*	Ophiocephalidae	Ophiocephaliformes	LC
64.	*Channa marulius*	Ophiocephalidae	Ophiocephaliformes	LC
65.	*Channa striatus*	Ophiocephalidae	Ophiocephaliformes	NE
66.	*Glossogobius giuris*	Gobiidae	Perciformes	LC
67.	*Chanda nama*	Ambassidae	Perciformes	LC
68.	*Chanda (Parambassis) ranga*	Ambassidae	Perciformes	LC
69.	*Chanda baculis*	Ambassidae	Perciformes	NE
70.	*Nandus nandus*	Nandidae	Perciformes	LC
71.	*Badis badis*	Badidae	Perciformes	LC
72.	*Anabas testudenius*	Anabantidae	Perciformes	NE
73.	*Anabas scandens*	Anabantidae	Perciformes	NE
74.	*Colisa chuna*	Osphronemidae	Perciformes	NE
75.	*Colisa fasciatus*	Osphronemidae	Perciformes	NE
76.	*Colisa lalius*	Osphronemidae	Perciformes	NE
77.	*Rhinomugil corsula*	Mugilidae	Mugiliformes	LC
78.	*Sicamugil cascasia*	Mugilidae	Mugiliformes	LC
79.	*Notopterus notopterus*	Notopteridae	Osteoglossiformes	LC
80.	*Notopterus chitala*	Notopteridae	Osteoglossiformes	LC
81. .	*Gudusia chapra*	Clupeidae	Clupeiformes	LC
82.	*Gonialosa manmina*	Clupeidae	Clupeiformes	LC
83.	*Setipinna phasa*	Engraulidae	Clupeiformes	LC
84.	*Xenentodon cancila*	Belonidae	Beloniformes	LC
85.	*Amphipnous (Monopterus) cuchia*	Synbranchidae	Synbranchiformes	LC
86.	*Mastacembelus pancalus*	Mastacembeleidae	Synbranchiformes	NE
87.	*Mastacembelus unicolar*	Mastacembeleidae	Synbranchiformes	NE
88.	*Mastacembelus armatus*	Mastacembeleidae	Synbranchiformes	LC
89.	*Mastacembelus aculeatus*	Mastacembeleidae	Synbranchiformes	NE

On the basis of rate of decline, population size, area of geographic distribution and degree of population, distribution fragmentation etc., IUCN (International Union for Conservation of Nature) Red List [21] classified the species into nine groups including EN (Endangered), VU (Vulnerable), NT (near threatened), LC (least concern) and NE (not evaluated).

During exploration, a total of 89 species of fishes belonging to 45 genera, 23 families and 9 orders were identified. As per latest version of IUCN Red List, out of these 89 species of fishes identified, 2 species come under EN (Endangered), 2 under UV (Vulnerable), 5 under NT (near threatened), 56 under LC (least concern) and 24 species are NE (not evaluated) so far.

5. Conclusion

Among the 89 species of fresh water fishes identified, 2 species are EN (Endangered), 2 are UV (Vulnerable), 5 are NT (near threatened), 56 LC (least concern) and 24 species are NE (not evaluated) so far.

The ecological climate and weather of this lake also support the survival of several endangered and vulnerable species of both plants and animals including sarus crane. A detailed study of this lake is therefore necessary to understand the biodiversity so that effective conservation action plan can be designed and implemented.

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7. References

1. Verma AK, Prakash S, Kumar Sunil. Status and Ecology of Sarus Crane, *Grus antigone antigone* in and around the Alwara Lake of District Kaushambi (U.P.). International Journal on Environmental Sciences. 2015; 6(2):331-335.
2. Verma AK, Prakash S. Demographic studies of Indian Sarus Crane, *Grus antigone antigone* in and around Alwara Lake of District Kaushambi (U.P.), India. International Journal of Innovative Biological Research. 2016a; 5(1):1-4 http://sci-edit.net/journal/index.php/ijibr/ issue/view/22/show Toc.
3. Verma AK, Prakash S, Kumar Sunil. Increasing population trends of Indian Sarus Crane, *Grus antigone antigone* (Linnaeus, 1758) in and around Alwara Lake of District Kaushambi (U.P.), India. International Journal of Environmental Biology. 2016b; 6(1):1-3. http://www.urpjournals.com/table_of_contents.php?journal ID=13.

4. Verma AK, Prakash S. Selective behaviour of Indian Sarus Crane in choosing plant species for nest construction in and around Alwara Lake of district Kaushambi (U.P.), India. International Journal of Zoology and Research. 2016c; 6(3):1-6.
5. Verma AK, Prakash S. Alwara lake: Good natural habitat for vulnerable avian species *Grus antigone antigone* (Linnaeus, 1758). Journal of the Kalash Science. 2016d; 4(1):45-47.
6. Prakash S, Verma AK. Marital fidelity and congregation of Indian sarus crane, *Grus antigone antigone* in and around Alwara lake of district Kaushambi (Uttar Pradesh), India: International Journal of Biological Research. 2016a; 4(1):10-13. http://www.science pubco. com/index. php/IJBR/article/view/5692.
7. Prakash S, Verma AK. Impact of awareness programme on growth and conservation of vulnerable avian species *Grus antigone antigone* in and around Alwara lake of District Kaushambi (Uttar Pradesh), India. The Journal of Zoology Studies. 2016b; 3(2):1-5.
8. Prakash S, Verma AK. Studies on Use of Local Medicinal Flora in Nest Building by Threatened Bird, *Grus antigone antigone* in and around Alwara Lake of District Kaushambi (U.P.), India. Journal of Applied Life Sciences International. 2016c; 5(3):1-7.
   DOI: 10.9734/JALSI/2016/26383.
9. Prakash S, Verma AK, Prakash S. Seasonal variation of Zooplankton and Zoobenthos Population in Alwara lake of District Kaushambi (U.P.) India. The Journal of Zoology Studies. 2015a; 2(5):13-16.
10. Prakash S, Verma AK, Kumar S, Mishra BK. Monthlies variations in phytoplankton density in Alwara lake of District- Kaushambi (U.P.). Global Journal for Research analysis 2015b; 4(12).
    DOI: 10.15373/22778160/December2015/62.
11. Prakash S, Verma AK, Prakash Sadguru. Limnological Studies of Alwara Lake of Kaushambi (Uttar Pradesh). International Journal on Biological Sciences 2015c; 6(2):141-144.
12. Verma AK, Prakash S, Mishra BK. Phytoplankton diversity in Alwara Lake of district Kaushambi (U.P.). Journal of Entomology and Zoology Studies. 2016e; 4(1):170-172.
13. Verma AK, Kumar S, Prakash S. Seasonal Correlation between physico-chemical factors and phytoplankton density in Alwara taal of Kaushambi, U. P., India. International Research Journal of Biological Sciences. 2016f; 5(3):40-45.
14. Prakash S, Verma AK. Studies on different fish genera in Alwara Lake of Kaushambi. Bioherald: An International Journal of Biodiversity & Environment. 2015d; 5(1-2):60-62.
15. Verma AK, Prakash S. Fish biodiversity of Alwara Lake of District Kaushambi, Uttar Pradesh, India. Research Journal of Animal, Veterinary and Fishery Sciences 2016g; 4(4):5-9.
16. Mishra KS. An aid to identification of the common commercial fishes of India and Pakistan. Record Indian Museum. 1959; 57:1-320.
17. Day F. The fauna of British India including Ceylon and Burma. Fishes Taylor and Francis, London 1989, 2.
18. Jhingran VG. Fish and Fisheries of India. Hindustan Publishing Corporation, Delhi, India, 1991.
19. Jayaram KC. The freshwater fishes of the Indian region. Narendra Publishing House, Delhi-110006, India 1999, 551.
20. Srivastava GJ. Fishes of U.P. and Bihar, Vishwavidalaya Prakashan Chowk, Varanasi, India, 1998.
21. The IUCN Red List of Threatened Species. Version 2015-4. <www.iucnredlist.org>. Downloaded on 25 March 2016.