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CHECK LIST OF ICHTHYOFAUNA OF GOBIND SAGAR RESERVOIR: YEARS 2009-2013

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Gobind Sagar reservoir was created due to construction of a dam across the River Sutlej at a place called Bhakra, in year 1963. This reservoir is located (31° 25' N; 76° 25' E) in Bilaspur and Una districts of Himachal Pradesh, India. Fish fauna of this Reservoir and its adjoining streams were studied during 2009-2013. Fish samples were caught using different types of fishing gears. Preservation of fish samples was done in 10 % formaldehyde solution. Total 40 fish species belonging to 29 genera, 04 orders (Cypriniformes, Siluriformes, Perciformes andSynbranchiformes) and 10 families (Cyprinidae, Nemacheilidae, Cobitidae, Bagridae, Schilbeidae, Amblycipitidae, Sisoridae, Clariidae Channidae and Mastacembelidae) were recorded from the Gobind Sagar Reservoir, nearby region of Sutlej River and its adjoining streams. Out of total (40) reported species in present study, status of 33 species have been evaluated and reported in CAMP workshop (1998).Out of these (33 species) 04 species have been assessed as endangered (EN), 11 species as vulnerable (VU), and 16 species as Lower Risk - Near Threatened (LRnt), 02 species as Lower Risk Least Concern (LRlc) in the CAMP Report (1998).

Key words: Ichthyofauna, Gobind Sagar Reservoir, Streams.

Gobind Sagar Reservoir is one of the largest reservoirs in India. Many perennial streams like Ali Khad, Seer Khad, Gambhar Khad, Gambhrola Khad, Lunkhar Khad, Sukkar Khad, Saryali Khad etc. joins this reservoir. These streams are rich in fish fauna. During early days ofthis reservoir formation, 36 species of fish belonging to 21 genera under 9families were collected from this reservoir, Sutlej River and associated waters (Bhatnagar, 1973). Fifty one species of fish including Brown trout Salmon trutta, Snow trouts *Schizothorax* spp. and several species of hill stream fishes were found in this reservoir(Anon., 1989, Johal *et al*., 1998).Fishing is being done in this reservoir and associated streams for commercial purpose. Fishes in the streams are facing pressures like illegal fishing,destructive fishing by dynamiting and excessive exploitation etc. Deposition of silt in the spawning grounds ispushing the fish species to the danger of population decline. Hill stream fishes are also facing the danger of habitat degradation due to removal of sand, gravel and stones etc. Use of gill nets with large mesh size in the reservoir area do not trap the small sized fishes hence small sized fishes escape the gears.This reservoir is being stocked with the seeds of Indian Major Carps (*Catla catla, Labeo rohita* and *Cirrhinus mrigala*) and Common Carp (*Cyprinus carpio)* every year to enhance the fish productivity.

MATERIALS AND METHODS

Fish specimens were procured with the help of fishermen who used the net with different mesh size. In the reservoir area gill nets with more than 5 cm, knot to knotmesh size were used. Small sized fish were caught with the help of line and rod. In the streams joining the reservoir, cast nets of different mesh sizes were used to catch the fish. Different regions of the reservoir and associated streams were surveyed every month for collection of fish fauna, from January, 2009 to December, 2013 except during the months of June and July when "closed season" was observed and no fishing was done. Fishes were kept in formaldehyde solution and brought to the laboratory for further meristic and morphometric study for identification, vide Talwar and Jhingran (1991) and Jayaram (1999). Fish were preserved in 10 % formaldehyde solution. Valid names for recorded fishes were adopted as per information available in fish base (Froese and Pauly, 2014). The IUCN status of recorded fishes was considered from the CAMP Workshop Report (Molur and Walker, 1998) and IUCN (2014).

RESULTS AND DISCUSSION

A total of 40 fish species belonging to 29 genera, 10 families and 4 orders (Cypriniformes, Siluriiformes, Perciformes and Synbranchiformes)were recorded from Gobind Sagar Reservoir and associated streams.Family Cyprinidae (60 %) dominated followed by Channidae (7.5%), Sisoridae (7.5 %),Nemacheilidae (5 %), Cobitidae (5 %),Bagridae (5 %),Schilbeidae (2.5 % , Amblycipitidae (2.5 %), Clariidae (2.5

Table 1: Ichthyofauna recorded from Gobind Sagar Reservoir and adjoining streams during years 2009-2013.

Sr. No.	Fish species	Family	Order	IUCN status (CAMP Report 1998)	IUCN status (IUCN Red List 2014)
1.	*Catla catla*	Cyprinidae	Cypriniformes	VU	LC
2.	*Cirrhinus mrigala*	Cyprinidae	Cypriniformes	LRnt	LC
3.	*Cirrhinus reba*	Cyprinidae	Cypriniformes	VU	LC
4.	*Ctenopharyngodon idella*	Cyprinidae	Cypriniformes	NE	NE
5.	*Cyprinus carpio*	Cyprinidae	Cypriniformes	NE	VU
6.	*Labeo bata*	Cyprinidae	Cypriniformes	LRnt	LC
7.	*Labeo calbasu*	Cyprinidae	Cypriniformes	LRnt	LC
8.	*Bangana dero* (syn. *Labeo dero*)	Cyprinidae	Cypriniformes	VU	LC
9.	*Labeo dyocheilus*	Cyprinidae	Cypriniformes	VU	LC
10.	*Labeo rohita*	Cyprinidae	Cypriniformes	LRnt	LC
11.	*Systomus sarana* (syn. *Puntius sarana*)	Cyprinidae	Cypriniformes	VU	LC
12.	*Puntius sophore*	Cyprinidae	Cypriniformes	LRnt	LC
13.	*Pethia ticto* (syn. *Puntius ticto*)	Cyprinidae	Cypriniformes	LRnt	LC
14.	*Tor putitora*	Cyprinidae	Cypriniformes	EN	EN
15.	*Salmophasia bacaila* (*syn. Salmstoma bacaila*)	Cyprinidae	Cypriniformes	LRlc	LC
16.	*Hypophthalmichthys molitrix*	Cyprinidae	Cypriniformes	NE	NT
17.	*Barilius barila*	Cyprinidae	Cypriniformes	VU	LC
18.	*Barilius bendelisis*	Cyprinidae	Cypriniformes	LRnt	LC
19.	*Barilius vagra*	Cyprinidae	Cypriniformes	VU	LC
20.	*Danio rerio*	Cyprinidae	Cypriniformes	LRnt	LC
21.	*Rasbora daniconius*	Cyprinidae	Cypriniformes	LRnt	LC
22.	*Schizothorax richardsonii*	Cyprinidae	Cypriniformes	VU	VU
23.	*Crossocheilus diplochilus*	Cyprinidae	Cypriniformes	NE	NE
24.	*Garra gotyla*	Cyprinidae	Cypriniformes	VU	LC
25.	*Schistura rupecula (syn. Nemacheilus rupecula)*	Nemacheilidae	Cypriniformes	LRnt	LC
26.	*Acanthocobitis botia* (syn. *Nemacheilus botia*)	Nemacheilidae	Cypriniformes	LRnt	LC
27.	*Botia birdi*	Cobitidae	Cypriniformes	LRnt	NE
28.	*Botia lohachata*	Cobitidae	Cypriniformes	EN	NE
29.	*Sperata seenghala (syn. Aorichthys seenghala)*	Bagridae	Siluriformes	NE	LC
30.	*Rita rita*	Bagridae	Siluriformes	LRnt	LC
31.	*Eutropiichthys vacha*	Schilbeidae	Siluriformes	EN	LC
32.	*Amblyceps mangois*	Amblycipitidae	Siluriformes	LRnt	LC
33.	*Glyptothorax cavia*	Sisoridae	Siluriformes	EN	LC
34.	*Glyptothorax conirostris*	Sisoridae	Siluriformes	NE	DD
35.	*Glyptothorax pectinopterus*	Sisoridae	Siluriformes	LRnt	LC
36.	*Clarias batrachus*	Clariidae	Siluriformes	VU	LC
37.	*Channa gachua*	Channidae	Perciformes	VU	LC
38.	*Channa punctate*	Channidae	Perciformes	LRnt	LC
39.	*Channa striata*	Channidae	Perciformes	LRlc	LC
40.	*Mastacembelus armatus*	Mastacembelidae	Synbranchiformes	NE	LC

EN- endangered; VU - vulnerable; NE- not evaluated; NT- not threatened;DD- data deficient; LRlc- Low risk least concern; LRnt- Low risk near threatened; LC- least concern.

%) and Mastacemblidae (2.5 %).*Catla catla* (Catla), *Labeo rohita* (Rohu), *Cirrhinus mrigala* (Mrigal), S*perata seenghala* (Singhara), *Cyprinus carpio* (Common carp), *Tor putitora* (Mahser), *Bangana dero* (Gid), *Labeo calbasu* (Kalbans) and *Ctenopharyngodon idella* (Grass carp) were found to be the fish species of commercial importance.In streams*Tor putitora*(Mahser), *Bangana dero* (Gid), *L. dyocheilus*, *Bariliusvagra, B. barila, B. bendelisis, Pethiaticto, Garragotyla* etc. were abundant (Table 1).

Number of fish species have declined as per the previous record of fish fauna of the Gobind Sagar Reservoir.Conservation status to 33 species has been designated in CAMP Workshop (1998). Out of these 33 species, 04 species (*Tor putitora, Botialohachata, Eutropiichthysvacha* and *Glyptothoraxcavia*) have been assessed as endangered (EN), 11 species as vulnerable (*Catla catla, Cirrhinus reba, Bangana dero, L. dyocheilus, Systomus sarana, Barilius barila, B. vagra, Schizothoraxr ichardsonii, Garra gotyla, Clarias batrachus* and *Channa gachua*), 16 species as Lower Risk - Near Threatened (*Cirrhinus mrigala, Labeo bata,Labeo calbasu, Labeo rohita, Puntius sophore, Pethiaticto, Barilius bendelisis, Danio rerio, Rasbora daniconius, Schisturaru pecula, Acanthocobitis botia, Botiabirdi, Rita rita, Amblyceps mangois, Glyptothorax pectinopterus* and *Channa punctata*), 02 species (*Channa striata* and *Salmo phasia bacaila*) as Lower Risk Least Concern (LRlc) in the CAMP Report (1998).

CONCLUSION

Forty fish species belonging to 29 genera, 10 families and 4 orders were recorded from Gobind Sagar Reservoir and its associated streams. Fish conservation measures can play an important role to protect the further decline of fish fauna of this reservoir and associated streams. Conservation measures likemesh size regulation, fixed minimum harvestable size, observing the "closed season", protection of the habitat and checking the destructive fishing were playing an important role in the conservation of fishes in thisreservoir and the associated streams.

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