UTTAR PRADESH JOURNAL OF ZOOLOGY

43(13): 46-50, 2022
ISSN: 0256-971X (P)

SEASON WISE FISH CATCH BY FISHERIES CO-OPERATIVE SOCIETY BERRIANWALA FROM GOBIND SAGAR RESERVOIR DURING THREE YEARS

KRISHAN LAL [a*]

[a] Department of Zoology, NSCBM Govt. College, Hamirpur (H. P.), India.

AUTHOR'S CONTRIBUTION

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.56557/UPJOZ/2022/v43i133084

Editor(s):
(1) Dr. Osama Anwer Saeed, University of Anbar, Iraq.
(2) Dr. Luis Enrique Ibarra Morales, State University of Sonora, Mexico.
(3) Dr. Telat Yanik, Atatürk University, Turkey.
Reviewers:
(1) Z. Kiamehr, Chabahar Maritime University, Iran.
(2) Neetu Nimesh, Chaudhary Charan Singh University, India.
(3) Janice Peixer, Instituto Federal de Educação, Brazil.

Received: 27 April 2022
Accepted: 01 July 2022
Published: 07 July 2022

Original Research Article

ABSTRACT

Gobind Sagar Reservoir is one of the large reservoirs in Himachal Pradesh. This reservoir has been created by damming River Sutlej at Bhakra in 1963. Different fisheries co-operative societies are working in Gobind Sagar reservoir. Fisheries co-operative society Berrianwala is one of these co-operatives. Data about fish caught by co-operative society Berrianwala, during years 2014, 2015 and 2016, was obtained from the state fisheries department of Himachal Pradesh Govt. No fishing was done by fishermen during the June-July months for conservation reasons. As this reservoir is large reservoir, gill nets are suitable gears for operating, catching the fish. Size of the gill nets used was 80 meters X 5 meters. *Catla catla, Labeo rohita, Cyprinus carpio, Hypophthalmichthys molitrix, Cirrhina mrigala, Ctenopharyngodon idella, Tor putitora, Labeo calbasu* were some of the fish caught for commercial purpose. Due to flash floods, *H. molitrix* (silver carp) have got accidently introduced in this reservoir, in year 1971 from the tanks at Ghagus where it was kept. After the accidental introduction in this reservoir, it is flourishing very well. Different co-operatives working in this reservoir have been allotted specific beats for the administrative reasons. Co-operative society Berrianwala is one of the co-operatives working for fisheries in the Gobind Sagar reservoir. Fishing activities are being performed under the supervision of state fisheries department.

During year 2014, number of fish caught by Berrianwala co-operative were 9014 weighing 20090 kg., during 2015 it remained 7807 (21174.5 kg) and in year 2016 it was 6227 (18092 kg). Different conservation measures were in practice. Season wise variation in fish, caught by Barrianwala co-operative, was recorded.

Keywords: Fishermen; fish species; fish co-operative society.

**Corresponding author: Email: krishanlaldaroch@gmail.com;*

1. INTRODUCTION

Gobind Sagar Reservoir is one of the large reservoirs in Himachal Pradesh. This reservoir has been created by damming River Sutlej at Bhakra in 1963.Thirty two fisheries co-operative societies were working in Gobind Sagar reservoir till year 2016. These co-operatives works in their allotted area of operations / beat(s). There were eight beats and eight landing centers in this reservoir. Sixty four fishermen were working under the fisheries co-operative society, Berrianwala. There are different welfare schemes for the fishermen. Fishermen hand over their catch to the concerned co-operative which further sell the catch to the concerned contractor at the rate already fixed. Contractor further sells the purchased fish.

Fish yield estimated by Jhingran [1] from Gobind Sagar Reservoir was 276 kg/ ha/year. For checking the dwindling of *Catla catla* from Gobind Sagar Reservoir, Kaushal [2] felt need to exploit silver carp intensively and stocking the fingerlings of *Catla catla* and *Labeo rohita.* According to Dua [3], deposition of silt resulted in rise of water temperature in Gobind Sagar Reservoir, consequently resulted in drastic declining trend in catch of *Labeo dero*, *Schizothorax plagiostomus* and *Tor putitora* fishes. After the establishment of *C. carpio* in 1975-76 and *H. molitrix* in 1984-85 declining trend in catch of *Tor putitora* was recorded by Sandhu et al. [4] from Govindsagar Reservoir. Before the creation of this reservoir (before year 1959) the fishing activity was limited to use of cast nets and angling targeted to catch the Mahseer, *Labeo dero* and *Schizothorax spp.* [5]. According to Johal et al. [6], due to rise in productivity of silver carp and common carp (exotic fishes), native fish species declined in Gobind Sagar reservoir during years 1981-1998. According to Katiha et al. [7] enforcement of different measures like mesh size regulation and catch weight regulation, observing the close season and rational fish stocking should be followed for increasing the fish production from Gobind Sagar Reservoir and Pong Reservoir. Upstream migration of silver carp got restricted due to construction of Kol dam across Sutlej River, consequently catch of silver carp remained high, 83% in 2001-02, 85% in 2002-03. Thereafter in 2003-04, this catch dwindled to 76.9% due to failure of natural breeding [8]. Tyagi et al. [9] have concluded that effective functioning of fisheries co-operative societies and greater efforts by state fisheries department, have resulted in conservation in Himachal Pradesh. Fish species of Gobind Sagar Reservoir were recorded by Lal and Dua [10].

2. MATERIALS AND METHODS

Data included in this paper was obtained from state fisheries department of Himachal Pradesh Govt. Only licensed fishermen were allowed to catch the fish, using the gill nets having knot to knot mesh size more than 5 cm. Close season was observed during June and July months due to breeding season. Fish caught during March, April and May was included under summer season. Catch during August, September and October was included under Monsoon season (also including Post Monsoon season in it). November, December, January and February were included under winter season. Commercial fish caught were *Catla catla*, *Labeo rohita*, *Cirrhinus mrigala*, *Cyprinus carpio*, *Tor putitora*, *Labeo calbasu*, *Sperata seenghala*. Fishing gears were applied during the afternoon hours. Fish trapped in the nets was collected next morning hours. Fish having size less than the harvestable size was released back in the reservoir, unharmed. Caught fish was handed over by the fishermen to their concerned co-operative society. Fisheries co-operative society further hand over the caught fish to the concerned contractors. Fish contractors provide the already fixed price of the fish to the co-operative. Further sale of the fish is carried on by the contractor. State fisheries department earns 15% royalty on the sold fish. Fish conservation measures are also practiced. Mesh size regulation, close season, fishing only by licensed fishermen, seed stocking, not harvesting of fish having size less than harvestable size are some of the measures for fish conservation.

3. RESULTS AND DISCUSSION

Maximum catch was consists of *Hypophthalmichthys molitrix* (silver carp) and *Cyprinus carpio* (Common carp). Total number of fish caught during years 2014-2016, were 23048 (weighing 59356.5 kg). During the winter season of 2014-15, 4861 fishes, weighing 8246.5 kg were caught. During the winter of 2015-16, number of fishes caught remained 1204, weighing 3134.5 kg, during the winter (November-December) of 2016 catch of fish remained 711 (weighing 2275 kg). Close season was observed during June-July months. During the Monsoon (also including post monsoon period) 3229 (8485 kg), 2496 (7549 kg) 2277 (7184.5 kg) fishes were caught in years 2014, 2015 and 2016 respectively (Table 1, 2, 3, 4). There remained a decline in fish catch during monsoon period these years. During summer season 3301 (8400 kg), 2582 (7672 kg) and 2387 (6410 kg) of fish were caught by Berrianwala fisheries co-operative during years 2014, 2015, 2016 respectively. Catch of *Cirrhinus mrigala* and *Ctenopharyngodon idella* remained negligible. Out of total catch by Berrianwala co-operative during years 2014 to 2016, more than 82% catch (94% by weight) was belonging to the *H. molitrix*. *Cyprinus carpio* was 3.4% (2.4% by weight). Fisheries co-operative society Berrianwala was

Table 1. Fish catch (number) by fisheries co-operative society Berrianwala (Source: State Fisheries Department Himachal Pradesh Govt.)

	Catla catla	*Labeo rohita*	*Cirrhinus mrigala*	*Sperata seenghala*	*C. idella*	*Cyprinus carpio*	*Tor putitora*	*H. molitrix*	*L. dero / L. bata*	**Total**
Year 2014	26	10	7	29	2	353	26	6925	1636	9014
Year 2015	13	24		45	4	248	92	6651	730	7807
Year 2016	27	83		54	1	631	77	5354		6227

Table 2. Fish catch (weight in kg) by fisheries co-operative society Berrianwala (Source: State Fisheries Department Himachal Pradesh Govt.)

	Catla catla	*Labeo rohita*	*Cirrhinus mrigala*	*Sperata seenghala*	*C. idella*	*Cyprinus carpio*	*Tor putitora*	*H. molitrix*	*L. dero / L. bata*	**Total**
Year 2014	219.5	20	17	48	16	423	47	18799	500.5	20090
Year 2015	125.5	44		72.5	29.5	302	155	20235.5	210.5	21174.5
Year 2016	196	193.5		99	8	708.5	133	16754		18092

Table 3. Season wise fish catch (number) by fisheries co-operative society Berrianwala during years 2014-16 (Source: State Fisheries Department Himachal Pradesh Govt.)

	2014			**2015**				**2016**			**Total (Years 2014-2016)**
	Summer Season (April – May)	**Monsoon /post monsoon Season (August-October)**	**Winter Season (November-December)**	**Winter Season (January – February)**	**Summer Season (March– May)**	**Monsoon Season / post monsoon post monsoon (August-October)**	**Winter Season (November-December)**	**Winter Season (January – February)**	**Summer Season (March– May)**	**Monsoon / post monsoon Season (August-October)**	**Winter Season (November-December)**	
Catla catla	3	20	3	1	4	5	3	5	18	2	2	66
Labeo rohita	2	6	2	2	2	11	9	6	55	10	12	117
Cirrhinus mrigala	7	0	0	0	0	0	0	0	0	0	0	7
Sperata seenghala	3	22	4	7	13	19	6	11	24	13	6	128
C. idella	1	1	0	1	2	0	1	0	1	0	0	7
Cyprinus carpio	84	256	13	10	15	169	54	146	237	173	75	1232
Tor putitora	14	8	4	23	5	31	33	47	23	7	0	195
H. molitrix	3057	2916	952	1603	2541	2261	246	637	2029	2072	616	18930
L. dero / L. bata	130	0	1506	730	0	0	0	0	0	0	0	2366
Total	3301	3229	2484	2377	2582	2496	352	852	2387	2277	711	
	9014			7807					6227			23048

Table 4. Season wise fish catch (weight in kg) by fisheries co-operative society Berrianwala during years 2014-16 (Source: State Fisheries Department Himachal Pradesh Govt.)

	2014				2015				2016			Total (Years 2014-2016)
	Summer Season (April – May)	**Monsoon Season / post monsoon post monsoon (August-October)**	**Winter Season (November-December)**	**Winter Season (January – February)**	**Summer Season (March– May)**	**Monsoon Season / post monsoon (August-October)**	**Winter Season (November-December)**	**Winter Season (January – February)**	**Summer Season (March–May)**	**Monsoon / post monsoon Season (August-October)**	**Winter Season (November-December)**	
Catla catla	30.5	171	18	10.5	50.5	42	22.5	28	121	25.5	21.5	541
Labeo rohita	4	11.5	4.5	3	6	16.5	18.5	13	130.5	23	27	257.5
Cirrhinus mrigala	17	0	0	0	0	0	0	0	0	0	0	17
Sperata seenghala	8.5	30.5	9	15.5	28.5	21	7.5	16.5	53.5	21.5	7.5	219.5
C. idella	8	8	0	8	15.5	0	6	0	8	0	0	53.5
Cyprinus carpio	117	291.5	14.5	21	18	198.5	64.5	172	262.5	191	83	1433.5
Tor putitora	25	14	8	42	5	61	47	80.5	33.5	19	0	335
H. molitrix	8153	7958.5	2687.5	4731	7548.5	7210	746	1912.5	5801	6904.5	2136	55788.5
L. dero / L. bata	37	0	463.5	210.5	0	0	0	0	0	0	0	711
	8400	8485	3205	5041.5	7672	7549	912	2222.5	6410	7184.5	2275	
Total	20090			21174.5					18092			59356.5

helping in scientific management of the reservoir fisheries in the area of it's operations. Fishing activities by this co-operative were also helping in the poverty alleviation of this co-operative. Proper record of fish catch was maintained by state fisheries department and co-operative society. This record shall be helpful in framing the policies accordingly. State fisheries department also keeps a strict vigil over the fishing activities to check the illegal fishing. Seed stocking was also being done from time to time for increasing the fish production and fish conservation.

4. CONCLUSION

Hypophthalmichthys molitrix and *Cyprinus carpio* were maximum in number. *H. molitrix* (silver carp) is getting autostocked in Gobind Sagar Reservoir. *Cyprinus carpio* and Indian Major Carps were being stocked regularly in Gobind Sagar Reservoir. *Ctenopharyngodon idella* was very less in catch. It may be due to the lack of aquatic weeds in the reservoir.

ACKNOWLEDGEMENT

Author is thankful to the state fisheries department of Himachal Pradesh Govt. for providing the fish catch data.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Jhingran VG. Fish and fisheries of India. Hindustan Publishing Corporation, New Delhi, India. 1982;pp 666
2. Kaushal DK. Dwindling *Catla catla* population of Gobindsagar Reservoir. Indian Journal of Fisheries. 1991;38(4):245-248.
3. Dua, A. Fisheries in Gobindsagar. Fishing Chimes. 1993;13 (9):53-54.
4. Sandhu GS, Tandon KK, Johal MS. Growth studies on an endangered fish Tor putitora (Hamilton) from Govindsagar (H. P.), India. In:Dehadrai, P.V., Das P. and Verma, S. R. (eds.) Proceedings of National Seminar on endangered fishes of India. Natcon Publication, NBFGR Allahabad, India. 1994;4:137-142.
5. Sugunan VV. Reservoir fisheries of India. FAO Fisheries Technical Paper 345. FAO Rome. 1995;1- 423.
6. Johal MS, Tandon KK, Esmaeili HR. Exotic introductions and changing fish composition in Gobindsagar. Proceedings of Indo-US Workshop on Conservation and Development of Natural Fishery Resources of Western Himalayas, Panjab University Chandigarh, India. 1998;70-81.
7. Katiha PK, Negi YS, Tewari SC. Management of Reservoir Fisheries- a study in Himachal Pradesh. Journal of Inland Fisheries Society of India. 2001;33 (2):15-22.
8. Sharma, B. D. Fisheries development in gobind sagar reservoir. Fishing Chimes. 2007;27 (1):112-114.
9. Tyagi LK, Pal A, Bisht AS, Lakra WS. Conservation orientation and fishes in Northern India. Indian Research Journal of Extension Education. 2008;8(2-3):46-50.
10. Lal K, Dua A. Checklist of Ichthyofauna of Gobind Sagar Reservoir:Years 2009-2013. J. Env. Bioscience. 2018;32(2) 213-215.