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Fish Catch by Fisheries Co-operative Society Mandli from Gobind Sagar Reservoir (Himachal Pradesh), India, during four years

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ABSTRACT

Gobind Sagar Reservoir has been created by damming Sutlej River at village Bhakra in 1963. Thirty two fisheries co-operative societies were working in this reservoir during year 2015-16. Fisheries co-operative society Mandli is one of the co-operative societies operating in Gobind Sagar Reservoir. This co-operative was established in year 1977-78. It has 76 fishermen and it works in beat No. 1 and 2. Fish catch data was obtained from state fisheries department of Himachal Pradesh Govt. This paper is based on the catch data of all fish species caught during 2013 to 2016. Close season during monsoon season was observed for two months (June and July) every year. No fishing was done during this period. There were eight landing centers in this reservoir. Reservoir has been divided in eight beats for administrative reasons.

Key words : Fishermen, Gillnets, Fish species.

Introduction

Fish production is important for food security of a nation. Fish is a source of the cheap animal protein for poor people. There are fresh water sources and marine water sources in India. Himachal Pradesh has streams, Rivers and Reservoirs. Some of the reservoirs are Gobind Sagar Reservoir, Pong Reservoir, Koldam Reservoir, Pandoh Reservoir and Chamera Reservoir. Gobind Sagar Reservoir is one of the large reservoirs. Large share of the fish is being produced by this reservoir in Himachal Pradesh. *Hypophthalmichthys molitrix* (silver carp) have got accidentally introduced in this reservoir in year 1971. It is flourishing well in this reservoir. Indian Major Carps and *Cyprinus carpio* are being stocked regularly to enhance the fish production.

Jhingran (1982) estimated the fish yield from Gobind Sagar Reservoir as 276 kg/ ha/year. Fisher-

men started fisheries operations in Gobind Sagar Reservoir in 1964-65 with the use of 16 nets (Sugunan, 1995). Das *et al.* (2008) studied the management strategies for enhancing fish production in reservoirs of Madhya Pradesh, by active involvement of fisheries co-operatives, mesh size regulation, no fishing during monsoon, and self-sufficiency in seed for stocking. According to Negi (2008) decline in catch of both Gobind Sagar Reservoir and Pong Reservoir was observed which may be due to the impact of hydropower projects constructed across the Rivers Sutlej and Beas respectively. According to Huang *et al.* (2001), in Chinese reservoirs more than 60 % of total catch was consist of silver carp and big-head carp. According to Dua (1993) deposition of silt has resulted in raised temperature of water in Gobind Sagar Reservoir, consequently it resulted in declining trend in catch of *Labeo dero*, *Schizothorax plagiostomus* and *Tor putitora*. Johal *et al.* (1998) re-

corded a rise in silver carp and common carp during years 1981-1998, and a decline in native fish of Gobind Sagar Reservoir. Katiha *et al.* (2001) suggested enforced conservation measures like mesh size regulation, catch weight regulation, observing close season and rational fish stocking for increasing the fish production in Gobind Sagar Reservoir and Pong Reservoir. According to Sharma (2007), construction of Kol Dam across River Sutlej, resulted in creating obstacle for fish migration, so 83 % silver carp got caught in year 2001-02. In year 2002-03 this catch remained 85 % but it dwindled to 76.9 % in year 2003-04 due to failure of natural breeding. Lal and Dua (2018) studied fish fauna of Gobind Sagar Reservoir during years 2009-13 and prepared a checklist. Inland fish production in India during year 2015-16 remained 71.62 lakh tons, including 0.12 lakh tons in Himachal Pradesh (Handbook on Fisheries statistics, 2020).

Fishing is helping the fishermen in poverty alleviation. There are different schemes for the welfare of fishermen. Fishermen hand over the caught fish to their co-operative society which further sells the fish to the concerned contractor. After providing 15 % royalty to the state fisheries department and deduction of other expenditure, earned amount is provided to the fishermen (members) of the co-operative. There are some welfare schemes also for the welfare of the fishermen. Fishermen also helps in the conservation of fish. Fish which have not attained the minimum harvestable size was not caught by the fishermen. State fisheries department keeps a strict vigil on the fishing activities to stop the poaching.

Materials and Methods

Data used in this paper was obtained from state fisheries department of Himachal Pradesh Govt. Fish was caught by using gill nets. Gill nets were applied during the afternoon hours and caught fish was collected next morning. Knot to knot mesh size of the gill net used was more than 5 cm. Record keeping of the fish catch was done by the state fisheries department.

Results and Discussion

Sufficient fish catch was obtained from Gobind Sagar Reservoir by Fisheries co-operative society Mandli. Total individuals of all fishes collected by fisheries co-operative society Mandli was 98,921

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

	<i>Catla catla</i>	<i>Labeo rohita</i>	<i>Cirrhinus mrigala</i>	<i>Sperata seenghala</i>	<i>C. Idella</i>	<i>Cyprinus carpio</i>	<i>Tor putitora</i>	<i>H. molitrix</i>	<i>L. calbasu</i>	Total
Year 2013	2247	422	3602	1088	20	12086	455	10104	61	30085
Year 2014	1082	444	4293	1168	51	15018	1174	6343	177	29750
Year 2015	231	1061	2598	874	54	13588	1538	3394	76	23414
Year 2016	304	840	1575	667	11	9428	1500	1158	189	15672
Total	3864	2767	12068	3797	136	50120	4667	20999	503	98921

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

	<i>Catla catla</i>	<i>Labeo rohita</i>	<i>Cirrhinus mrigala</i>	<i>Sperata seenghala</i>	<i>C. idella</i>	<i>Cyprinus carpio</i>	<i>Tor putitora</i>	<i>H. molitrix</i>	<i>L.. calbasu</i>	Total
Year 2013	13908.4	485.9	3086.8	1097.2	38.5	8776.1	651.5	18088.1	43.4	46214.9
Year 2014	6375.3	600.4	4216.6	1162.8	175.4	11236.9	1538.5	12739.5	184	38229.4
Year 2015	1738.1	1470.3	2733.9	1001.7	235	9815.5	1882	7200.1	81.5	26158.1
Year 2016	1952.9	1348.5	1732.3	764.1	84.5	8353.7	1744.9	2663.9	394.5	19039.3
Total	23974.7	3905.1	11769.6	4025.8	533.4	38182.2	5816.9	40691.6	703.4	129641.7

(1,29,641.7 kg) during years 2013 to 2016 (Table 3, 4). Decline in the fish catch was observed during years 2013 to 2016. Number of individuals of *C. idella* and *L. calbasu* was very less in catch. Only 11 individuals of *C. idella* (in year 2016) and 61 of *L. calbasu* (in year 2013). Total individuals of *C. idella* were 136 only and *L. calbasu* were 503 only during these four years. Maximum catch was belonging to *Cyprinus carpio*, 50,120 individuals (weighing 38,182.2 kg) and *H. molitrix*, 20,999 individuals (weighing 40,691.6 kg). Declining trend was observed in the catch of *H. molitrix* during years 2013 to 2016 (Table 1, 2). Indian Major Carps and *Cyprinus carpio* were stocked regularly in this reservoir. Fish was caught for commercial purpose. As this reservoir is a large reservoir, gill nets were used for catching the fish.

Conclusion

This co-operative society was doing very well. Fishing is helping this co-operative society in poverty alleviation. Out of total number of fish caught by Mandli co-operative 51 % (29.45 % by weight) was *Cyprinus carpio*. *H. molitrix* in total catch remained 21.2 % during these years, by fisheries co-operative Mandli. Contribution of *Cirrhina mrigala* remained 12 %. Indian Major Carps and *Cyprinus carpio* are being stocked regularly. *Labeo dero* was lacking in the catch of this co-operative.

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