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Statistics of Fish Catch from Gobind Sagar Reservoir by Fisheries Co-operative Society Chilt Thera, during four years

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ABSTRACT

There are many reservoirs in India. Gobind Sagar Reservoir has been created by damming River Sutlej at village Bhakra in 1963. This reservoir is located in Himachal Pradesh, India. Fishermen working in this reservoir have organized themselves in the form of fisheries co-operative societies. Fisheries co-operative society Chilt Thera is one of these co-operatives. Data of fish caught by fisheries co-operative society Chilt Thera during September 2013 to December 2016, has been included in this study. Area of operations have been fixed for different co-operatives by the state department of fisheries, for administrative reasons. Gill nets were applied during afternoon hours and collected next morning. Only licensed fishermen are allowed to catch the fish. Fishermen hand over their catch to their concerned co-operative which further sells the fish to the concerned contractors at the already fixed price. Close season was observed for two months during monsoon season every year, for fish conservation. *Cirrhina mrigala* was very less in catch (8 individuals weighing 20 kg). *Labeo calbasu* was not in catch of this co-operative, during this period. Catch of *Ctenopharyngodon idella* was very less. Fish catch was dominated by the *Hypophthalmichthys molitrix* (silver carp) and *Cyprinus carpio* (Common Carp). *H. molitrix* have got accidentally entered in the reservoir. Seed stocking of *Cyprinus carpio* and Indian Major Carps is being done regularly.

Key words: Gill nets, Close season, Fishermen.

Introduction

Fish is a source of cheap animal protein. Himachal Pradesh has streams, Rivers and reservoirs. Gobind Sagar Reservoir is one of these reservoirs. Due to changed ecological conditions after the creation of reservoir fish fauna also got changed. Fishermen have organized themselves into fisheries co-operative societies. Fish catch depends on the number of active fishermen involved in fishing, mesh size of gillnets used, availability of fish, duration of fishing etc. There are different welfare schemes for the fishermen. *Catla catla*, *Lebeo rohita*, *Cirrhinus mrigala*,

Sperata seenghala, *Tor putitora*, *Cyprinus carpio*, *Hypophthalmichthys molitrix* and *Ctenopharyngodon idella* are some of the fishes occurring in Gobind Sagar Reservoir. *H. molitrix* (silver carp) have got entered in this reservoir accidentally in 1971. Environmental conditions are suitable for this carp in this reservoir, so it is proliferating very well in this reservoir. *Cyprinus carpio* is being stocked in this reservoir, regularly. Minimum harvestable size have been fixed for catching the fishes. Fisheries is being managed scientifically by the fisheries co-operatives and state fisheries department. State fisheries department earns 15 percent royalty over the sold fish.

Materials and Methods

Data of fish caught by fisheries co-operative for years 2013 to 2016, was obtained from state department of fisheries Himachal Pradesh Govt. Fishes were caught by licensed fishermen only. Fishes have been caught using gillnets. No fish was caught during June and July months due to fish conservation. Fish having size less than the harvestable size were not caught. When any fish having size less than the harvestable size got trapped in the gill net, it was released back in the reservoir, unharmed. Size of the gill net was 80 meters X 5 meters. Minimum harvestable size is 50 cm for *Tor putitora*, 45 cm for *H. molitrix*, 30 cm for *Cyprinus carpio*, 45 cm for *Catla catla* and 40 cm for *Labeo rohita*. Fishing operations were observed by visiting the reservoir at monthly intervals.

Result and Discussion

Cyprinus carpio and *H. molitrix* dominated the catch. *Labeo calbasu* (kalbas) was not in fish catch of this co-operative society, during this period. Regular stocking of *C. carpio* was being done by the state department of fisheries. *H. molitrix* (silver carp) was getting auto-stocked. Silver carp matured after 5-6 years in North China, 4-5 years in Central China and after 2-3 years in South China. After the induced breeding experiments were performed on Silver carp, at Cuttack, Jhingran and Natarajan (1978) recorded that it matured just after one year. Johal *et al.* (1998) recorded increased productivity of silver carp and common carp, during 1981-1998, in Gobind Sagar Reservoir, but decline of native fish species during this period. Sharma (2007) recorded that catch of silver carp from Kol Dam, upstream the Gobind Sagar Reservoir, remained 83 % in year 2001-02, 85 % in year 2002-03 and declined to 76.9 % in year 2003-04, due to failure of natural breeding. Fishing activity was mainly limited to fishing of *Labeo dero*, *Mahser* and *Schizothorax spp.* (Sugunan, 1995) by using the cast nets before the creation of Gobind Sagar Reservoir. According to Rao (2007) stocking programs are successful in medium and large reservoirs if stocked fish breed and get established in the reservoir. According to Sharma (2004) fishermen of Gobind Sagar Reservoir were in better position but more was needed to be done for more growth and development of fisheries co-operatives. According to Sakhare (2007), most of fish catch from

Yeldari reservoir was during monsoon season. According to FAO (2021) statistics, India was on 3rd position (5.9 percent) in world in total capture fishery after China (15.1 percent) and Indonesia (8.1 percent) in 2019.

Total annual fish catch by fisheries co-operative society Chilt Thera was 5103 (9383 kg), 20525 (45978 kg), 12937 (36560 kg), 12490 (37985 kg) during years 2013, 2014, 2015 and 2016 respectively. Total catch by this co-operative during years 2013 to 2016, was 51055 (129906 kg). During these years total 51055 fish (weighing 129906 kg) was caught by this co-operative (Table 1). During year 2013, 1972 fish individuals were belonging to *Cyprinus carpio* and 2733 individuals were belonging to *H. molitrix* out of 5103 total fish individuals caught. Catch was dominated by *Cyprinus carpio* and *H. molitrix* in year 2013. Catch of *Ctenopharyngodon idella* was lacking and catch of *Cirrhinus mrigala* was meagre (only 8 individuals weighing 20 kg) in year 2013. *C. mrigala* was not in catch from this co-operative during year 2014 to 2016. *Labeo dero* was not in catch during year 2016. Catch of *H. molitrix*, *Cyprinus carpio* and *Labeo dero* / *L. bata* dominated the catch during year 2014. Catch was dominated by *H. molitrix* only in year 2015 and year 2016. Month wise maximum catch was recorded during March month of 2014, August month of year 2015 and 2016. More catch during August month was due to observing the close season during June and July months.

Conclusion

Cyprinus carpio and *H. molitrix* constitute a major share of fish production from Gobind Sagar Reservoir. This may be due to the more proliferation of *H. molitrix* due to the suitable conditions for it, it has got itself established in this reservoir. *Cyprinus carpio* is being stocked regularly so it has more contribution in fish catch from this reservoir. *Cirrhina mrigala* (Mrigal) and *Ctenopharyngodon idella* (Grass carp) were very less in catch. *Labeo calbasu* was not recorded by this co-operative society in the catch, during this period. Less availability of *Ctenopharyngodon idella* may be due to lacking of the aquatic weeds.

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Table 1. Fish Catch from Gobind Sagar Reservoir by Fisheries Co-operative society Chilt Thera during years 2013 to 2016.

Year 2013 to Year 2016		<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. dero/ L. bata</i>	Total
September	Number				10		284		226		520
	Weight (in kg)				13.5		301		556		870.5
October	Number	7	16	8	23		1192	5	723	110	2084
	Weight (in kg)	52	22	20	28		1234.5	10	1785	27	3178.5
November	Number	5	6		29		370	5	744	70	1229
	Weight (in kg)	61	10		34		379.5	8	1870.5	17	2380
December	Number	7	5		12		126		1040	80	1270
	Weight (in kg)	58.5	10		18		140.5		2707	20	2954
Total (Year 2013)	Number	19	27	8	74		1972	10	2733	260	5103
	Weight (in kg)	171.5	42	20	93.5		2055.5	18	6918.5	64	9383
January	Number	11	3		8		130		540	127	819
	Weight (in kg)	104	6.5		11.5		158		1392.5	32.5	1705
February	Number	3			8	2	49		949	173	1184
	Weight (in kg)	25			14.5	16	79		2499.5	47	2681
March	Number	2	1		4	1	4		4487	405	4904
	Weight (in kg)	22	2		8	8	4.5		11951.5	124	12120
April	Number	3	1		5	1			2377	783	3170
	Weight (in kg)	36	1.5		10.5	10			6523.5	222	6803.5
May	Number	4	1		5	1	53		2152	173	2389
	Weight (in kg)	42.5	1.5		6.5	5	57		5526	49.5	5688
August	Number	11	4		22	4	197	2	2372		2612
	Weight (in kg)	119.5	5.5		39	36	224	8	6864		7296
September	Number		1		10		214	42	767		1034
	Weight (in kg)		1.5		15.5		246	66	2037		2366
October	Number	12	8		23	7	551	3	823		1427
	Weight (in kg)	88	12.5		34	13	609.5	7	2271.5		3035.5
November	Number	3	1		16	1	59		738	433	1251
	Weight (in kg)	12.5	2		22	12	70		2036	129.5	2284
December	Number	5			9		28		550	1143	1735
	Weight (in kg)	38			14		38		1590	319	1999
Total (Year 2014)	Number	54	20		110	17	1285	47	15755	3237	20525
	Weight (in kg)	487.5	33		175.5	100	1486	81	42691.5	923.5	45978
January	Number	6	3		8	2	5	31	911	402	1368
	Weight (in kg)	34	5.5		21	21	5	43	2554	119.5	2803
February	Number	5			8	2			2357		2372
	Weight (in kg)	14			23.5	7			7174.5		7219
March	Number	2	18		9	3		11	1792	130	1965
	Weight (in kg)	4.5	28		31.5	29		25	5479	44	5641
April	Number	17	2		9	3	20	10	1434	50	1545
	Weight (in kg)	98.5	3		16.5	28	29	12	4368	20	4575
May	Number	9	3		11	2	23	3	550		601
	Weight (in kg)	40	4.5		16	23	31	20	1658		1792.5
August	Number	9	2		12		210		2765		2998
	Weight (in kg)	77.5	3		18		244		8244		8586.5
September	Number		4		4		20		893		921
	Weight (in kg)		7.5		4		30		2698.5		2740
October	Number	3	13		2	1	63	7	341		430
	Weight (in kg)	7	21		2	5	65	20	1008.5		1128.5
November	Number	1	2		11		44	15	385		458
	Weight (in kg)	3	3.5		15		51.5	24	1181		1278
December	Number	2			8		5	8	256		279
	Weight (in kg)	13			14		5	10	754.5		796.5
Total (Year 2015)	Number	54	47		82	13	390	85	11684	582	12937
	Weight (in kg)	291.5	76		161.5	113	460.5	154	35120	183.5	36560

Table 1. *Continued ...*

Year 2013 to Year 2016		<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. dero/ L. bata</i>	Total
January	Number	1			1		16	16	125		159
	Weight (in kg)	2			1		22.5	25.5	382.5		433.5
February	Number		5		3	1	9		890		908
	Weight (in kg)		8.5		8.5	4	9		2784.5		2814.5
March	Number	8	5		7	1	12	41	798		872
	Weight (in kg)	17.5	10		23	6	14	69	2423.5		2563
April	Number	27	2		17	1	20	5	1597		1669
	Weight (in kg)	256.5	3		31	10	20	10	4809.5		5140
May	Number	19	89		30	5	9	2	2144		2298
	Weight (in kg)	186	222		64	27	11.5	10	6525.5		7046
August	Number	7	8		6	5	391	35	1858		2310
	Weight (in kg)	41.5	12.5		11.5	50	490	61	6020.5		6687
September	Number	2	9		5		182	6	1101		1305
	Weight (in kg)	20.5	18		11.5		217.5	9	3524		3800.5
October	Number	13	17		6		5		978		1019
	Weight (in kg)	91	37		13.5		5		3217		3363.5
November	Number	6	22		5		30		965		1028
	Weight (in kg)	59.5	54.5		5		34		3142		3295
December	Number	5	5		9		116		787		922
	Weight (in kg)	33	12.5		17.5		127		2652		2842
Total	Number	88	162		89	13	790	105	11243		12490
(Year 2016)	Weight (in kg)	707.5	378		186.5	97	950.5	184.5	35481		37985
Total (Year	Number	215	256	8	355	43	4437	247	41415	4079	51, 055
2013 to	Weight (in kg)	1658	529	20	617	310	4952.5	437.5	120211	1171	1, 29, 906
Year 2016)											

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