

Snake River Spring Chinook Salmon Final Fishery Report, 2005

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The Snake River recreational chinook fishery opened June 11 and ran through June 30, 2005. The Snake River was open from the Texas Rapids boat launch upstream to the Corps of Engineers boat launch (approximately one mile) upstream of Little Goose Dam on the south bank of the river; referred to as the Little Goose (LGO) fishery in this report. The fishery was open seven days per week, with daily fishing hours set from one hour before sunrise to one hour after sunset. The daily limit consisted of one hatchery (adipose fin-clipped) chinook salmon (adult or jack) per day, with a minimum size of 12 inches. Anglers were required to use barbless hooks, with hooks of no more than 5/8 inch from point to shank.

The pre-season Snake River runsize estimate (entering the mouth of the Columbia River) was 128,100 spring/summer Chinook with about 23,400 (18%) estimated to be of wild origin. Pre-season plans for the Snake River recreational chinook fishery was to harvest up to 2,132 hatchery adult spring chinook, with an allowable Endangered Species Act (ESA) impact of 47 wild fish mortalities (0.2% ESA impact on wild chinook estimated at Columbia River mouth). Assuming a 10% mortality rate on released fish, this allowed for 468 wild adult encounters. ESA impacts for this fishery are included as part of the non-Indian rate of 2.0% allowable impact which also includes recreational and commercial fisheries downstream. However, the run came in at a lower rate than expected from pre-season estimates. An in-season estimate in early June based primarily on counts at Bonneville Dam reduced the estimated Snake River spring/summer chinook run to approximately 39,700 fish (at Lower Granite Dam). We reduced the harvest target to 373 hatchery chinook adults and the encounter (or "handle") of wild chinook adults to 124. Total ESA impact for this fishery was expected to be 12 wild adult mortalities or an impact rate of approximately 0.17%.

The Washington Department of Fish and Wildlife monitored the fishery using a roving creel survey which included: boat ramp and shore interviews to collect catch rate, completed trip and biological information; and effort counts of shore anglers, boat anglers, and the number of boats (counts were done five times a day). Monitoring was conducted at least one weekday and one weekend day per 7 day period, utilizing a dawn to dusk survey format. Creel surveys were conducted on 7 days (3 weekend days and 4 weekdays) of the season. The 20 day fishery had 14 weekdays and 6 weekend days available. We sampled 50% of weekend days and 28.6% of weekdays. Survey data were summarized weekly to estimate kept catch and encounters (kept catch and fish released) and assure compliance with the ESA impact level that had been set for the fishery.

The fishery results were divided by "spill" and "no spill" segments. The no spill days were from June 11th through the 19th and also included June 30th. No spill days had much better fish movement through Little Goose Dam and therefore had better catch and release rates than spill

days. June 30th was included as a no spill day because the proportion of spill to turbine flows was modified on that day and most of the fish that were pooled up below the dam passed on that day (Appendix A). We have also heard that the catch rate increased on the afternoon of the 30th although a creel survey was not conducted on that day. The major spill days were from June 20th through June 29th. During spill days the harvest and release rates were very poor, and fish passage at Little Goose Dam was very low (Appendix A).

Creel Interviews

Interviews at LGO were conducted with 446 anglers with a total of 2,383 hours of fishing effort, but only 273 (61.2%) of these anglers were targeting chinook (1,607 angler hours). Other anglers interviewed were targeting sturgeon (10.0%), both sturgeon and catfish (0.7%), catfish (13.5%), catfish and smallmouth bass (2.0%), smallmouth bass (8.3%), northern pikeminnow (2.9%), northern pikeminnow and catfish (0.6%) and northern pikeminnow, smallmouth bass and catfish (0.6%). Data collected during the creel surveys were entered into a spreadsheet that was used to calculate angler hours, total fish kept, catch rate (hours/fish kept and hours/fish encountered), total fish released, release rate (hours/fish released), and fish size (min, max, and mean) (Table 1).

Table 1. Data summaries from chinook anglers interviewed during the Snake River spring chinook fishery, 2005.

				Catch per Hour Fished			Release Rate	Harvested Fish Size Fork Length (cm)		
		Angler Hours	Chinook Kept	Hrs/Chinook Kept	Hrs/Chinook Encountered	Chinook Released	Hrs/Chinook Released	Min	Max	Mean
No Spill	Weekday Shore	306.9	10	30.7	13.3	13	23.611	51	90	75.8
	Weekday Boat	7.0	0	0.0	0.0	0	0.000	0	0	0
	Weekend Shore	634.2	26	24.4	11.5	29	21.870	56	84	75.9
	Weekend Boat	15.3	0	0.000	0.0	0	0.000	0	0	0
No Spill Total		964	36	26.8	12.4	42	22.9	51	90	75.9
Spill	Weekday Shore	342.1	0	0.0	0.000	0	0.000	0	0	0
	Weekday Boat	30.5	0	0.0	0.000	0	0.000	0	0	0
	Weekend Shore	0	0	0.0	0.000	0	0.000	0	0	0
	Weekend Boat	270.75	2	135.4	90.250	1	270.750	63	81	72
Spill Total		643	2	321.7	214.5	1	643.4	63	81	72
Total		1,607	38	42.3	19.8	43	37.4	51	90	73.7

Creel interview data documented that 38 spring chinook were kept and 43 spring chinook were released at LGO. Fishery regulations identified that jacks were <24 inches or 61 cm total length and we estimated that jacks were <57cm fork length (which is how we measure fish in the creel). Of the 38 hatchery chinook kept, 37 were sampled, consisting of 35 (94.6%) adults and 2 (5.4%)

jacks. Interviews documented that 43 chinook were released; comprised of 37 (86.0%) wild adults, 4 (9.3%) unknown jacks, 1 (2.3%) wild jack, and 1 (2.3%) hatchery jack.

Fishery regulations allowed for harvest of hatchery adipose (Ad) clipped chinook. We confirmed that 35 adults and 2 jacks had “Ad” clips. The other fish caught was not seen by the creel clerk (Table 2). We also recovered 1 PIT tag and 1 coded wire tag (Table 3).

Marks	Adults	Jacks	Unknown	Total
Ad	35	2	0	37
Unknown	0	0	1	1
Totals	35	2	1	38

Tag Type ^a	Tag Code	Date	Length	Other Marks	Release Location	Stock
PIT	985120015534383	06/15/05	84.0	Ad	Knox Bridge, SF Salmon River, ID	
CWT	093660	06/19/05	73.0	Ad	Imnaha River	Imnaha River and Tribs.

^a CWT=coded wire tag

Expanded Fishery Results

Total calculated angler effort for spring chinook anglers for the season was 5,056 hours. Effort was calculated separately for boat and shore anglers, by strata (weekend or weekday), using the following formula:

$$\text{Effort} = \# \text{ of hours/day} \times \# \text{ of days available} \times \text{mean} \# \text{ of chinook anglers (from the counts).}$$

We used 15 hours/day as the available fishing time (# of hours/day) for the entire season. Since the data were stratified by weekend or weekday and boat or shore we first calculated effort in each of these categories and then summed them to estimate total effort (Tables 4, Appendix B, Appendix C). Completed angler days (for chinook fishermen) were calculated by averaging the number of hours in a complete trip from creel surveys. The completed angler day at LGO averaged 5.23 hrs/day on weekdays and weekends. Dividing effort by the hours in an angler day provides the number of angler days for the season (Tables 4).

Table 4. Calculated expanded effort^a for spring chinook anglers in the Snake River spring chinook fishery, 2005.

		Number of Fishing Days	Average Number of Anglers/Day	Angler Effort (hrs)	Angler Days
No Spill	Weekday Shore	6	22.3	1,668.8	319
	Weekday Boat	6	7.8	585.0	112
	Weekend Shore	4	24.1	1,447.2	277
	Weekend Boat	4	1.2	27.7	5
No Spill Total				3,729	713
Spill	Weekday Shore	8	6.4	863.0	165
	Weekday Boat	8	1.9	69.7	13
	Weekend Shore	2	13.2	394.6	75
	Weekend Boat	2	1.4	0.0	0
Spill Total				1,327	253
Total				5,056	966

^a We used 15 hours as the available fishing day length. Shore anglers could not access the “Wall” at Little Goose Dam until 6 a.m. by Corp of Engineers rules, and counts ranged from 7:00a.m. to 8:00p.m.

Angler interview information (Table 1) and count data from Little Goose were expanded to estimate total chinook kept, the number of fish released and angler effort for the fishery. By multiplying harvest and release rates and angler effort we estimated that 75 adult spring chinook were kept and 83 wild adult spring chinook were released (Appendix B, Appendix C, Table 5). While the overall totals in Table 5 are correct, due to a rounding error if you add up the numbers of fish it may not equal the total. Multiplying the original estimates by the proportions of sampled adults, jacks and unknown fish enabled us to estimate the number of adults, jacks, and unknown spring chinook harvested, as well as the number of wild adults, wild jacks, hatchery adults, and unknown jacks released (Table 5). By applying a 10% mortality rate to the number of wild adults released we estimate that our ESA impact level was a total of 8 adult spring chinook, below the allowable impact of 12 wild adults. The harvest of 77 adult spring chinook (this includes adults and unknowns, but not jacks) was well under the expected harvest of 373 spring chinook. We believe stratification to separate spill from no spill periods (Appendix B, Appendix C) provides the most accurate and appropriate estimates of angler effort, harvest and release of chinook.

Table 5. Estimated number of spring chinook harvested and released during the Snake River fishery, 2005.

		Estimated Number of Fish Harvested				Estimated Number of Fish Released				
		Adults	Jacks	Unknown	Total*	Wild Adults	Wild Jacks	Hatchery Jacks	Unknown Jacks	Total*
No Spill	Weekday Shore	39	2	1	42	47	1	1	5	55
	Weekday Boat	0	0	0	0	35	1	1	4	41
	Weekend Shore	34	2	1	37	0	0	0	0	0
	Weekend Boat	0	0	0	0	0	0	0	0	0
No Spill Totals		73	4	2	79	82	2	2	9	96
Spill	Weekday Shore	0	0	0	0	0	0	0	0	0
	Weekday Boat	0	0	0	0	0	0	0	0	0
	Weekend Shore	2	0	0	2	1	0	0	0	1
	Weekend Boat	0	0	0	0	0	0	0	0	0
Spill Totals		2	0	0	2	1	0	0	0	1
Totals		75	4	2	81	83	2	2	9	97

* The total was taken from Appendix A and Appendix B, and due to rounding errors may not equal the sum of the fish in that row.

**Appendix A. River Flow, Spill, and Fish Passage Data
for Little Goose Dam from June 11th to June 30th, 2005**

Appendix A. Table 1. River Flow, Spill, and Fish Passage data for Little Goose Dam from June 11th to June 30th, 2005.

Month	Day	River Flow	Spill	Fish Passage	Water Temp
6	11	51.3	0.0	311	56.4
6	12	51.4	0.0	343	56.8
6	13	49.9	0.0	386	57.2
6	14	51.7	0.0	287	57.0
6	15	51.5	0.0	319	56.8
6	16	47.2	0.0	280	57.7
6	17	48.0	0.0	417	57.6
6	18	50.9	0.0	352	58.5
6	19	53.7	0.0	403	57.9
6	20	51.8	36.7	65	58.2
6	21	48.1	33.4	88	58.8
6	22	52.7	33.0	54	58.8
6	23	51.8	33.5	112	59.5
6	24	54.1	40.7	61	60.8
6	25	46.0	33.3	41	60.4
6	26	50.5	35.4	56	61.2
6	27	43.8	31.6	52	61.2
6	28	44.1	28.5	56	62.6
6	29	58.0	32.8	154	63.3
6	30	55.5	25.1	1585	64.2

**Appendix B. Angler Effort and Harvest With Only
“No Spill” Data, 2005**

Appendix B. Angler effort and harvest of spring chinook at Little Goose on the Snake River from June 11th through June 19th (before spill began), 2005.

Appendix B. Angler effort and harvest of spring chinook at Little Goose on the Snake River from June 11 th through June 19 th (before spill began), 2005.																							Totals		
			Count				Daily Averages					Average harvest Rates (hrs/fish kept)		Average Release Rates (hrs/fish released)		Angler Effort (hours)		Harvest of Chinook		Release of Chinook		Angler	Total Chinook		
Month	Day	Day Type	Time	Number of Shore Anglers	Number of Boats	Number of Boat Anglers	Shore Anglers	Shore Chinook Anglers	Boats	Boat Anglers	Boat Chinook Anglers	Shore Anglers	Boat Anglers	Shore Anglers	Boat Anglers	Shore	Boat	Shore	Boat	Shore	Boat	Effort (hrs)	Harvested	Released	
6	11	WE	8:00	47	3	3																			
			11:00	59	1	2																			
			14:00	50	0	0																			
			17:00	28	1	0																			
			20:00	16	2	2																			
6	19	WE	7:00	53	0	0																			
			10:00	59	1	2																			
			13:00	34	4	3																			
			16:00	15	0	0																			
			18:00	5	0	0																			
Weekend Totals				366	12	12	36.60	24.12	1.20	1.20	0.46	38.961	0.000	34.931	0.000	1,447.16	27.72	37.1	0.0	41.4	0.0	1,474.9	37	41	
6	15	WD	8:00	42	6	12																			
			11:00	38	6	13																			
			14:00	31	5	9																			
			17:00	17	3	5																			
			20:00	15	0	0																			
Weekday Totals				143	20	39	28.60	22.25	4.00	7.80	7.80	39.762	0.000	30.586	0.000	2002.57	702.00	50.4	0.0	65.5	0.0	2704.6	50	65	
Season Totals				609	32	51										3,450	730	88	0	107	0	4,179	88	107	

**Appendix C. Angler Effort and Harvest With Only
“Spill” Data, 2005**

Appendix C. Angler effort and harvest of spring chinook at Little Goose on the Snake River from June 20th to June 30th (after spill began), 2005.

Appendix C. Angler effort and harvest of spring chinook at Little Goose on the Snake River from June 20 th to June 30 th (after spill began), 2005.																							Totals		
				Count			Daily Averages					Average harvest Rates (hrs/fish kept)		Average Release Rates (hrs/fish released)		Angler Effort (hours)		Harvest of Chinook		Release of Chinook		Angler	Total Chinook		
Month	Day	Day Type	Time	Number of Shore Anglers	Number of Boats	Number of Boat Anglers	Shore Anglers	Shore Chinook Anglers	Boats	Boat Anglers	Boat Chinook Anglers	Shore Anglers	Boat Anglers	Shore Anglers	Boat Anglers	Shore	Boat	Shore	Boat	Shore	Boat	Effort (hrs)	Harvested	Released	
6	25	WE	7:00	26	2	3																			
			10:00	39	2	1																			
			13:00	32	0	0																			
			16:00	25	2	0																			
			19:00	32	1	3																			
Weekend Totals				154	7	7	30.80	13.15	1.40	1.40	0.00	199.010	0.000	398.020	0.000	394.55	0.00	2.0	0.0	1.0	0.0	394.5	2	1	
6	21	WD	7:00	13	0	0																			
			10:00	3	3	6																			
			13:00	2	2	4																			
			16:00	2	0	0																			
			18:00	0	0	0																			
6	24	WD	7:00	16	0	0																			
			10:00	19	3	8																			
			13:00	16	1	4																			
			16:00	15	1	1																			
			18:00	11	1	1																			
6	27	WD	8:00	13	0	0																			
			11:00	11	1	3																			
			14:00	16	1	1																			
			17:00	11	1	1																			
			20:00	3	0	0																			
Weekday Totals				151	14	29	10.07	6.39	0.93	1.93	0.52	0.000	0.000	0.000	0.000	767.08	61.94	0.0	0.0	0.0	0.0	829.0	0	0	
Season Totals				305	21	36										1,162	762	2	0	1	0	1,224	2	1	