

IDAHO

FISH & GAME DEPARTMENT

Joseph C. Greenley, Director

FEDERAL AID IN FISH AND WILDLIFE RESTORATION

ANNUAL COMPLETION REPORT

STATEWIDE FISHING HARVEST SURVEY

Project F-18-R-20



Job 3. Check Station Surveillance of Chinook Salmon Fisheries (Upper Salmon River)

by Melvin Reingold
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Job 3. Check Station Surveillance of Chinook Salmon Fisheries (Clearwater River)

by Ronald L. Lindland
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March 1, 1973 - February 28, 1974

Boise, Idaho
February, 1974

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JOB PERFORMANCE REPORT

State of Idaho

Name: STATEWIDE FISHING HARVEST SURVEY

Project No. F-18-R-20

Title: Check Station Surveillance of
Major Salmon and Steelhead

Job No. 3

Fisheries in Idaho (Salmon Only)

Period Covered: March 1, 1973 to February 28, 1974

ABSTRACT:

In 1973, we operated three check stations on the upper Salmon River to provide management with timely and usable chinook salmon catch data. Between June 4 and July 29, check station operators interviewed 4,917 anglers who fished 63,855 hours to catch 1,550 salmon; 41.2 hours per fish. Nonresidents comprised 9% of the salmon anglers and spent 11% of the total hours fished to catch 9% of the harvest recorded at our stations. Anglers also reported catching 38 jack salmon, 2.5% of the total salmon catch. We recorded 10,197 man-days spent fishing for 1,550 adult salmon, or 6.6 man-days per fish.

From random returns of permit cards marked at the stations, I estimated that 5,069 salmon over 20 inches entered the anglers' creel from the various streams and river sections covered by our stations. The statewide estimate for these same stream sections computed by the random samples of permit holders was 5,083 fish as reported in Job 1, F-18-R-20 (Ortmann, 1974).

Submitted by:

Melvin Reingold
Principal Fishery Research Biologist

RECOMMENDATIONS:

We recommend that salmon harvest check stations continue annually to provide management with timely and useful information on the upper Salmon River chinook fishery.

OBJECTIVES:

To monitor chinook salmon sport fishery catch data on a weekly basis by standardized check station methods. Managers correlate catch rates and fishing pressure with dam counts and water conditions to obtain usable and timely data.

To collect standardized check station data (location, operating hours, days-per-week, etc.) and compare this with salmon permit return data to determine if correlations exist which we can use to increase the accuracy of random sample permit catch estimates or to enhance or replace that method.

To evaluate returns to the creel from various hatchery and rearing-release programs by checking for marked fish in the anglers' bag.

To assist downriver fisheries investigations by other state and federal fishery agencies by collecting and reporting tagged fish data.

TECHNIQUES USED:

As in past years, we set up three temporary checking stations at major egress points through which a high percentage of Idaho's chinook anglers return to their homes. The three station locations remained the same as described in the 1971 report (Reingold, 1972).

We collected the following information: dates, number of resident and non-resident anglers, days fished, hours fished, adult salmon caught, jack salmon caught and stream or river section fished. When available (69% of the time), we inspected fish for marks, clipped fins and sex and measured fork length to the nearest inch.

Station personnel inspected the salmon permit card of each angler and marked the permit with a conductor's punch to the right of each salmon recorded on the permit, regardless of when caught.

Operators also explained to uninformed anglers the newly developed system of recording catches by subsections of major rivers. They completed permits as needed and issued informational maps and instructions.

Each Monday morning, check station operators summarized the previous week's records and telephoned the information to the Salmon Subregional Office. Regional personnel compiled the data and forwarded it to Boise Headquarters.

Biological aides, college students on summer employment, operated the check stations. They received assistance during periods of heavy traffic from conservation officers and field staff personnel. Travel trailers provided housing. We operated each station from 12 noon to 8 p.m., Thursdays through Mondays with only one or two minor variations.

FINDINGS:

Salmon

During the 1973 chinook salmon season, check station operators conducted 4,917 angler interviews. These anglers reported fishing 63,855 hours to catch 1,550 adult salmon, an average of 41.2 hours per fish (Table 1). Hours per fish ranged from 6 hours on Valley Creek in mid-July to 215 hours on this same stream in late June (Tables 2, 3). For 1973, the number of salmon recorded at the stations represented approximately 29% of the estimated total harvest as compared to 27% in 1972.

As in 1972, we queried anglers on the number of jack salmon caught and kept. In Idaho, a jack salmon (1-year ocean males) 20 inches fork length or less need not be recorded on salmon permit cards. We recorded 38 jack salmon reported caught by anglers stopping at our stations. Added to the total catch of salmon, the jacks comprised 2.5% of the total salmon reported (Table 4). In 1971, jacks comprised 23% of this total and in 1972, 3%.

Nine percent of the anglers that stopped at our check stations in 1973 were nonresidents (living in states other than Idaho). This compares to 18% in 1972 and 18% in 1971. The nonresident anglers spent 11% of the total hours fished and 12% of the total man-days expended to catch 9% of the total chinook salmon recorded at our stations (Tables 5, 6). Most of the nonresident pressure occurred in Salmon River Section 8, as in past years (64%). In 1973, we recorded a total of 442 nonresident angler interviews compared to 352 in 1972 and 205 in 1971. Although we recorded more nonresident anglers in 1973 than previous years, a large increase in resident participation reduced out-of-state fishermen to 9% of the total salmon anglers.

High chinook counts over Columbia and Snake River dams and low clear water conditions throughout the Columbia River drainage led anglers to anticipate excellent chinook angling in 1973. This is reflected in the largest number of angler interviews since we began check station operations in 1970. Chinook angling success, however, as shown by hours per fish, did not reflect the high dam counts and the expected "excellent" salmon fishing did not materialize in the upper Salmon River (Table 7). Fishing was good by mid-June in most areas covered by our stations but tapered off by late June. Fishing in mid-July was fair but angler participation had fallen off by that time (Table 8).

The large salmon run anticipated by Idaho, as indicated by large dam counts, did not materialize in the upper Salmon River. Redd counts conducted by Idaho Fish and Game personnel showed the upper Salmon River area counts

11.6% below the 1962-1966 five-year average. The Lemhi River Counting Weir chinook total of 1,043 fish for the 1973 run was 10.7% below the 1968-1973 average of 1,135.

The ratio of punched to unpunched salmon permits in a random sample returned to Boise Headquarters at the end of the 1973 season indicated the percent of harvest from the various streams and river sections checked at our stations. This allowed me to expand the check station data proportionately and arrive at an estimate of total harvest for those areas covered by our stations (Table 9).

From random returns of permit cards marked at the stations, I estimated that 5,069 salmon over 20 inches entered the anglers' creel from the various streams and river sections covered by our stations. The statewide estimate for these same stream sections computed by the random samples of permit holders was 5,083 fish as reported in Job 1, F-18-R-20 (Ortmann, 1974).

The harvest estimates shown in this report are for the areas covered by our check stations only. Other rivers and streams that provide considerable chinook salmon harvest but are not within the confines of our check station coverage are not considered in this report. Total harvest figures for those streams are reported in Job No. 1. In 1973, over 30% of the total Idaho chinook salmon harvest occurred in the Little Salmon River where a salmon run returning to Rapid River Hatchery provides an intensive fishery.

Trout

Because the signs directing traffic into the check stations referred to all "fishermen", we also interviewed all trout anglers stopping at our stations. During the course of the 8 weeks we operated, we interviewed 6,105 trout fishermen who spent 40,900 hours to catch 27,031 trout (Table 13). Nonresidents comprised 18% of the trout anglers stopping at our stations, and they fished 21% of the total hours recorded and caught 21% of the total trout harvest.

As in 1972, we inspected the trout in the creel when available and attempted to define wild trout of all species versus hatchery-reared rainbow catchables on the basis of fin deformation. Of 9,808 trout inspected, check station operators recorded 2,326 wild trout (24%), 7,467 as hatchery trout (76%) and 15 trout as unknown. The Idaho Fish and Game Department conducts an extensive hatchery catchable trout planting program in the lakes and streams of the upper Salmon River area. It appears that during the period our check stations operated, about three-fourths of the trout harvest consisted of these fish.

Also, during the 1973 season, we separated wild rainbow from hatchery rainbow caught in the Salmon River proper and Valley Creel only. Of 839 rainbow inspected, we classified 759 as hatchery origin (90%) and 80 as wild (10%). The hatchery rainbow ranged from 6 inches (152 mm) to 14 inches (356 mm) and averaged between 8.5-9 inches (216-229 mm) total length.

In the spring of 1973, the Idaho Fish and Game Department released approximately 600,000 hatchery-reared steelhead smolts in the upper Salmon River. On an underwater survey of the upper Salmon River in August 1973 (SCUBA and snorkel), we found some residualism of the smaller fish from these steelhead releases. These remained primarily near the release sites in Sawtooth Valley and Valley Creek. While these steelhead juveniles contributed to the trout fishery in those local areas, their contribution to the over-all upper Salmon River trout fishery appeared small. The rainbow trout harvest from the main Salmon River and Valley Creek in June and July 1973, consisted of 90% hatchery rainbow and 10% wild rainbow, compared to 88% hatchery and 12% wild in 1972. The relatively small numbers of juvenile steelhead caught by anglers may account for the slightly higher percent of hatchery fish in the creel in 1973, and the slightly reduced average length. (Most residualized steelhead were less than 7 inches total length.)

From June 5 through July 29, 1973, we interviewed a total of 11,022 fishermen, both trout and salmon, resident and nonresident. Of this total, 45% fished for salmon and 55% for trout.

LITERATURE CITED:

- Ortmann, David, 1974. Annual Survey of the Salmon and Steelhead Sport Fishery Harvest in Idaho. F-18-4-20, Job 1, 1973.
- Reingold, Melvin, 1972. Check Station Surveillance of Chinook Salmon Fisheries. F-18-R-18, Job 3, 1971.
- Reingold, Melvin, 1973. Check Station Surveillance of Chinook Salmon Fisheries. F-18-R-19, Job 3, 1972.

Submitted by:

Melvin Reingold
Principal Fishery Research Biologist

Table 1. Summary of data collected at the salmon harvest check stations during the 1973 Idaho salmon fishing season.

Number of Angler Interviews:	4,917 (100%)
Resident Anglers:	4,475 (91%)
Nonresident Anglers:	442 (9%)
Hours Fished - Nonresidents:	7,025 (11%)
Hours Fished - Residents:	56,830 (89%)
Total Hours Fished:	63,855 (100%)
Chinook Caught - Nonresidents	143 (9%)
Chinook Caught - Residents:	1,407 (91%)
Total Chinook Caught:	1,550 (100%)
Hours per Salmon - Nonresidents:	49.1
Hours per Salmon - Residents:	40.4
Combined Hours per Salmon:	41.2
Man-days Spent Angling - Nonresidents:	1,195 (12%)
Man-days Spent Angling - Residents:	9,002 (88%)
Total Man-days spent Angling:	10,197 (100%)
Man-days per Salmon - Nonresidents:	7.5
Man-days per Salmon - Residents:	6.5
Combined Man-days per Salmon:	6.6

Table 2. Fish caught, hours fished, and hours per fish, by area, recorded at the salmon harvest check stations in June, 1973.

June, 1973															
Week (Monday through Sunday)															
Area	4 - 10			11 - 17			18 - 24			25 - 30			Combined		
	Fish Cght.	Hours fished	Hrs. fish	Fish Cght.	Hours fished	Hrs. fish	Fish Cght.	Hours fished	Hrs. fish	Fish Cght.	Hours fished	Hrs. fish	Fish Cght.	Hours fished	Hrs. fish
S.R. 8	35	3019	86.3	51	3912	76.7	159	7989	50.2	50	4261	85.2	295	19,181	65.0
S.R. 7	14	1133	80.9	33	1095	33.2	35	1622	46.3	4	245	61.3	86	4,095	47.6
Mid. Fork	27	506	18.7	85	1344	15.8	127	2701	21.3	54	1553	28.8	293	6,104	20.8
East Fork	0	261	---	5	202	40.4	17	539	31.7	3	209	69.7	25	1,211	48.4
Marsh Cr.	0	6	---	0	60	---	6	330	55.0	8	96	12.0	14	492	35.1
Valley Cr.	1	106	106.0	0	18	---	3	81	27.0	1	215	215.0	5	420	84.0
Loon Cr.	5	63	12.6	1	78	78.0	24	338	14.1	3	173	57.6	33	652	19.8

Table 3. Fish caught, hours fished, and hours per fish, by area, recorded at the salmon harvest check stations in July, 1973.

July, 1973 Week (Monday through Sunday)															
Area	1 - 8			9 - 15			16 - 22			23 - 29			Combined		
	Fish cght.	Hours fished	Hrs. fish												
S.R. 8	134	7806	58.3	122	6134	50.3	57	2518	44.2	67	2580	38.5	380	19,038	50.1
S.R. 7	15	837	55.8	10	650	65.0	14	378	27.0	4	641	160.3	43	2,506	58.3
Mid. Fork	201	4061	20.2	40	822	20.6	23	389	16.9	17	234	13.8	281	5,506	19.6
East Fork	6	556	92.7	2	103	51.5	0	88	---	3	94	31.3	11	841	76.5
Marsh Cr.	25	1242	49.7	13	444	34.2	5	330	66.0	2	135	67.5	45	2,189	48.6
Valley Cr.	2	257	128.5	13	425	32.7	4	24	6.0	0	0	---	19	724	38.1
Loon Cr.	10	364	36.4	8	318	39.8	2	136	68.0	0	54	---	20	896	44.8

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Table 4. The number of adult and jack salmon per each river section or stream as recorded at the three salmon harvest check stations during 1973.

River section or stream	Adult salmon recorded	Jack salmon recorded	Percent jack salmon	Total salmon recorded
S. R. 8	675	22	3	697
S. R. 7	129	7	5	136
Middle Fork	574	7	1	581
East Fork	36	1	3	37
Marsh Cr.	59	0	0	59
Valley Cr.	24	0	0	24
Loon Creek	<u>53</u>	<u>1</u>	<u>2</u>	<u>54</u>
Totals	1,550	38	2.5	1,588

Table 5. Distribution of nonresident salmon fisherman pressure for each stream and river section and percent of harvest compared to total (resident plus nonresident) harvest, 1973.

Stream and river section	Nonresident anglers recorded	Percent of nonresident anglers	Nonresident percent of total anglers	Nonresident percent of total harvest	Percent of nonresident harvest per area	Percent of total harvest per area
S.R. 8	284	64	5.7	4.6	51	44
S.R. 7	55	12	1.1	0.8	8	8
Middle Fork	66	15	1.3	2.9	32	37
East Fork	29	7	0.6	0.6	7	2
Marsh Cr.	2	.5	0.04	0.0	0	4
Valley Cr.	2	.5	0.04	0.0	0	2
Loon Creek	<u>4</u>	<u>1</u>	<u>0.1</u>	<u>0.2</u>	<u>2</u>	<u>3</u>
Totals	442	100	9.0	9.0	100	100

Table 6. Distribution of nonresident salmon fishermen pressure and harvest for each stream and river section during July, 1973.

Stream and river sections	Total anglers checked	Nonresident anglers checked	Total chinook checked	Nonresident chinook harvest
S.R. 8	2,738	284 (10%)	675	72 (11%)
S.R. 7	620	55 (9%)	129	12 (9%)
Middle Fork	898	66 (7%)	574	46 (8%)
East Fork	201	29 (14%)	36	10 (27%)
Marsh Cr.	245	2 (1%)	59	0
Valley Cr.	75	2 (3%)	24	0
Loon Creek	<u>140</u>	<u>4 (3%)</u>	<u>53</u>	<u>3 (7%)</u>
Totals	4,917	442 (9%)	1,550	143 (9%)

Table 7. Comparative salmon harvest check station data, 1970 - 1973.

Year	Number anglers	Resident anglers	Nonres. anglers	Percent nonres.	Chinook caught	Hours per chinook	Man-days per fish
1970	3,512	3,001	511	15	1,198	35.4	7.1
1971	1,137	932	205	18	706	26.0	5.5
1972	1,913	1,561	352	18	809	35.0	5.8
1973	4,917	4,475	442	9	1,550	41.2	6.6

Table 8. Summary of salmon recorded at all check stations by day during June and July, 1973.

June and July, 1973											
Date	Day	No. fish	Date	Day	No. fish	Date	Day	No. fish	Date	Day	No. fish
1	F	--*	17	Sn	92	1	Sn	102	17	T	--
2	S	--	18	M	32	2	M	43	18	W	--
3	Sn	--	19	T	--	3	T	--	19	Th	13
4	M	--	20	W	--	4	W	89	20	F	2
5	T	0	21	Th	43	5	Th	20	21	S	5
6	W	15	22	F	79	6	F	20	22	Sn	67
7	Th	8	23	S	60	7	S	29	23	M	12
8	F	8	24	Sn	157	8	Sn	90	24	T	--
9	S	5	25	M	23	9	M	21	25	W	--
10	Sn	46	26	T	--	10	T	--	26	Th	14
11	M	10	27	W	--	11	W	--	27	F	11
12	T	--	28	Th	36	12	Th	17	28	S	10
13	W	--	29	F	22	13	F	47	29	Sn	46
14	Th	49	30	S	42	14	S	26	30	M	--
15	F	9				15	Sn	97	31	T	--
16	S	15	Sub Total:		751	16	M	18	Total		1550

* A dash (--) indicates no stations operating that date.

Table 9. Summary of marked and unmarked permits returned by salmon anglers and expanded estimates derived from these data and from the Idaho 1973 random survey.

Stream or river section	Total no. salmon on permits returned to Boise	No. of station marks on permits	Percent marked at stations	No. salmon on permits marked at stations	No. salmon recorded at stations	Percent of harvest recorded at stations	Chinook harvest est.	
							From check stations	From random survey ^{3/}
S.R. 8	296	128	43.2 ^{1/}	848 ^{1/}	675 ^{2/}	29.8 ^{2/}	1,963	2,263
S.R. 7	95	26	27.4	225	129	17.3	821	746
Middle Fork	182	96	52.7	670	574	47.2	1,271	1,216
East Fork	49	13	26.5	54	36	17.6	204	465
Marsh Cr.	21	13	61.9	57	59	38.5	92	153
Valley Cr.	3	0	--	26	24	66.7	26	36
Loon Cr.	15	2	13.3	92	53	25.9	692	204
Totals	661	278	42.1	1,972	1,550	30.5	5,069	5,083

^{1/} These columns represent the salmon recorded at the stations caught on that trip and all prior trips as shown on the anglers' salmon permit card. Harvest estimates are computed from these figures.

^{2/} These columns represent the salmon recorded at the stations caught on that trip only. It does not include fish caught on prior trips.

^{3/} See Job 1, F-18-R-20, Ortmann, 1974. The totals do not represent the total state catch, only the catch for the streams and Salmon River sections listed.

Table 10. Summary of salmon recorded at each check station during the 1973 salmon angling season.

Stream & River Sections	NUMBER FISH RECORDED PER STATION				
	Malm	Banner	Frenchman	Combined	Percent
S.R. 8	211	41	423	674	44
S.R. 7	110	9	10	129	8
Middle Fork	215	179	180	574	37
East Fork	27	0	9	36	2
Marsh Cr.	1	36	22	59	4
Valley Cr.	2	8	14	24	2
Loon Creek	<u>24</u>	<u>4</u>	<u>25</u>	<u>53</u>	<u>3</u>
Totals	590 (38%)	277 (18%)	683 (44%)	1550	100%

Table 11. Percentages of the total chinook salmon harvest observed at the salmon check stations since their beginning in 1970.

Stream	1970	1971	1972	1973	Average*
S.R. 8	24.9	23.6	30.5	29.8	27.4
S.R. 7	19.5	25.7	31.6	17.3	22.1
Middle Fork	46.6	33.9	25.7	47.2	39.0
East Fork	23.3	16.6	17.8	17.6	13.8
Marsh Cr.	41.1	42.1	64.5	38.5	42.1
Valley Cr.	30.7	34.0	16.3	66.7	34.3
Loon Cr.	28.6	32.7	30.7	25.9	26.6

* Derived by dividing the sum of salmon checked in 1970, 71, 72, 73, by the sum of the survey harvest estimates (Job 1, F-18-R-20, Ortmann, 1974.) for those years.

Table 12. Fork length, in inches, of 1,074 salmon measured at the salmon harvest check stations during July, 1973.

Fork length	Males	Females
20	2	0
21	7	0
22	8	0
23	4	0
24	9	1
25	11	0
26	19	2
27	28	1
28	20	1
29	14	6
30	13	10
31	6	8
32	9	10
33	1	10
34	6	27
35	5	65
36	17	107
37	17	114
38	21	142
39	33	94
40	42	55
41	31	15
42	30	6
43	30	3
44	7	0
45	2	0
46	2	0
47	1	0
48	2	0
Totals	397 (37%)	677 (63%)

Table 13. Summary of trout angler data collected at the F-18-R salmon harvest check stations during June and July 1973.

Number of Angler Interviews:	6,105 (100%)
Resident Anglers:	5,004 (82%)
Nonresident Anglers:	1,101 (18%)
Hours Fished, Nonresident:	8,476 (21%)
Hours Fished, Resident:	32,424 (79%)
Total Hours Fished:	40,900 (100%)
Trout Caught, Nonresident:	5,677 (21%)
Trout Caught, Resident:	21,354 (79%)
Trout Caught, Combined:	27,031 (100%)
Hours per Trout, Nonresident:	1.5
Hours per Trout, Resident:	1.5
Man-days Spent Angling, Nonresident:	2,737 (22%)
Man-days Spent Angling, Resident:	9,628 (78%)
Total Man-days Spent Angling:	12,365 (100%)
Hrs./Man-day Spent Angling, Nonres.	3.1
Hrs./Man-day Spent Angling, Resident:	3.4

JOB PERFORMANCE REPORT

State of Idaho Name: STATEWIDE FISHING HARVEST SURVEY
Project No. F-18-R-20 Title: Check Station Surveillance of
Job No. 3 Major Salmon and Steelhead
Fisheries in Idaho (Clearwater
River Salmon)
Period Covered: March 1, 1973 to February 28, 1974

ABSTRACT:

In 1973, the first salmon season in many years was permitted on the Clearwater River. The season extended from May 26 to June 30, 1973 on the main Clearwater (mouth to Kooskia) and Middle Fork Clearwater (Kooskia to Lowell). Fisheries personnel conducted an angler count-interview type creel census on these river sections during the 1973 salmon season.

On the upper Clearwater (Orofino to Kooskia) and Middle Fork Clearwater rivers, we estimated that salmon anglers spent 746 hours to harvest 11 salmon. Census efforts in the lower Clearwater (mouth to Orofino) resulted in an estimate of 1,241 hours of effort and no chinook (Ball and Pettit, 1974).

The harvest estimate drawn from chinook permit returns and questionnaires was 41 salmon for the Clearwater and Middle Fork Clearwater rivers in 1973 (Ortmann, 1974). Ortmann's harvest estimate is probably more accurate because of our relatively small sample.

Submitted by:

Ronald L. Lindland
Senior Fishery Research Biologist

RECOMMENDATIONS:

Continue the chinook salmon census on the Clearwater River as a part of the statewide estimate of salmon harvest.

OBJECTIVES:

To make annual estimates of salmon harvest in the Clearwater River for comparison with dam counts and escapement trend counts.

TECHNIQUES USED:

In 1973, the first salmon season in many years was permitted on the Clearwater River. The season extended from May 26 to June 30, 1973 on the main Clearwater River (from the mouth to Kooskia) and on the Middle Fork Clearwater River (Kooskia to Lowell).

During the 1973 Clearwater chinook salmon season, fisheries personnel made four angler counts daily on the upper Clearwater (Orofino to Kooskia) and Middle Fork Clearwater rivers on all weekend days (11) and 13 randomly selected weekdays. Counts were made by vehicle from Highway 12 with no attempt to separate anglers fishing the main Clearwater from those fishing the Middle Fork. We attempted to interview all bank anglers seen. Very few boat anglers fished this stretch of the river during the chinook season, and no boat anglers were interviewed. Angler counts and angler interview information were expanded to arrive at an estimated total angler use and salmon harvest in this section for the entire season. We multiplied average daylight hours during each 2-week interval by daily average angler counts to obtain an estimate of angler effort. We then multiplied total estimated angler effort by catch per hour from interviews to arrive at a total estimated catch.

Anglers were asked whether they were fishing specifically for chinook. If they replied in the affirmative, we wrote a number on their salmon cards so that each angler could be identified if checked again. We also recorded creel census information for anglers fishing for other species.

No information on the salmon fishery in the lower Clearwater River (mouth to Orofino) was collected by Dworshak study personnel (Ball and Pettit, 1974).

FINDINGS:

Chinook

From May 26 to June 30, 1973, we checked a total of 42 chinook anglers on the upper Clearwater and Middle Fork Clearwater rivers (Orofino to Lowell). They fished 66 hours for one 26-inch female chinook (Table 1). We noted five other chinook which had been caught in this stream section and recorded on salmon cards but were not actually seen. The only chinook

actually checked was caught in a deep pool just below Clear Creek by an angler from Missoula, Montana. All other salmon that we heard about were caught in this same area below Clear Creek.

We checked one angler from Lolo, Montana three times and two anglers from Kooskia, Idaho twice each. All other chinook anglers were checked only once during the season.

Thirty (71%) of the 42 chinook anglers checked were Idaho residents. The 12 nonresidents checked included 7 from Montana, 3 from California and 1 each from Texas and Nebraska.

Since we checked only one chinook salmon, we cannot make a really valid estimate of the total chinook harvest in this river section for 1973. We can, however, estimate angler effort from our angler counts. Our angler interviews indicate that 26% of the bank anglers checked were fishing for chinook. We did not interview any boat anglers and counted only 27 boats (49 anglers) in this section all season. I believe we can assume that any boat effort expended in this river section during June was specifically for chinook. We, therefore, have an estimated total effort of 746 hours for chinook (Table 2). Using a catch rate of .015 fish per hour (Table 1), we obtain an estimated catch of 11 chinook from Orofino to Lowell in 1973.

Dworshak study personnel monitored the chinook fishing in the lower Clearwater River (mouth to Orofino) as part of their project responsibilities. They interviewed 54 salmon anglers who had fished 137.5 hours and caught no salmon. Their total estimated effort for the 1973 chinook season on the lower Clearwater was 1,241 hours (Ball and Pettit, 1974).

Combining estimates of chinook angler effort for all river sections, we arrive at a total estimate of 1,987 hours on the Clearwater and Middle Fork Clearwater rivers in 1973.

The estimated chinook harvest from the statewide survey of salmon permits and questionnaires was 41 salmon for the Clearwater system in 1973 (Ortmann, 1974). About 50% of these fish were taken in the lower Clearwater and the other 50% taken in the upper Clearwater and Middle Fork Clearwater. Ortmann's harvest estimate is probably more accurate, because of our relatively small sample.

Water conditions were excellent throughout the 1973 chinook season and fish were fairly abundant as evidenced by the increase in redd counts (Hoss, et al., 1974). Fishing should have been better. Some reasons for the lack of success on chinook may have been:

- (1) most of the chinook were already into the Lochsa and Selway by the time the season opened in the Middle Fork; and/or
- (2) anglers in this area do not know how or where to fish for chinook, since this was the first chinook season in many years on the Clearwater.

Other Species

We checked 120 other anglers in the upper Clearwater and Middle Fork Clearwater rivers who fished 142 hours for 14 rainbow trout, 7 cutthroat trout, 7 smallmouth bass, 2 whitefish, 3 suckers and 5 squawfish (Table 1). Using the catch rates shown in Table 1, our estimated catches are: 166 rainbow trout, 82 cutthroat trout, 82 smallmouth bass, 24 whitefish, 35 suckers and 59 squawfish.

LITERATURE CITED:

- Ball, K., and S. Pettit, 1974. Evaluation of game and rough fish populations below Dworshak Dam and relationship to water quality. Idaho Fish and Game Department Annual Completion Report.
- Hoss, S., D. Corley, and Tom Welsh, 1974. Salmon spawning ground surveys. Idaho Fish and Game Department Annual Completion Report.
- Ortmann, D., 1974. Estimates of the 1973 harvest of salmon and steelhead (survey). Idaho Fish and Game Department Annual Completion Report.

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Table 1. Chinook anglers and other bank anglers interviewed, catch rates and percent of catch on the Clearwater River and Middle Fork Clearwater (Orofino to Lowell), May 26-June 30, 1973.

Inclusive dates	Chinook anglers interviewed	Hours fished	Chinook checked	Other anglers interviewed	Hours fished	Number of fish caught					
						Rb	Ct	Smb	Wf	Sa	Sq
5/26-6/8	24	41	0	68	105	7	3	4	1	3	1
6/9-6/22	13	16	0	36	27	1	2	1	1	0	3
6/23-6/30	<u>5</u>	<u>9</u>	<u>1</u>	<u>16</u>	<u>10</u>	<u>6</u>	<u>2</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>1</u>
Totals	42	66	1	120	142	14	7	7	2	3	5
Catch per hour			.015			.099	.049	.049	.014	.021	.035
Percent of catch						36.8	18.4	18.4	5.3	7.9	13.2

Table 2. Estimated angling effort by chinook anglers and other anglers on the Clearwater and Middle Fork Clearwater Rivers (Orofino to Lowell), May 26-June 30, 1973.

Inclusive dates	Chinook angler effort (hours)			Other angler effort (hours)
	Total	Bank	Boat	Bank
5/26-6/8	428 (57.4%)	327 (55.2%)	101 (65.6%)	929 (55.3%)
6/9-6/22	226 (30.2%)	173 (29.2%)	53 (34.4%)	491 (29.2%)
6/23-6/30	<u>92</u> (12.3%)	<u>92</u> (15.5%)	<u>0</u>	<u>260</u> (15.5%)
Totals	746	592	154	1,680

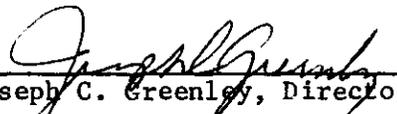
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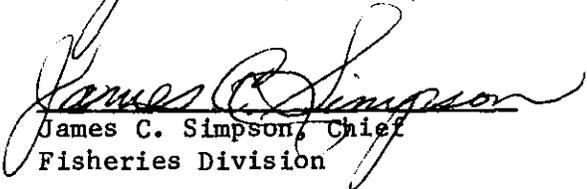
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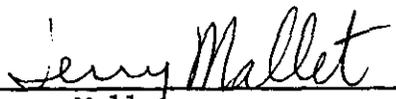
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