

IDAHO FISH & GAME DEPARTMENT

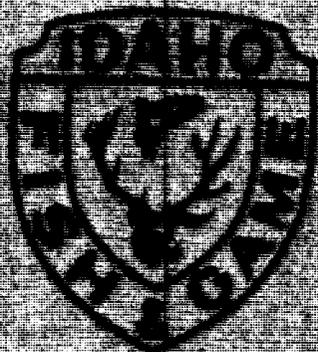
John R. Macdonald, Director

FEDERAL AID IN FISH AND WILDLIFE RESTORATION

ANNUAL COMPLETION REPORT

STATEWIDE FISHING HARVEST SURVEY

PROJECT F-18-R-17



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Job 1. Annual Survey of the Salmon and Steelhead Sport Fishery Harvest in Idaho

by James F. Keating
Fishery Research Supervisor

Job 3. Check Station Surveillance of Chinook Salmon Fisheries.

by Melvin Kellogg
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Job 3. Check Station Surveillance of Steelhead Trout Fisheries.

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Regional Fishery Biologists

Period Covered: March 7, 1970 - February 28, 1971

Boise, Idaho
July, 1971

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JOB COMPLETION REPORT
RESEARCH PROJECT STATEMENT

State of Idaho Name: ANNUAL SURVEY OF THE SALMON AND
STEELHEAD SPORT FISHERY HARVEST
IN IDAHO
Project No. F-18-R-17 Title: Estimates of the 1970 Harvest
of Salmon and Steelhead (Survey)
Job No. 1
Period Covered: March 1, 1970 - February 28, 1971

ABSTRACT

Idaho's salmon and steelhead anglers purchased separate permits for each species for the first time in 1970. In addition because of a further restriction of earlier requirements, nonresident anglers obtained season fishing (or combination hunting-fishing) licenses prior to purchasing permits.

Only 9,097 of 11,000 salmon permit purchasers fished and only 2,552 of these caught salmon. The 1970 catch estimate of 5,742 was down significantly from the 13,142 taken in 1969. Angler participation was down by half from 1969 while extended high water in June and, possibly, nitrogen related losses of chinook also contributed to the low harvest.

The 1970 steelhead harvest of 20,681 was up from the 17,187 estimate for 1969. The number of successful anglers reporting (6,688) was approximately equal to those in 1969 (6,585). Some 22,750 anglers purchased steelhead permits although 4,482 of these did not fish for steelhead.

Idaho residents comprised 79 and 82 percent of the salmon and steelhead permit purchasers, respectively.

Salmon anglers fished an average of 4.6 days each while steelhead anglers spent 6 days each in pursuit of their quarry.

The 2,194 salmon anglers who responded reported an average catch of 0.37 jack salmon (under 20 inches in length) in addition to the catch on their permits.

Submitted by:

James F. Keating
Fishery Research Supervisor

We compiled basic chinook salmon catch estimates by mid-November, 1970, and steelhead estimates in March, 1971.

FINDINGS:

In prior years, 50,000 to 55,000 Idaho anglers received free combination salmon-steelhead permits. Many anglers accepted free permits when purchasing licenses even though not serious about salmon angling.

In 1970, this all changed as separate permits were sold for salmon (10 fish) and steelhead (20 fish) for \$1.00 each. Nonresident anglers were required to purchase a season fishing license for \$15.00 to qualify for either or both permits in contrast to past years where only a one day or week's license was needed.

Sales of 1970 salmon and steelhead permits totaled 11,000 (approximately) and 22,750, respectively. Approximately 83 and 80 percent of the permittees indicated they fished; however, only 23 and 29 percent of each of the two totals caught fish (Tables 1 and 2).

The average 1970 season's catch of salmon for all anglers (those who fished) was 0.63 while successful anglers caught 2.25 fish (Table 3).

Steelhead anglers averaged 1.13 fish each or 3.09 for successful anglers (Table 4).

Approximately 98 percent of the salmon anglers caught five or less fish. However, their catch comprised 83 percent of the total catch (Table 5). The two percent of the anglers who took between 6 and 10 chinook caught 17 percent of the total.

Steelhead anglers were allowed to keep 20 fish in 1970. However, 94 percent caught 0 to 5 fish; 4 percent caught 6 to 10 fish; and only 2 percent caught 11 to 20 fish. The three groups of anglers took 55, 26, and 19 percent of the total catch, respectively (Table 6).

Anglers in the random sample reported catching 1,596 chinook salmon and only 118 of these were not recorded by exact stream section (Table 7). Expansion of this data by month of catch and stream, prorating the unknown catches, provides estimates of 2,803 chinook caught from the main Salmon River (70 percent in Section 8) and 2,781 taken in Salmon River tributaries in a state total of 5,742 (Table 8).

Steelhead anglers caught an estimated 20,681 fish in 1970. The catch covers portions of two fish-year runs (1969-70 and 1970-71) and is reported by stream and month, with raw data and prorated estimates in Tables 9 and 10, respectively.

Anglers took 96 percent of the Salmon River steelhead catch of 10,107 fish in Sections 1 to 5 (mouth to Salmon City). Other significant catches were made in the Clearwater River, 5,363 and the Snake River, 3,581.

Chinook salmon anglers (2,194 responding) caught an average of 0.37 jacks per angler (Table 11) that were not recorded on permits and do not show in the estimates made in Tables 1 and 8. I factored the average jack catch (0.37) by the estimated number of chinook anglers (9,097) to estimate the jack catch, 3,366 fish. Potential biases in reporting jacks (memory, poor identification, etc.) have not been evaluated.

Table 1. Basic random sample return data used to compute chinook salmon catch estimated in 1970.

- (1) 11,000 permits were sold (as of October 31, 1970).
- (2) 4,007 random sample requests were mailed.
- (3) 3,105 random sample permits were returned (as of October 31, 1970).
- (4) 3,062 of these contained usable information.
- (5) 43 contained no information.
- (6) Estimates and sample size.

<u>Category</u>	<u>Usable Sample</u>	<u>Percent of Total</u>	<u>Estimate</u>
Did not fish	530	17.3	1,903
Fished for Chinook	2,532	82.7	9,097
a. Did not catch	1,823	59.5	6,545
b. Caught chinook	<u>709</u>	<u>23.2</u>	<u>2,552</u>
Total replies	3,062	N.A.	11,000
Chinook caught	1,596		5,742

Chinook per successful angler: 2.25

Notes: The Post Office returned 132 undeliverable letters.

: 80% of delivered request were returned by permittees.

: 86% of 2,532 anglers who fished told us how many jacks they caught.

: 93% of 2,532 anglers who fished told us how many days they fished.

Table 2. Basic random sample return data used to compute Idaho steelhead catch estimates in 1970.

-
- (1) 22,750 permits were issued.
 - (2) 4,500 random sample requests were mailed.
 - (3) 3,630 random sample permits were returned.
 - (4) 3,504 of these contained usable information.
 - (5) 126 contained no information.
 - (6) Estimates and sample size.

<u>Category</u>	<u>Usable Sample</u>	<u>Percent of Total</u>	<u>Estimate</u>
Did not fish	690	19.7	4,482
Fished for steelhead	2,814	80.3	18,268
a. Did not catch	1,785	50.9	11,580
b. Caught steelhead	<u>1,029</u>	<u>29.4</u>	<u>6,688</u>
Total Replies	3,504	N.A.	22,750
Steelhead caught	3,182		20,681

Note: The Post Office returned 131 undeliverable letters.

Average catch per all anglers who fished = 1.1307

Average catch per all successful anglers = 3.0923

Ratio estimate: sample = 6.4993: 1.0000

Table 3. The number and percentage (in parentheses) of anglers returning 1970 salmon permits who fished for and caught chinook salmon, did not fish for salmon, or did not indicate on permit whether they fished or not.

Type of Return	Fished and caught fish	Fished, did not catch	Did not fish	No information	Totals	Chinook Caught	Catch per	
							Successful Angler	All Anglers
Permit								
First and* Second Request	397 (35.3)	596 (52.9)	124 (10.2)	17 (1.6)	1,134 (100)**	935	2.36	0.94
Sample Permit								
First Request	215 (17.4)	764 (61.6)	241 (19.4)	20 (1.6)	1,240 (100)	470	2.19	0.48
Second Request	97 (13.3)	463 (63.3)	165 (22.6)	6 (0.8)	731 (100)	191	1.97	0.34
Total Random Sample	709 (22.8)	1,823 (58.7)	530 (17.1)	43 (1.4)	3,105 (100)	1,596	2.25	0.63

* Includes 28 permits returned voluntarily by random sample → permittees.

** 36.5 percent of respondees returned their original permits.

Table 4. The number and percentage (in parentheses) of anglers returning 1970 steelhead permits who fished and caught steelhead, fished but did not catch steelhead, did not fish for steelhead, or did not indicate on permit whether they fished or not.

Type of return	Fished and caught fish	Fished, did not catch	Did not fish	No information	Totals	Steelhead caught	Catch per	
							Successful Angier	All Anglers
Permit								
First and Second Request	706 (39.3)	792 (44.1)	245 (13.6)	54 (3.0)	1,797 (100.0)	2,173	3.08	1.45
Sample Permit								
First Request	246 (18.6)	715 (54.2)	320 (24.2)	40 (3.0)	1,321 (100.0)	787	3.17	0.82
Second Request	77 (15.0)	278 (54.4)	125 (24.4)	32 (6.2)	512 (100.0)	222	2.88	0.63
Total Random Sample	1,029 (28.3)	1,785 (49.2)	690 (19.0)	126 (3.5)	3,630 (100.0)	3,182	3.09	1.13

Table 5. Number of chinook salmon reported caught by anglers in the 1970 random sample--Idaho.

Catch per Anglers	Number of Anglers Reporting	Total Sample Catch	Percent of Total
0	1,823	None	----
1	297	297	18.6
2	200	400	25.1
3	91	273	17.1
4	58	232	14.5
5	<u>26 (98%)</u> (2%)	130	<u>8.1 (83%)</u> (17%)
6	17	102	6.4
7	10	70	4.4
8	2	16	1.0
9	4	36	2.3
10	<u>4</u>	<u>40</u>	<u>2.5</u>
Totals	2,532	1,596	100

Note: 709 (28 percent) of 2,532 anglers contacted, who fished, caught salmon.

Table 6. Summary of the catch of steelhead per successful angler reporting in random survey, Idaho, 1970.

Catch Per Angler	Number of Anglers Reporting	Percent	Total Catch	Subtotal Catch	Percent of Catch
0	1,785		0		
1	407		407		
2	228		456		
3	113		339		
4	74		296		
5	<u>50</u>		250	<u>1,748</u>	<u>55</u>
		94			
6	40		240		
7	33		231		
8	16		128		
9	14		126		
10	<u>11</u>		110	<u>835</u>	<u>26</u>
		4			
11	11		121		
12	8		96		
13	5		65		
14	3		42		
15	4		60		
16	3		48		
17	2		34		
18	3		54		
19	1		19		
20	<u>3</u>		60	<u>599</u>	<u>19</u>
		2			
	<u>2,814</u>		<u>3,182</u>	<u>3,182</u>	<u>100</u>

Table 7. 1970 reported catch of chinook salmon by month and stream - random sample returns only.

Stream	Jan.- April	May	June	July	Aug.	Unknown	Total
Salmon - 1	0	1	0	2	2	0	5
Salmon - 2	0	8	5	2	0	0	15
Salmon - 3	0	1	5	4	0	0	10
Salmon - 4	0	0	1	9	1	0	11
Salmon - 5	0	0	2	18	0	0	20
Salmon - 6	0	0	0	10	0	0	10
Salmon - 7	0	0	6	131	3	0	140
Salmon - 8	0	2	44	435	4	7	492
Salmon Unk.	0	1	2	73	0	0	76
Salmon Total	0	13	65	684	10	7	779
S. F. Salmon	0	0	0	0	0	0	0
M. F. Salmon	3	1	4	215	0	0	223
E. F. Salmon	0	0	3	47	0	0	50
N. F. Salmon	3	0	0	3	0	0	6
Pahsimeroi	1	0	0	0	0	0	1
Little Salmon	1	11	45	75	1	0	133
Bear Valley	0	0	0	6	0	0	6
Loon Cr.	0	0	1	69	0	1	71
Lemhi River	1	0	24	90	0	0	115
Marsh Cr.	0	0	5	38	1	0	44
Big Cr.	0	0	0	7	0	0	7
Valley Cr.	0	0	0	28	0	0	28
Camas Cr.	0	0	3	86	0	0	89
Salmon R. Tributaries Total	9	12	85	664	2	1	773
Lower Snake	0	0	0	0	0	0	0
Upper Snake	0	0	0	0	2	0	2
Snake Unk.	0	0	0	0	0	0	0
Snake Total	0	0	0	0	2	0	2
Unk. Stream	0	1	0	41	0	0	42
Total State	9	26	150	1,389	14	8	1,596

Table 8. 1970 estimated total catch of chinook salmon by month and stream, Idaho.

Stream	Jan.- April	May	June	July	Aug.	Total
Salmon - 1	0	4	0	8	8	20
Salmon - 2	0	31	20	8	0	59
Salmon - 3	0	4	19	16	0	39
Salmon - 4	0	0	4	37	4	45
Salmon - 5	0	0	8	71	0	79
Salmon - 6	0	0	0	39	0	39
Salmon - 7	0	0	24	523	12	559
Salmon - 8	0	8	178	1,761	16	1,963
Salmon Total	0	47	253	2,463	40	2,803
M. F. Salmon	11	4	14	773	0	802
E. F. Salmon	0	0	12	168	0	180
N. F. Salmon	11	0	0	11	0	22
Pahsimeroi	4	0	0	0	0	4
Little Salmon	4	39	162	269	4	478
Bear Valley	0	0	0	22	0	22
Loon Cr.	0	0	4	251	0	255
Lemhi River	4	0	92	318	0	414
Marsh Cr.	0	0	20	134	4	158
Big Cr.	0	0	0	25	0	25
Valley Cr.	0	0	0	101	0	101
Camas Cr.	0	0	12	308	0	320
Salmon R. Tributaries Total	34	43	316	2,380	8	2,781
Lower Snake	0	0	0	0	0	0
Upper Snake	0	0	0	0	7	7
Snake Total	0	0	0	0	7	7
Unk. Stream	0	4	0	147	0	151
Total State	34	94	569	4,990	55	5,742

* January to April salmon catch recordings probably errors on permits. These may be steelhead.

Table 9. 1970 reported catch of steelhead by month and stream.- random sample raw data returns only.

Stream	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.	Total
Salmon - 1	2	21	32	8	1	1			26	84	49	11	16	251
Salmon - 2	18	19	18	11	6				10	50	28	10		170
Salmon - 3	6	35	47	5	1				1	73	30	7		205
Salmon - 4		46	51	35					4	71	17	1		225
Salmon - 5	5	46	47	13	3				15	77	48	6	5	265
Salmon - 6	1	3	8	5	1									18
Salmon - 7		1	3	7	1						1		1	14
Salmon - 8		1	1		1		1			3		2		9
Salmon Unk.	<u>6</u>	<u>48</u>	<u>31</u>	<u>19</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>37</u>	<u>140</u>	<u>73</u>	<u>8</u>	<u>31</u>	<u>398</u>
	38	220	238	103	14	3	2	2	93	498	246	45	53	1,555
S. F. Salmon		3		12									9	24
M. F. Salmon		4	13	18				2	4	4			1	46
E. F. Salmon		2												2
N. F. Salmon			2							1			1	4
Pahsimeroi				1									1	2
Little Salmon					8	6		1					2	17
Big Creek					1								1	2
Salmon Trib.														
Subtotal	<u>0</u>	<u>9</u>	<u>15</u>	<u>31</u>	<u>9</u>	<u>6</u>	<u>0</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>15</u>	<u>97</u>
Lower Clearwater	8	40	25	4			1		34	162	91	36	12	413
Upper Clearwater	4	15	5	2					3	56	7	8		100
Clearwater Unk.	<u>4</u>	<u>16</u>	<u>27</u>	<u>13</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>20</u>	<u>126</u>	<u>40</u>	<u>45</u>	<u>20</u>	<u>312</u>
Clearwater Total	16	71	57	19	0	0	2	0	57	344	138	89	32	825
N. F. Clearwater	1		13	11						1				26
M. F. Clearwater	1	19	17	16						24	6	4		87
Selway		1	8	4						1	1			15
Lochsa				9										9
Clearwater Trib.														
Subtotal	<u>2</u>	<u>20</u>	<u>38</u>	<u>40</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>26</u>	<u>7</u>	<u>4</u>	<u>0</u>	<u>137</u>
Lower Snake	10	11	3			1		1	29	92	41	42		230
Upper Snake	12	8	7	8	2		1	2	6	14	18	7		85
Snake Unk.	<u>21</u>	<u>4</u>	<u>14</u>	<u>18</u>	<u>4</u>	<u>1</u>	<u>1</u>	<u>3</u>	<u>16</u>	<u>73</u>	<u>32</u>	<u>33</u>	<u>21</u>	<u>236</u>
Snake Total	43	23	24	26	6	1	1	3	51	179	91	82	21	551
Unknown Streams		4	3	1						7			2	17
State Total	99	347	375	220	29	10	5	8	205	1,059	482	220	123	3,182

Table 10. Estimated 1970 Idaho steelhead catch by stream and month, prorated

Estimated catch in:

Month	Estimated catch in:												
	Jan.	Feb.	Mar.	Apr.	May -*	June	July -	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Stream Section													
Salmon 1	18	196	298	75	18			243	784	457	103		2,192
2	157	166	158	96	52			87	438	244	87		1,485
3	52	305	411	44	9			9	638	262	61		1,791
4		402	446	306				35	620	148	9		1,966
5	45	409	418	116	27			134	684	427	54		2,314
6	9	26	70	44	9								158
7		9	28	67	9						9		122
8		9	9		9				26			17	79
Salmon Total	281	1,522	1,838	748	133			9	508	3,190	1,547	331	10,107
S. F. Salmon		31		125									156
M. F. Salmon		27	86	121			13	26	26				299
Other Salmon Tribs.		16	16	8	119		8		8				175
Lower Clearwater	86	431	269	43			11	366	1,744	980	387		4,317
Upper Clearwater	42	157	52	21				31	586	73	84		1,046
Total Clearwater	128	588	321	64			11	397	2,330	1,053	471		5,363
N. F. Clearwater	6		85	72					6				169
M. F. Clearwater	6	124	111	104					156	39	26		566
Other Clearwater Tribs.		6	53	84					6	6			155
Lower Snake	114	125	34		11	11	330	1,046	466	478			2,615
Upper Snake	136	91	80	91	22	34	68	159	205	80			966
Snake River Total	250	216	114	91	33	45	398	1,205	671	558			3,581
Unknown Streams		29	23	7					51				110
State Total	671	2,559	2,647	1,424	285	86	1,329	6,978	3,316	1,386			20,681

* Fish taken prior to July 1 are from fish year 1969-70 run, those taken after July 1 are 1970-71 fish.

Table 11. Summary of the number of jack salmon reported caught by random sample anglers responding to our questionnaire in 1970.

Number of jacks caught	Number of anglers who responded to each letter			Total Jacks Caught
	First Return	Second Return	Total	
No information	277	61	338	?
Zero	1,420	526	1,946	None
1	95	18	113	113
2	48	7	55	110
3	24	3	27	81
4	11	3	14	56
5	8	1	9	45
6	10	2	12	72
7	1	0	1	7
8	3	0	3	24
9	1	0	1	9
10	2	2	4	40
11	1	0	1	11
12	0	0	0	0
13	1	0	1	13
14	0	0	0	0
15	3	1	4	60
⋮				
22	1	1	2	44
⋮				
40	<u>1</u>	<u>0</u>	<u>1</u>	<u>40</u>
Total	1,907	625	2,532	725

Total who answered: 2,194
 Average jacks per respondee: 0.37

We do not have specific catch area information for the jack salmon, but at least a significant proportion are returns to the Rapid River Hatchery as 102 of 157 jacks caught by anglers reporting a catch of 13 or more jacks were taken by anglers living near Riggins.

Unpublished field census data for the Little Salmon River shows 195 jacks checked compared to 255 adult salmon in 1970. This expands to an estimate of 365 jacks (compared to 478 adults on permits). Unfortunately, check station operators near Stanley and Challis did not ask about or record jack catches. Also, a high percent of jacks caught probably were consumed in camp.

Approximately 80 and 82 percent of salmon and steelhead anglers were Idaho residents (Tables 12 and 13). We did not record catch data by state for chinook; however, Reingold, 1971 (attached) calculated that residents also caught 80 percent of chinook seen at check stations.

Nonresidents caught about 20 percent of steelhead taken overall; however, percentages in Salmon River Sections 4 and 5 reached 44 and 31 percent while 37 percent of the steelhead catch in the upper Clearwater River was by nonresidents (Table 14).

Salmon anglers reported fishing an average of 4.6 days each; however, a breakdown by residency was not made (Table 15). Steelhead anglers can fish over many more months; however, they only averaged 6.0 days each (Table 13). Approximately 81 percent of the steelhead anglers fished 10 or less days (Tables 16 and 16a).

Salmon raw data catch reports are recorded by day and stream for June and July for major streams in Table 17, and steelhead weekday-weekend catch reports are shown in Table 18. Both tabulations show high catches on weekends but indicate that weekday catches are quite substantial during periods of good fishing.

As usual, the combined Salmon River catch of salmon and steelhead tops all rivers in Idaho (Table 19) although the Clearwater and Snake Rivers catches of steelhead are significant.

Table 20 summarizing salmon and steelhead catches since 1954 shows that the chinook catch (5,500) was the worst on record (except 1965 closure), while the steelhead catch (20,500) was comparable with average past years' catches.

Submitted by:

James F. Keating
Fishery Research Supervisor

Table 12. State of origin of 4,007 randomly selected anglers who purchased chinook salmon permits in Idaho in 1970.

	<u>Chinook Permit Holders - 1970</u>	
	<u>Number from</u>	<u>Percent of Total</u>
Idaho	3,161	78.9
Utah	326	8.1
California	152	3.8
Montana	139	3.5
Nevada	53	<u>1.3</u>
Washington	31	all below total:
Wyoming	28	4.4
Colorado	15	
Arizona	13	
Oregon	13	
Texas	10	
Kansas, Missouri	7	
Illinois, Oklahoma	6	
Ohio	5	
Florida, Minn., Nebraska	4 each	
N. Mexico, New York	3 each	
Louisiana, Md., Miss., Penn., W. Virginia	2 each	
Conn., Canada, Ind., N. Hamp., S. Dakota, Alaska, N. J.	<u>1 each</u>	
	4,007*	

*Sample of the approximately 11,000 anglers who purchased salmon permits as of October 31, 1970.

Table 13. Number and percent of anglers in steelhead permit sample responding from each state and days fished, Idaho, 1970.

Rank	State	Anglers per State		Man Days Fished		Days Fished /man
		<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent of total</u>	
1	Idaho	2,305	81.9	14,286	84.8	6.2
2	Montana	168	6.0	1,151	6.8	6.8
3	Washington	111	3.9	654	3.9	5.9
4	California	79	2.8	244	1.4	3.1
5	Utah	50	1.8	182	1.1	3.6
6	Oregon	24	0.9	115	0.7	4.8
7	Nevada	18	0.6	59	0.3	3.3
8	Wyoming	8	0.3	18	0.1	2.2
9	Others	<u>51</u>	<u>1.8</u>	<u>150</u>	<u>0.9</u>	<u>2.9</u>
		2,814	100.0	16,859	100.0	6.0

Note: 2,814 includes responses on request letters - 474 respondees did not indicate how many days they fished.

Table 14. A. - Estimated total catch of steelhead by residence of anglers for selected streams and, B. - Reported catch for all streams from 1970 random sample returns, Idaho.

A. - Estimated Steelhead catch by angler from:

Stream Section	Idaho	Wash.	Ore.	Calif.	Nev.	Utah	Wyo.	Mont.	Other	Total
Lower Snake River	2,034	409	57					57	57	2,614
Upper Snake River	705	23	216						23	967
Lower Clearwater River	3,952	209		10				146		4,317
Upper Clearwater River	659	21		136				188	42	1,046
Salmon - 1	1,877	140	44	105				17	9	2,192
Salmon - 2	1,407		9	17		26		26		1,485
Salmon - 3	1,346	17	52	131	52	79		44	70	1,791
Salmon - 4	1,110		9	61	17	122	9	612	26	1,966
Salmon - 5	1,608	26		17	17	70	26	515	35	2,314

B. - Raw data, random sample catch by state - all streams

N (Sample)	2,523	151	50	71	13	40	7	286	41	3,182
Percent of total	79.4	4.7	1.6	2.2	0.4	1.2	0.2	9.0	1.3	100%

Table 15. Summary of the number of days fished in Idaho by chinook salmon anglers reporting on random sample letters, 1970.

Number of Days Fished	Number of Anglers Reporting:			Total Days Fished
	On First Reply	On Second Reply	Total	
No information	127	21	148	?
Zero	21	15	36	Zero
1	248	115	363	363
2	389	165	554	1,108
3	233	90	323	969
4	195	55	250	1,000
5	156	39	195	975
6	94	30	124	744
7	88	17	105	735
8	57	10	67	536
9	21	7	28	252
10	83	20	103	1,030
11	8	3	11	121
12	35	5	40	480
13	6	1	7	91
14	26	6	32	448
15	27	6	33	495
16	4	2	6	96
17	5	1	6	102
18	3	0	3	54
19	1	0	1	19
20	16	4	20	400
21	15	1	16	336
23	1	1	2	46
24	2	0	2	48
25	5	2	7	175
28	3	0	3	84
30	9	3	12	360
35	1	0	1	35
40	2	0	2	80
45	2	0	2	90
26, 27, 50, 90	4*		4*	193
	<u>1,887</u>	<u>619</u>	<u>2,506</u>	<u>11,465</u>

Note: The 2,358 anglers reporting fished an average of 4.6 days each.

* One each

Table 16. Summary of the number of days fished by steelhead anglers reporting in random sample, Idaho, 1970.

Range in Days Fished	Number of Days Fished	Number of Anglers Reporting	Subtotal N.	Percent of N.
1-10	1	301		
	2	437		
	3	318		
	4	226		
	5	152		
	6	136		
	7	77		
	8	66		
	9	42		
	10	130	1,885	81
11-20	11	31		
	12	46		
	13	17		
	14	38		
	15	46		
	16	14		
	17	11		
	18	15		
	19	4		
	20	55	277	12
21-30	21	11		
	22	7		
	23	6		
	24	8		
	25	17		
	26	3		
	27	5		
	28	4		
	30	38	99	4
	31-40	Number per day summary		28
41-50	" " "	"	13	0.6
51-60	" " "	"	6	0.3
61-70	" " "	"	3	Tr.
71-80	" " "	"	2	Tr.
81-90	" " "	"	3	Tr.
91-100	" " "	"	1	Tr.
101-110	" " "	"	1	Tr.
		2,318	2,318	100.0

Note: 474 anglers gave no information
 22 anglers said they fished no days

Table 16-a Number of days fished reported by random sample steelhead anglers, Idaho, 1970.

Stream or Drainage	Class of Angler	Number of Fishermen Reporting Days	Total Days Reported Fished	Average No. Days Fished
Clearwater River Drainage	Resident	808	5,787	7.2
	Nonres.	<u>165</u>	<u>818</u>	<u>5.0</u>
	Subtotal	973	6,605	6.8
Salmon River Drainage	Resident	1,113	5,690	5.1
	Nonres.	<u>283</u>	<u>1,326</u>	<u>4.7</u>
	Subtotal	1,396	7,016	5.0
Snake River	Resident	508	2,809	5.5
	Nonres.	<u>67</u>	<u>429</u>	<u>6.4</u>
	Subtotal	575	3,238	5.6
	Total	2,944	16,859	5.7

Table 17. Reported catch (raw data) of chinook salmon by day, by section, Idaho, 1970.

June	Salmon River			Little Salmon	Middle Fork	Camas Creek	Loon Cr.	Marsh Creek	Lemhi River	East Fork	Valley Creek	Unknown	Total
	Sec. 7	Sec. 8	Sec. 9										
1				1									1
2													0
3				1				1					2
4		1											1
5		1											1
6*													*0
7*		1											*1
8		2											2
9													0
10													0
11		1	1										2
12		1		1				3					5
13*		1		2					1				*4
14*		1	1	2				1					*5
15				1						1			2
16				3						1			4
17	1	2		2									5
18		7		4	1				1	1			14
19		2		3					2				7
20*		3		2									*5
21*		2		2									*4
22		1							1				2
23		2		1					1				4
24		1		1					2				4
25	1	1		1		1			3				7
26		2		1		1			1				5
27*		1		6					3				*10
28*	2	6		4					8				*20
29		2		4	2				1				9
30	2	3		3	1	1	1						11
Sub- total	6	44	2	45	4	3	1	5	24	3	0	0	137

* Weekend days

Table 17 (continued)

July	Salmon River			Little Salmon	Middle Fork	Camas Creek	Loon Cr.	Marsh Creek	Lemhi River	East Fork	Valley Creek	Unknown	Total
	Sec. 7	Sec. 8	Sec. 9										
1		10		4	2	1	1	1	1				20
2		6		4	1				6	1		2	20
3*	1	15		2	6				3			2	*29
4*	3	6	1	9	5	1	2		5				*32
5*		5	1	3	4		2		1				*16
6		4	2	3	7	2			1				19
7		10		1	4	3			2			1	21
8		5	2	5	7	4			3			1	27
9	3	7		6	9	5			8		1	5	44
10	2	13	1	7	14	4	1	1	6			3	52
11*	1	17	3	1	17	7	2		7			4	*59
12*		13	2	2	12	2	2	3	3	1	1	1	*42
13		13		8	13	7	4		3	5		3	56
14		23	2	2	21	7	3	4	3	3		2	70
15	4	19	3		20	7		1	7	4	2	1	68
16	8	19		4	10	2	3	4	2	4		1	57
17	1	25	3	4	6	5	4	2	1	1		4	56
18*	12	30	2	2	10	4	6	2	6	3	5		*82
19*	7	19	4		3	4	5		1	1	5	1	*50
20	1	16			2	2	5		8	4			38
21	5	6	3		5		4		2	1		1	27
22	4	12	6	1	2	7	2	3	3	1		2	43
23	3	19	6	1	5	3		2	2	2			43
24	14	18	6	2	11	1	1	2	2	2	2		61
25*	16	25	4	2	8	3	4	3	2	2	5	4	*78
26*	8	16	8		5	5	5	2	1	1	3		*54
27	1	15	1	1			7	1		3			29
28	4	16	3		1		4	1		2	3	1	35
29	11	11	1				1	2		5	1		32
30	10	11	4	1	3			2	1	1		1	34
31	12	9	3		2		1	2				1	30
99 Unk.		2	2										4
Sub. Total	131	435	73	75	215	86	69	38	90	47	28	41	1,328

* Weekend and holiday

Table 18. Summary of the average reported catch by type of day, of steelhead from 1970, Idaho, random sample returns (spring months).

Spring Months	Number of days	Average steelhead catch per day				Average Total**
		Snake River	Clearwater River	Salmon River		
				Lower*	Upper*	
January						
Holiday	1	3 -	4	0 -	0	7 -
Weekday	1	3	2	0	0	5
Wk.end	2	4 -	1	2.5-	0	8 -
Weekday	5	1.6	0.2	0	0	1.8
Wk.end	2	3 -	0	2 -	0	5 -
Weekday	5	1.6	0.2	0.2	0	2.2
Wk.end	2	0.5-	1	2 -	2.5	6 -
Weekday	5	0.2	0	0.2	0	0.6
Wk.end	2	0 -	0	4 -	0	4 -
Weekday	5	0	0.6	0.4	0	1.6
Wk.end	1	3 -	1	0 -	0	4 -
February						
Wk.end	1	2 -	2	1 -	0	5 -
day	5	1	3	2	1.6	8.2
end	2	0 -	1	2 -	2.5	7 -
day	5	1.2	1.6	1.6	3.4	10.4
end	2	0.5-	1.5	3.5-	9.5	17.5-
day	5	0.6	1.4	3.8	2.6	11.4
end	2	0.5-	5.2	5 -	8.5	21.5-
day	5	0.4	3	2	1.8	8.6
end	1	3 -	1	6 -	3	16 -
March						
Wk.end	1	1 -	3	8 -	9	22 -
day	5	0.2	1.4	1.8	1.8	5.2
end	2	0.5-	2	5.5-	6.5	14.5-
day	5	0.8	3	4.8	3.2	13
end	2	0.5-	1.5	6 -	6	16.5-
day	5	0.6	0.4	1.4	1.6	4.2
end	2	2.5-	3.5	5 -	6	18 -
day	5	1	2.4	1.6	3.6	9
end	2	1.5-	1	2 -	2.5	7.5-
day	2	0	0	1	1.5	2.5

*Lower Salmon includes areas 41, 42, 43; Upper includes 44 and 45

**Includes unknown Salmon River catches

Table 18 (continued). Summary of the average reported catch by type of day, of steelhead from 1970, Idaho, random sample returns (fall months).

Fall Months	Number of days	Average steelhead catch per day				Average Total
		Snake River	Clearwater River	Salmon River Lower*	Upper*	
September						
Holiday	1	0 -	1	0 -	0	1 -
Weekday	3	0.4	0	0	0	1.7
end	2	0.5-	0	0 -	0	2 -
day	5	0.8	0	0.2	0.2	2
end	2	2 -	0	2 -	0	4 -
day	5	1	2.6	0.8	0.8	5.8
end	2	1 -	4.5	2 -	1	12 -
day	5	1.2	0.8	2.4	1	5.8
end	2	7.5-	6.5	3.5-	3	24.5-
day	4	2.5	3.8	1.3	0.3	9.3
October						
Weekday	2	4	11.0	0.5	2	19.5
end	2	6.5-	11.5	4.5-	5	32.5-
day	5	6.0	9.8	3.6	5.5	24.2
end	2	14 -	3	9.5-	6	40 -
day	5	4.4	14.4	7.4	3.8	34.2
end	2	8 -	26	16 -	8	69.5-
day	5	2.4	8.8	7.2	4.4	28
end	2	12 -	7.5	7.5-	7	40 -
day	5	3.6	7.8	4.6	7.2	25.8
end	1	6 -	18	12 -	3	44 -
November						
Weekend	1	5.0-	15	5 -	5.0	36 -
day	5	2.4	6.8	5.2	3	20.6
end	2	5.5-	12.5	8.5-	5.5	35.5-
day	5	3.4	3	3	2.6	15.2
end	2	3.5-	4	4.5-	4.5	19 -
day	5	2.4	2	2.2	1.8	11.4
end	2	2.5-	1	5 -	0	11.5-
day	5	2.2	2.2	0.6	0	5
end	2	4.5-	7	2.5-	0.5	15 -
day	1	1	4	0	2	7
December						
Weekday	4	2.3	2.0	0.5	0.3	5
end	2	3.0-	8.5	2 -	1	15 -
day	5	1.8	3.2	0.2	0.4	6
end	2	3.0-	6.5	3 -	0.5	13.5-
day	5	1.4	3	0.2	0	4.6
end	2	4.0-	4	1 -	0.5	9.5-
day	4	1.5	0.8	0.5	0	2.8
H & wk. end	3	3.0-	0.3	0.7-	0	4.3-
day	4	5.3	2	2.0	0	10

Table 19. Estimated total catch of chinook salmon and steelhead trout in Idaho, 1970, from random sample returns of permits

Stream or Section	Chinook Salmon		Steelhead Trout	
	Sample Size	Estimated Catch	Sample Size	Estimated Catch
Salmon - 1	5	20	251	2,192
Salmon - 2	15	59	170	1,485
Salmon - 3	10	39	205	1,791
Salmon - 4	11	45	225	1,966
Salmon - 5	20	79	265	2,314
Salmon - 6	10	39	18	158
Salmon - 7	140	559	14	122
Salmon - 8	492	1,963	9	79
Salmon Unk.	76	(273)*	398	(2,586)*
Subtotal	779	2,803	1,555	10,107
S. F. Salmon	0	0	24	156
M. F. Salmon	223	802	46	299
E. F. Salmon	50	180	2	13
N. F. Salmon	6	22	4	26
Little Salmon	133	478	17	110
Lemhi River	115	414	--	--
Pahsimeroi	1	4	2	13
Valley Cr.	28	101	--	--
Big Cr.	7	25	2	13
Camas Cr.	89	320	--	--
Loon Cr.	71	255 Tributary	--	-- Tributary
Marsh Cr.	44	158 Subtotal	--	-- Subtotal
Bear Valley Cr.	6//773	22//2,781	--//97	--//630
Lower Clearwater			413	4,317
Upper Clearwater			100	1,046
Clearwater Unk.			312	(2,028)*
Subtotal			825	5,363
N. F. Clearwater			26	169
M. F. Clearwater			87	566
S. F. Clearwater			--	--
Selway River			15	97
Lochsa River			9//137	58//890
Lower Snake River	0	0	230	2,614
Upper Snake River	2	7	85	967
Snake River Unk.	0	0	236	(1,533)*
Subtotal	2	7*	551	3,581
Unknown Streams	42	151	17	110
State Total	1,596	5,742	3,182	20,681

Notes: I computed factors of 3.598 for chinook and 6.499 for steelhead by dividing the total reported catch into total estimated catch from Tables.

I multiplied each stream sample by the factor to estimate individual catches.

* The unknown Salmon, Clearwater and Snake River catches are prorated and included in the catch from known sections.

Table 20. Idaho Salmon and Steelhead Catch Estimates, 1954-1970.

Year	CHINOOK SALMON		Year	STEELHEAD TROUT	
	Catch	Estimate		Catch	Estimate
1954	15,000		1954	12,000	
1955	19,000		1955	13,000	
1956	21,000		1956	8,000	
1957	39,000		1957	20,000	
1958	24,000		1958	30,000	
1959	20,000		1959	31,000	
1960	21,000		1960	30,000	
1961	13,000		1961	25,000	
1962	12,000		1962	19,000	
1963	12,000		1963	26,000	
1964	8,000		1964	18,000	
1965	SALMON SEASON CLOSED		1965	20,000	
1966	8,500		1966	20,000	
1967	7,500	(6,500)*	1967	24,500	(22,500)*
1968	11,500	(10,000)	1968	24,500	(23,000)
1969	13,000	(11,500)	1969	17,000	(15,500)
1970	5,500		1970	20,500	

*Estimates in parentheses are calculated assuming that "no information" returns indicate that no fish were caught, and are more representative for trend purposes since the pre-1967 estimates were made using this assumption. The 1970 returns include very few "no information" returns and are therefore comparable. The original 1967-1969 estimates shown were calculated without the "no information" returns.

Job Completion Report
Research Project Statement

State of Idaho

Name: STATEWIDE FISHING HARVEST
SURVEY

Project No. F-18-R-17

Title: Check Station Surveillance of
Major Salmon and Steelhead
Fisheries in Idaho (Salmon Only)

Job No. 3

Period Covered: March 1, 1970 to February 28, 1971

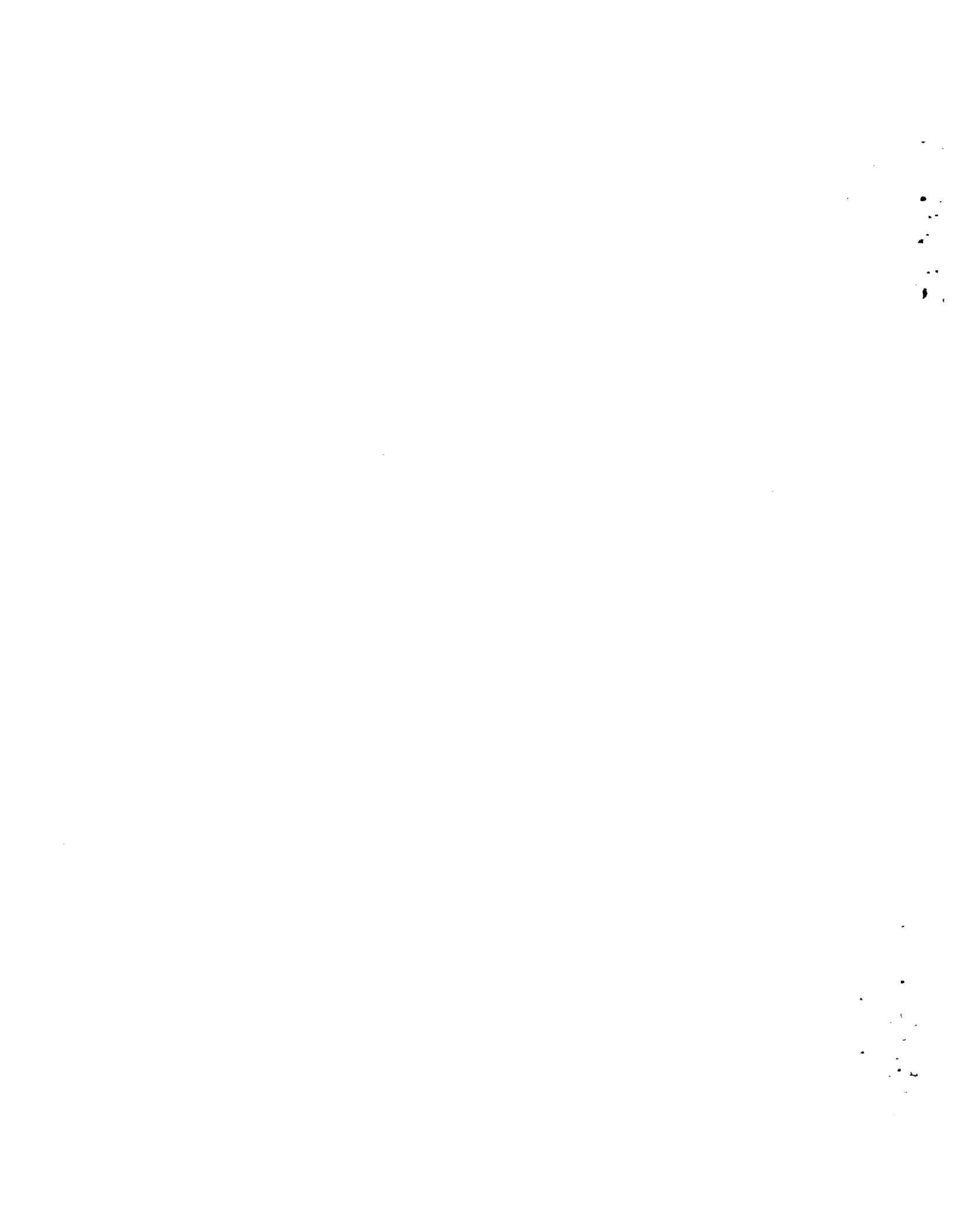
ABSTRACT

In 1970, three check stations on the upper Salmon River provided management with usable and timely chinook salmon catch data. Between June 16 and July 30, check station operators conducted 3,512 angler interviews and recorded 42,429 hours of angling effort to catch 1,198 salmon; 35.4 hours per fish. Non-residents comprised 15 percent of the salmon anglers and spent 21 percent of the total hours fished to catch 20 percent of the harvest recorded at our stations.

We recorded 8,508 man-days spent fishing for 1,198 salmon, or 7.1 man-days per fish.

By returns of permit cards marked at the stations, we estimated that 5,511 salmon 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 sample of permit holders was 4,040 fish, as reported in Job 1, F-18-R-17 (Keating).

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RECOMMENDATIONS:

We recommend that salmon harvest check stations continue annually to provide management information for 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 check station data (location, operating hours, days-per-week) and compare this with salmon and steelhead permit return data to determine if correlations exist which we can use to increase the accuracy of random sample permit catch estimates or to replace that method.

To evaluate returns to the creel from various hatcheries by checking for marked fish in the anglers bag.

TECHNIQUES USED:

We set up three check stations at major egress points through which a high percentage of Idaho's chinook anglers return to their homes (Figure 1). We planned to operate these stations five days each week from the beginning of chinook angling (dependent on water conditions) until the end of the season. In 1970, we opened the first station on June 16 and closed the last one July 30 (Tables 6 - 21) operating from 12 noon to 8 p.m. each day.

We collected the following information: date, number of resident and non-resident anglers, days fished, hours fished and salmon caught by stream or river section. When angler traffic permitted (88 percent of the time), we inspected fish for marks, clipped fins and sex and measured fork lengths 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 caught on that trip only. In 1970, punch marks were made on the left side of each permit for salmon caught on previous trips but we did not record these at our stations. We will record these in future years.

Operators also explained to uninformed anglers the newly developed system of recording catches by sub-sections 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 telephone the information to the Salmon Regional Office. Regional personnel compiled the data and forwarded it to Boise headquarters.

Biological Aides, college students on summer employment, operated the permanent check stations alone on weekdays and received assistance from locally hired labor and Fish and Game personnel ranging from Conservation Officers to Boise headquarters staff on weekends. Travel trailers provided housing. We operated each station from 12 noon to 8 p.m. Thursdays through Mondays, with only one or two unavoidable minor variations (Figure 2).

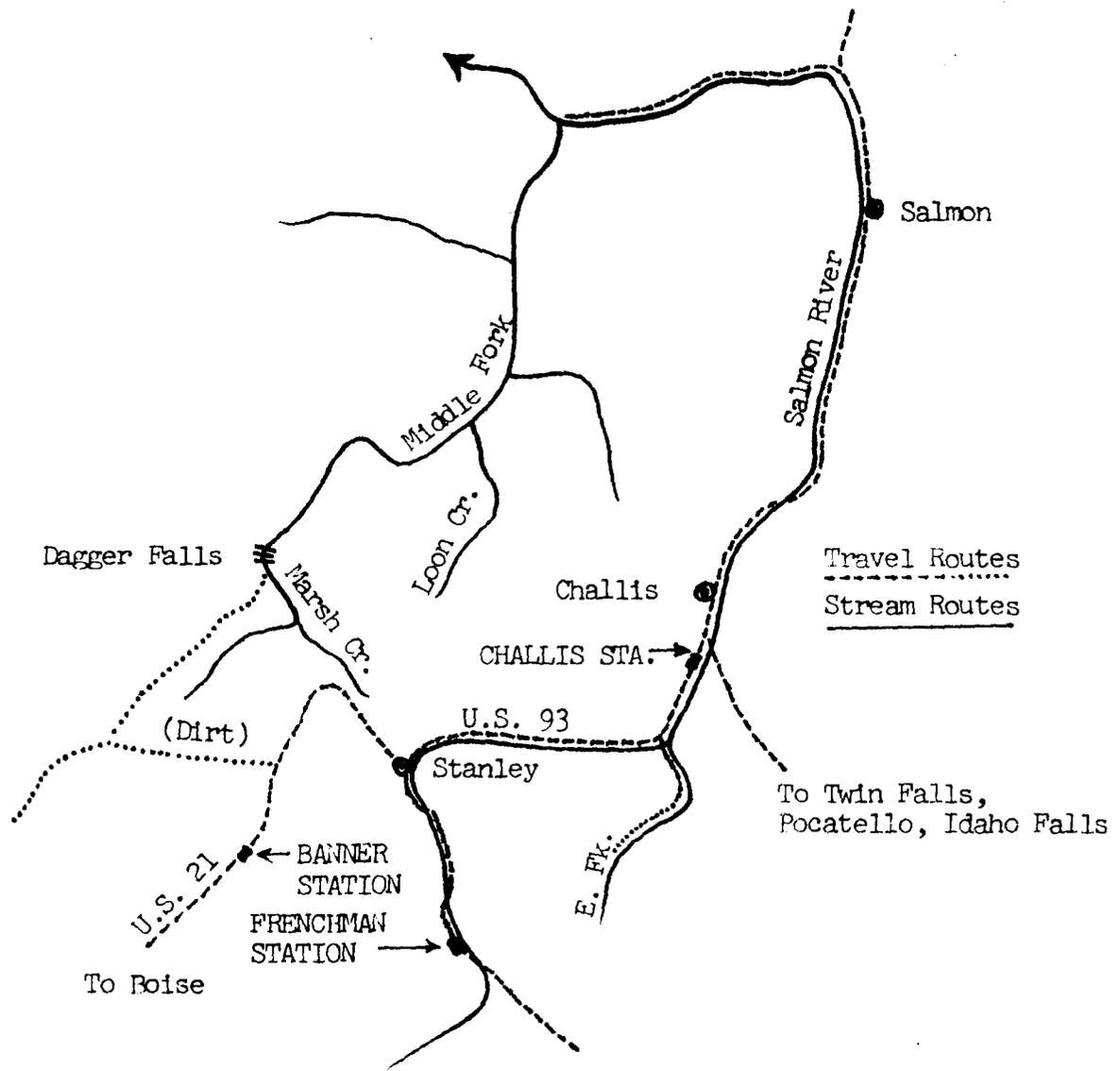


Figure 1. Map showing locations of the three salmon harvest check stations operated in 1970.



Figure 2. Check station operators interviewed over 3,500 salmon fishermen that turned into the three permanent check stations.



Figure 3. Check station personnel inspected over 1,000 salmon for marks, tags, or clipped fins and measured and sexed over 850 fish.

Table 1. Summary of data collected at the salmon harvest check stations during the 1970 salmon fishing season, Idaho.

Number of Angler Interviews:	3,512	(100%)
Resident Anglers:	3,001	(85%)
Nonresident Anglers:	511	(15%)
Hours Fished - Nonresidents:	9,126	(21%)
Hours Fished - Residents:	33,303	(79%)
Total Hours Fished:	42,429	(100%)
Chinook Caught - Nonresidents:	249	(20%)
Chinook Caught - Residents:	949	(80%)
Total Chinook Caught:	1,198	(100%)
Hours per Salmon - Nonresidents:	36.7	
Hours per Salmon - Residents:	35.1	
Combined Hours per Salmon:	35.4	
Man-days Spent Angling - Nonresidents:	1,655	(19%)
Man-days Spent Angling - Residents:	6,853	(81%)
Total Man-days Spent Angling:	8,508	(100%)
Man-days per Salmon - Nonresidents:	6.6	
Man-days per Salmon - Residents:	7.2	
Combined Man-days per Salmon:	7.1	

Table 2. Summary of marked and unmarked permits returned by salmon anglers, and expanded estimates derived from these data and from random survey, 1970, Idaho.

Stream and River Section	Total No. Permits Returned to Boise*	No. Marked on Right Side at Stations	Percent Marked on Right Side	No. Salmon Recorded at Stations	Chinook Harvest Estimates	
					From Check Stations	From Random Survey*
Salmon River - 8	333	64	19.2	489	2,546	1,963
Salmon River - 7	107	21	19.6	109	556	559
Middle Fork	164	51	31.1	374	1,202	802
East Fork	56	5	8.9	42	471	180
Marsh Creek	28	7	25.9	65	251	158
Valley Creek	26	8	30.8	31	101	101
Bear Valley Creek	4	2	50.0	6	12	22
Loon Creek	46	9	19.6	73	372	255
Salmon R. (unknown)	84	7	8.3	-	-	-
Yankee Fork	0	0	-	9	-	-
TOTALS	848	174	20.5	1,198	5,511	4,040

*See Job I,F-18-R-17, Keating, 1971. The totals do not represent the total state catch, only for the streams listed.

Table 3. Summary of salmon recorded at each check station during the 1970 salmon angling season.

Stream & River Sections	NUMBER FISH RECORDED PER STATION				
	Challis	Banner	Frenchman	Combination	Percent
Salmon River -9	210	31	248	489	41.0
Salmon River -7	100	7	2	109	9.0
Middle Fork	93	113	168	374	31.0
Loon Creek	26	1	46	73	6.0
Marsh Creek	5	36	24	65	5.5
Valley Creek	3	12	16	31	3.0
Bear Valley Cr.	0	6	0	6	.5
East Fork	20	1	21	42	3.5
Yankee Fk. (Indian)	4	1	4	9	.5
	<u>461 (38%)</u>	<u>208 (17%)</u>	<u>529 (45%)</u>	<u>1,198</u>	<u>100.0%</u>

FINDINGS:

During the 1970 chinook salmon fishing season, check station operators conducted 3,512 angler interviews. These anglers reported fishing 42,429 hours to catch 1,198 salmon, an average rate of 35.4 hours per fish. These anglers spent 8,508 man-days to catch the 1,198 salmon, or 7.1 man-days per fish (Table 1). Hours per fish ranged from 12.1 hours on Valley Creek to 42.6 hours in Salmon River-8 (Table 5).

The ratio of punched to unpunched salmon permits returned to the Boise headquarters at the end of 1970 indicated the percent of harvest from various streams and river sections checked at our stations. This allowed us to expand the check station data proportionately and arrive at an estimate of total harvest for those streams and river sections covered by our check stations (Table 2).

The check stations intercepted traffic from the Salmon River upstream from Challis which takes in most of the fishable area of Salmon River-7, the East Fork, Salmon River-8, Loon Creek, Marsh Creek, the Middle Fork, and all the tributaries from Challis upstream. The percent of the total catch from each area is presented in Table 3.

The Yankee Fork of the Salmon River remains open for fishing only to Idaho Indian tribal members. We consider the nine fish from Yankee Fork reported at the stations by Indians as far below the actual numbers caught. Because no salmon anglers returned permit cards from these waters, I did not estimate harvest from this stream.

Boise headquarters received permits with 84 salmon recorded as caught from the Salmon River but with no section designation. Seven of these showed a right hand mark applied at one of our check stations. The check station records show a section designation for all salmon checked through the station, which indicates the operators included these fish in some Salmon River section but failed to add the section on the anglers permit card. I did not include these fish in computing the expanded harvest estimates presented in Table 2.

Non-resident anglers comprised 15 percent of the salmon fishermen that stopped at our check stations. The non-resident anglers spent 21 percent of the total hours fished and 19 percent of the total man-days expended to catch 20 percent of the total chinook salmon recorded at our stations (Table 1).

The data indicates that the out-of-state fisherman spends slightly more time fishing and proportionately realizes a slightly larger catch than the resident fisherman. This seems a realistic outcome as out-of-state fishermen almost universally camp right on the stream whereas many resident anglers return home daily. The information on Table 4 tends to substantiate this; over two-thirds of the non-resident pressure appeared in Salmon River section 8 where space for campers and trailers is almost unlimited. Although the Middle Fork harvest comprised over 30 percent of the fish checked through our station, only 19 percent of the non-resident pressure occurred there. The Middle Fork is a remote area off paved roads with relatively limited camping space and access to fishing areas only by foot trail. Table 5 shows that the percentage of non-residents in major areas ranged from 15 to 25 percent.

The fact that the non-resident and resident anglers harvested chinook in almost the same proportion as the amount of effort they expended indicates their fishing skill averages about the same.

Table 4. Distribution of non-resident salmon fisherman pressure for each stream and river section and percent of harvest compared to total (resident plus non-resident) harvest, 1970.

Stream and River Sections	Non-Resident Anglers Recorded	Percent of Non-Resident Anglers	N.-Res. Percent of Total Anglers	Percent of Non-Resident Harvest	N.-Res. Percent of Total Harvest	Percent of Total Harvest Per Area
Salmon River-8	295	65.0%	9.8%	51%	10.2%	41.0%
Middle Fork	86	19.0%	2.8%	32%	6.4%	31.0%
Salmon River -7	37	8.0%	1.2%	6%	1.2%	9.0%
East Fork	17	4.0%	0.6%	3%	.6%	4.0%
Loon Creek	10	2.0%	0.3%	8%	1.6%	6.0%
Marsh Creek	7	1.5%	0.2%	0%	0.0%	5.5%
Bear Valley Cr.	1	0.5%	0.1%	0%	0.0%	0.5%
Valley Creek	<u>0</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0%</u>	<u>0.0%</u>	<u>3.0%</u>
TOTALS	453	100 %	15 %	100%	20 %	100 %

Table 5. Distribution of non-resident salmon fisherman pressure and harvest for each stream and river section during July, 1970.

Stream and River Sections	Total Anglers Checked	Non-Resident Anglers Checked	Total Chinook Checked	Non-Resident Chinook Harvest
Salmon River - 8	1,985	289 (15%)	439	126 (26%)
Middle Fork	580	88 (15%)	374	80 (21%)
Salmon River - 7	114	28 (25%)	109	17 (16%)
East Fork	87	19 (22%)	42	12 (29%)
Loon Creek	108	10 (9%)	73	14 (19%)
Marsh Creek	222	12 (5%)	65	0
Bear Valley Creek	38	0	6	0
Valley Creek	43	0	31	0
TOTALS	3,177	446 (15%)	1,189	249 (20%)

The check station operators recorded the auto license plates of 147 non-resident vehicles. Fishermen from Utah made up nearly two-thirds of the non-residents fishing for salmon in the area covered by our check stations (Table 6).

The checkers inspected 1,053 chinook salmon at the stations. They recorded 444 females (42%) and 609 males (58%) and measured 896 of these (Table 7). The operators observed three salmon with right-ventral fin-clips. We applied this mark to 4,900 chinook smolts leaving the Decker Flat experimental chinook rearing pond in May, 1968.

Because the signs directing traffic into the check stations referred to all "Fishermen", we also interviewed all trout fishermen stopping at our stations. During the course of the six weeks we operated, we interviewed 5,841 trout fishermen that spent 31,155 hours to catch 22,505 trout (Table 8). Non-residents comprised 18 percent of the trout fishermen stopping at our stations but they fished 27 percent of the total hours recorded and caught 27 percent of the total harvest. These non-resident anglers spent 24 percent of the total man-days fishing compared to 76 percent for resident fishermen.

The non-resident and resident trout fisherman appears to be equally skillful in catching trout, but the non-resident trout angler spends more time at it and catches proportionately more fish; 1.6 hrs/man-day compared to 1.0 for residents (Table 8)

From June 16 to July 30, we interviewed a total of 9,353 fishermen: both trout and salmon, resident and non-resident. Of this total, 37 percent fished for salmon, 63 percent for trout.

Angling success for chinook salmon in the upper Salmon River depends to a great extent on water conditions (Table 9). The first chinook generally enter the anglers creel the latter part of May, usually near the city of Salmon, Idaho. Spring runoff normally curtails salmon angling from the end of May to the latter part of June. In 1970, the Salmon River ran high and turbid from early May through June and chinook angling did not become good until after the first part of July (90 percent of the total harvest occurred after July 5).

In effect, the majority of the chinook harvest took place during the month of July (Table 10). The extended spring runoff undoubtedly reduced the harvest of chinook salmon in May and June. However, downriver passage problems such as delays at dams, nitrogen supersaturation, ladder malfunctions, etc., confound attempts to correlate river flows with salmon harvest.

An appendix, following, includes a series of tables showing the number of chinook from each stream checked through each station each day for the entire season. This data is presented for detailed comparisons in future years for trend analysis.

LITERATURE CITED:

Keating, James F. 1970. Annual survey of the salmon and steelhead sport fishery harvest in Idaho. F-18-R-16, Job 1 (1969).

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Table 6. State of origin of 147 non-resident anglers checked at the salmon check stations, percent from each state, and comparison with numbers of resident anglers, 1970.

State of Origin	Number of Non-Resident Anglers Checked	Percent of Non-Res. Anglers From each State	Tot. Anglers From each State (N.R.-expanded)		Percent of Resident and Non-Res. Anglers
Idaho	-	-	3,001		85.4%
Utah	94	64.0%	327		9.3%
Montana	20	14.0%	72		2.0%
California	17	12.0%	61		1.7%
Nevada	4	3.0%	15		.4%
Oregon	3	2.0%	10		.3%
New Mexico	3	2.0%	10		.3%
Oklahoma	2	1.0%	5		.2%
Nebraska	2	1.0%	5		.2%
Colorado	1	.5%	3		.1%
Texas	1	.5%	3		.1%
TOTALS	147	100 %	3,512		100 %

Table 7. Fork length in inches of 896 salmon measured at the salmon harvest check stations during June and July, 1970.

Fork Length Inches	Males	Females
20	21	3
21	12	4
22	28	2
23	12	1
24	33	1
25	20	7
26	35	4
27	41	9
28	45	10
29	29	9
30	53	25
31	26	19
32	36	28
33	21	15
34	17	21
35	11	30
36	14	68
37	6	37
38	5	30
39	9	23
40	9	22
41	7	10
42	4	5
43	5	2
44	2	2
45	2	2
46	2	1
47	0	0
48	0	0
49	1	0
TOTALS	506	390

Table 8. Summary of trout angler data collected at the F-18-R salmon harvest check stations during June and July, 1970.

Number Of Angler Interviews:	5,841 (100%)
Resident Anglers:	4,764 (82%)
Non-Resident Anglers:	1,077 (18%)
Hours Fished, Non-Resident:	8,486 (27%)
Hours Fished, Resident:	22,669 (73%)
Total Hours Fished:	31,155 (100%)
Trout Caught, Non-Resident:	6,130 (27%)
Trout Caught, Resident:	16,375 (73%)
Trout Caught, Combined:	22,505 (100%)
Hours Per Trout, Non-Resident:	1.4
Hours Per Trout, Resident:	1.4
Man-days Spent Angling, Non-Res.:	5,293 (24%)
Man-days Spent Angling, Resident:	22,054 (76%)
Total Man-days Spent Angling:	27,347 (100%)
Hrs./Man-day Spent Angling, Non-Res.:	1.6
Hrs./Man-day Spent Angling, Resident:	1.0

Table 9. Fish caught, hours fished, and hours-per-fish, by area, recorded at the salmon harvest check stations July, 1970.

JULY, 1970									
WEEK (Monday through Sunday)									
Area	1 - 5			6 - 12			13 - 19		
	Fish Cght.	Hours Fished	Hrs. Fish	Fish Cght.	Hours Fished	Hrs. Fish	Fish Cght.	Hours Fished	Hrs. Fish
S.R. - 8	42	2323	55.3	62	5794	93.4	175	4895	27.9
Middle Fk.	34	1594	46.8	114	2919	25.6	156	1488	9.5
S.R. - 7	0	24	----	2	87	43.5	59	1334	22.6
Loon Cr.	8	194	24.2	9	356	39.5	37	491	13.3
Marsh Cr.	1	135	135.0	6	755	125.0	28	502	17.9
Valley Cr.	0	2	----	3	104	34.6	19	179	9.0
East Fork	1	76	76.0	7	179	25.5	13	311	23.9
Area	20 - 26			27 - 31			Combined		
	Fish Cght.	Hours Fished	Hrs. Fish	Fish Cght.	Hours Fished	Hrs. Fish	Fish Cght.	Hours Fished	Hrs. Fish
S.R. - 8	150	5223	34.8	31	1370	44.1	460	19605	42.6
Middle Fk.	60	911	15.2	5	285	57.0	369	7197	19.5
S.R. - 7	37	914	24.7	10	122	12.2	108	2481	23.0
Loon Cr.	11	181	16.5	8	294	36.7	73	1516	20.7
Marsh Cr.	30	748	24.9	0	12	----	65	2152	33.1
Valley Cr.	9	89	9.9	0	0	----	31	374	12.1
East Fork	11	236	21.5	10	85	8.5	42	887	21.1
Average Hours/Fish June 16, - July 30, :									35.4
Average Hours/Fish July 1, - July 30.:									33.4

Table 10. Summary of salmon recorded at all check stations, by day, during June and July, 1970.

JUNE, 1970			JULY, 1970		
Date	Day	No. Fish	Date	Day	No. Fish
1	M	-	1	W	-
2	T	-	2	Th	13
3	W	-	3	F	10
4	Th	-	4	S	12
5	F	-	5	Sn	51
6	S	-			
7	Sn	-	6	M	15
			7	T	-
8	M	-	8	W	-
9	T	-	9	Th	-
10	W	-	10	F	33
11	Th	-	11	S	53
12	F	-	12	Sn	106
13	S	- 1/			
14	Sn	-	13	M	66
			14	T	21
15	M	-	15	W	-
16	T	0 2/	16	Th	56
17	W	0	17	F	57
18	Th	5	18	S	72
19	F	5	19	Sn	217
20	S	0			
21	Sn	5	20	M	45
			21	T	-
22	M	1	22	W	-
23	T	-	23	Th	36
24	W	-	24	F	31
25	Th	0	25	S	52
26	F	3	26	Sn	144
27	S	2			
28	Sn	11	27	M	38
			28	T	12
29	M	3	29	W	13
30	T	-	30	Th	1
			31	F	-
TOTALS:		35			1,154

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

2/ A zero (0) indicates no salmon checked through stations.

Does not include Yankee Fork harvest (9 fish).

A P P E N D I X

Summaries of salmon recorded daily at each check station by stream and river sections during June and July, 1970.

June, 1970

NUMBER FISH RECORDED BY STATION-S.R. 8

Date & Days	Challis	Banner	Frenchman	Combined
16 T	<u>0</u> ^{2/}	<u>-</u> ^{1/}	-	0
17 W	0	-	-	0
18 Th	5	0	0	5
19 F	2	0	3	5
20 S	0	0	0	0
21 SN	0	0	3	3
22 M	1	0	0	1
23 T	-	-	-	-
24 W	-	-	-	-
25 Th	0	0	0	0
26 F	3	0	0	3
27 S	2	0	0	2
28 SN	4	0	3	7
29 M	3	0	0	3
30 T	-	-	-	-
TOTALS	20	0	9	29

1/ A dash (-) indicates station closed.

2/ A zero (0) indicates no salmon checked through station.

July, 1970		NUMBER FISH RECORDED PER STATION - S.R. 8			
Date	Days	Challis	Banner	Frenchman	Combined
1	W	-	- ^{1/}	-	-
2	Th	3	0 ^{2/}	2	5
3	F	2	0	6	8
4	S	7	1	1	9
5	Sn	8	0	12	20
6	M	9	0	1	10
7	T	-	-	-	-
8	W	-	-	-	-
9	Th	-	-	-	-
10	F	2	0	6	8
11	S	0	2	6	8
12	Sn	12	3	21	36
13	M	6	0	14	20
14	T	-	-	7	7
15	W	-	-	-	-
16	Th	10	1	-	11
17	F	5	4	10	19
18	S	25	0	9	34
19	Sn	36	9	39	84
20	M	17	0	11	28
21	T	-	-	-	-
22	W	-	-	-	-
23	Th	12	1	8	21
24	F	2	1	2	5
25	S	4	2	12	18
26	Sn	25	7	46	78
27	M	5	0	12	17
28	T	-	-	10	10
29	W	-	-	4	4
30	Th	-	0	-	-
31	F	-	-	-	-
TOTALS:		190	31	239	460

^{1/} A dash (-) indicates station closed.

^{2/} A zero (0) indicates no salmon checked through station.

July,* 1970

NUMBER FISH RECORDED PER STATION - S.R. 7

Date	Days	Challis	Banner	Frenchman	Combined
1	W	-	- ^{1/}	-	-
2	Th	0	0 ^{2/}	0	0
3	F	0	0	0	0
4	S	0	0	0	0
5	Sn	0	0	0	0
6	M	0	0	0	0
7	T	-	-	-	-
8	W	-	-	-	-
9	Th	-	-	-	-
10	F	0	0	0	0
11	S	0	2	0	2
12	Sn	0	0	0	0
13	M	4	1	1	6
14	T	-	-	0	0
15	W	-	-	-	-
16	Th	12	0	-	12
17	F	3	0	0	3
18	S	3	0	0	3
19	Sn	35	0	0	35
20	M	2	0	0	2
21	T	-	-	-	-
22	W	-	-	-	-
23	Th	8	0	0	8
24	F	7	0	0	7
25	S	7	0	1	8
26	Sn	9	3	0	12
27	M	10	0	0	10
28	T	-	-	0	0
29	W	-	-	0	0
30	Th	-	0	-	-
31	F	-	-	-	-
TOTALS:		100	6	2	108

^{1/} A dash (-) indicates station closed.

^{2/} A zero (0) indicates no salmon checked through station.

* One chinook recorded for S.R.-7 in June (Banner, June 28).

June, 1970

NUMBER FISH RECORDED PER STATION-MIDDLE FORK
SALMON RIVER

Date & Days	Challis	Banner	Frenchman	Combined
16 T	0 <u>2/</u>	- <u>1/</u>	-	0
17 W	0	-	-	0
18 Th	0	0	0	0
19 F	0	0	0	0
20 S	0	0	0	0
21 Sn	0	2	0	2
22 M	0	0	0	0
23 T	-	-	-	-
24 W	-	-	-	-
25 Th	0	0	0	0
26 F	0	0	0	0
27 S	0	0	0	0
28 Sn	0	1	2	3
29 M	0	0	0	0
30 T	-	-	-	-
TOTALS	0	3	2	5

1/ A dash (-) indicates station closed.

2/ A zero (0) indicates no salmon checked through station.

July, 1970

NUMBER FISH RECORDED PER STATION-MIDDLE FORK SALMON RIVER

Date & Days		Challis	Banner	Frenchman	Combined
1	W	<u>1/</u>	-	-	-
2	Th	2	<u>02/</u>	4	6
3	F	0	0	2	2
4	S	0	1	2	3
5	Sn	0	6	17	23
6	M	0	3	0	3
7	T	-	-	-	-
8	W	-	-	-	-
9	Th	-	-	-	-
10	F	8	6	9	23
11	S	12	19	6	37
12	Sn	10	20	21	51
13	M	0	3	22	25
14	T	-	-	10	10
15	W	-	-	-	-
16	Th	12	14	-	26
17	F	2	0	4	21
18	S	14	15	15	29
19	Sn	16	13	16	45
20	M	0	4	9	13
21	T	-	-	-	-
22	W	-	-	-	-
23	Th	0	0	4	4
24	F	3	1	8	12
25	S	5	0	7	12
26	Sn	9	3	7	19
27	M	0	1	1	2
28	T	-	-	2	2
29	W	-	-	0	0
30	Th	-	1	-	1
31	F	-	-	-	-
TOTALS		93	110	166	369

1/ A dash (-) indicates station closed.

2/ A zero (0) indicates no salmon checked through station.

July,* 1970

NUMBER FISH RECORDED PER STATION-LOON CR.

Date & Days		Challis	Banner	Frenchman	Combined
1	W	- ^{1/}	-	-	-
2	Th	0	0 ^{2/}	2	2
3	F	0	0	0	0
4	S	0	0	0	0
5	Sn	0	1	5	6
6	M	0	0	0	0
7	T	-	-	-	-
8	W	-	-	-	-
9	Th	-	-	-	-
10	F	1	0	1	2
11	S	0	0	2	2
12	Sn	2	0	3	5
13	M	0	0	5	5
14	T	-	-	4	4
15	W	-	-	-	-
16	Th	0	0	-	0
17	F	6	0	2	8
18	S	3	0	0	3
19	Sn	4	0	13	17
20	M	0	0	0	0
21	T	-	-	-	-
22	W	-	-	-	-
23	Th	0	0	0	0
24	F	0	0	0	0
25	S	0	0	0	0
26	Sn	10	0	1	11
27	M	0	0	8	8
28	T	-	-	0	0
29	W	-	-	0	0
30	Th	-	0	-	0
31	F	-	-	-	-
TOTALS		26	1	46	73

^{1/} A dash (-) indicates station closed.

^{2/} A zero (0) indicates no salmon checked through station.

* No chinook recorded for Loon Creek in June.

July, * 1970

NUMBER FISH RECORDED PER STATION-EAST FORK
SALMON RIVER

Date & Days	Challis	Banner	Frenchman	Combined
1 W	- <u>1/</u>	-	-	-
2 Th	0	0 <u>2/</u>	0	0
3 F	0	0	0	0
4 S	0	0	0	0
5 Sn	1	0	0	1
6 M	1	0	0	1
7 T	-	-	-	-
8 W	-	-	-	-
9 Th	-	-	-	-
10 F	0	0	0	0
11 S	0	0	4	4
12 Sn	2	0	0	2
13 M	1	0	0	1
14 T	-	-	0	0
15 W	-	-	-	-
16 Th	3	0	-	3
17 F	0	0	0	0
18 S	0	1	0	1
19 Sn	6	0	2	8
20 M	1	0	0	1
21 T	-	-	-	-
22 W	-	-	-	-
23 Th	0	0	2	2
24 F	0	0	0	0
25 S	4	0	1	5
26 Sn	1	0	2	3
27 M	0	0	1	1
28 T	-	-	0	0
29 W	-	-	9	9
30 Th	-	0	-	0
31 F	-	-	-	-
TOTALS	20	1	21	42

1/ A dash (-) indicates station closed.

2/ A zero (0) indicates no salmon checked through station.

* No chinook recorded for East Fork in June.

July, 1970

NUMBER FISH RECORDED PER STATION-MARSH CR.

Date & Days		Challis	Banner	Frenchman	Combined
1	W	- ^{1/}	-	-	-
2	Th	0	0 ^{2/}	0	0
3	F	0	0	0	0
4	S	0	0	0	0
5	Sn	0	0	1	1
6	M	0	0	0	0
7	T	-	-	-	-
8	W	-	-	-	-
9	Th	-	-	-	-
10	F	0	0	0	0
11	S	0	0	0	0
12	Sn	0	4	2	6
13	M	2	2	3	7
14	T	-	-	0	0
15	W	-	-	-	-
16	Th	0	4	-	4
17	F	0	4	0	4
18	S	0	0	0	0
19	Sn	0	4	9	13
20	M	0	0	0	0
21	T	-	-	-	-
22	W	-	-	-	-
23	Th	0	0	1	1
24	F	0	7	0	7
25	S	2	4	1	7
26	Sn	1	7	7	15
27	M	0	0	0	0
28	T	-	-	0	0
29	W	-	-	0	0
30	Th	-	0	-	0
31	F	-	-	-	-
TOTALS		5	36	24	65

^{1/} A dash (-) indicates station closed.

^{2/} A zero (0) indicates no salmon checked through station.

July,* 1970		NUMBER FISH RECORDED PER STATION-VALLEY CREEK			
Date & Days		Challis	Banner	Frenchman	Combined
1	W	-	-	-	-
2	Th	0	0 ^{1/2}	0	0
3	F	0	0	0	0
4	S	0	0	0	0
5	Sn	0	0	0	0
6	M	0	1	0	1
7	T	-	-	-	-
8	W	-	-	-	-
9	Th	-	-	-	-
10	F	0	0	0	0
11	S	0	0	0	0
12	Sn	0	0	2	2
13	M	0	0	0	0
14	T	-	-	0	0
15	W	-	-	-	-
16	Th	0	0	-	0
17	F	0	0	2	2
18	S	0	0	2	2
19	Sn	0	6	9	15
20	M	0	0	1	1
21	T	-	-	-	-
22	W	-	-	-	-
23	Th	0	0	0	0
24	F	0	0	0	0
25	S	0	2	0	2
26	Sn	3	3	0	6
27	M	0	0	0	0
28	T	-	-	0	0
29	W	-	-	0	0
30	Th	-	0	0	0
31	F	-	-	-	0
TOTALS		3	12	16	31

1/ A dash (-) indicates station closed.

2/ A zero (0) indicates no salmon checked through station.

* No chinook recorded for Valley Creek in June.

July, * 1970

NUMBER FISH RECORDED PER STATION-BEAR VALLEY CR.

Date & Days		Challis	Banner	Frenchman	Combined
1	W	- 1/	-	-	-
2	Th	0	0 2/	0	0
3	F	0	0	0	0
4	S	0	0	0	0
5	Sn	0	0	0	0
6	M	0	0	0	0
7	T	-	-	-	-
8	W	-	-	-	-
9	Th	-	-	-	-
10	F	0	0	0	0
11	S	0	0	0	0
12	Sn	0	4	0	4
13	M	0	2	0	2
14	T	-	-	0	0
15	W	-	-	-	-
16	Th	0	0	-	0
17	F	0	0	0	0
18	S	0	0	0	0
19	Sn	0	0	0	0
20	M	0	0	0	0
21	T	-	-	-	-
22	W	-	-	-	-
23	Th	0	0	0	0
24	F	0	0	0	0
25	S	0	0	0	0
26	Sn	0	0	0	0
27	M	0	0	0	0
28	T	-	-	0	0
29	W	-	-	0	0
30	Th	-	0	-	0
31	F	-	-	-	-
TOTALS		0	6	0	6

1/ A dash (-) indicates station closed.

2/ A zero (0) indicates no salmon checked through station.

* No chinook recorded for Bear Valley Creek in June.

JOB COMPLETION REPORT
RESEARCH PROJECT STATEMENT

State of Idaho

Name: ANNUAL SURVEY OF SALMON AND STEELHEAD
SPORT FISHERY HARVEST IN IDAHO

Project No. F-18-R-17

Title: Check Station Surveillance of Salmon
and Steelhead Fisheries in Idaho
(Steelhead Only)

Job No. 3

Period Covered: March 1, 1970 to February 28, 1971

ABSTRACT

Steelhead check stations operated in the major Salmon River steelhead fishing areas in the spring and fall, 1970, provided estimates of hatchery fish catch percentage and described fishing success and fish size.

Station operators also showed hundreds of anglers how to properly fill out steelhead permits thereby improving data obtained in Job 1.

Submitted by:

Donald R. Corley, Regional Fishery Biologist
Thomas L. Welsh, Regional Fishery Biologist

RECOMMENDATIONS:

Steelhead check stations at North Fork and Riggins should be operated during the main fishing periods fall and spring each year. A satisfactory check of fish for fin clips can be obtained by operating four to five days each week.

The operation of a check station in a river section insures that a high percentage of permits from that section have proper catch location notations. Every effort should be made to insure that permits in all river sections are checked to insure uniform weighing of percentages of location marks. If this is not done, unmarked catch records are incorrectly prorated out to the various sections and impart a positive bias to catch estimates for sections with check stations.

OBJECTIVES:

To collect steelhead catch statistics from selected heavily fished river sections which can be used to prorate statewide catch estimates by river section and to provide estimates of hatchery steelhead returns. Catch per angler data also provides long-term catch trend measurements.

TECHNIQUES USED:

Temporary personnel operate check stations covering primary egress points for Salmon River sections 3, 4, and 5 at sites above Riggins (section 3) and at North Fork (sections 4 and 5). Biologists assist on weekends and supervise the operation.

Prepared forms insure that catch data (date, river section, sex, size and fin marks) are properly recorded.

Late in 1970 operators started marking permits with paper punches to permit the computation of a checked:no check ratio for catches reported to the Boise office.

FINDINGS:

Prior to 1970, Regional Fisheries Biologists operated steelhead check stations periodically at North Fork and Riggins to sample fishing success and to check fish size and residence of anglers. Stations were operated sporadically only when success was good and for varying but limited number of days each season.

Table 1 summarizes data collected from anglers who fished the Salmon River below North Fork, primarily in river sections 4 and 5, between 1957 and 1969.

Total steelhead catch estimates by month for the Salmon River from 1964 to 1970 are summarized from Job 1 of the Statewide Fishing Harvest Survey (Table 2). We have subdivided the catch by river sections since 1969 (Job 1).

Don Corley, Regional Fishery Biologist, Salmon, operated the North Fork station on 36 days between February 21 and April 12, 1970 (Table 3). He checked 2,633 anglers who fished 24,176 hours to catch 553 steelhead, including 140 fish (25 percent) bearing worn or clipped fins from hatcheries.

In the fall of 1970, Corley operated his station on 27 days between October 10 and November 15 (Table 4). The 1,067 anglers checked caught 562 steelhead in 8,870 hours including 73 (17 percent) which had worn or clipped fins.

Table 1. Summary of steelhead catch data collected from the Salmon River near North Fork, Idaho, from 1957 through 1969.

Month/Year	Days Checked	Wk.	Wk.	Number Anglers	Number Hours	Number Steelhead	Hours Per Steelhead	Average Size-T.L.	Size Range	Number Measured
Sept. 1957	?			134	425	25	17.0			
Oct. 1957	"			118	621	67	9.2			
Nov. 1957	"			21	100	10	10.0			
Jan. 1958	"			24	71	8	8.9			
Feb. 1958	"			332	1,253	79	15.8			
Mar. 1958	"			835	5,300	530	10.0			
Jan. & Feb. 1959	"			135	649	21	30.9			
Feb. 1959	"			255	784	90	8.7			
Mar. 1959	"			1,978	14,562	420	34.7			
Oct. 1962	"			10	41	1	41.0			
Nov. 1962	"			6	22	0	0			
Dec. 1962	"			4	24	0	0			
Mar. 1963	1	2		236	1,649	122	13.5			
Apr. 1963		1		374	3,004	259	11.5	28.5	20-37	174
Oct. 1963		2		87	450	35	12.8	27.4	23-34	33
Nov. 1963				62	527	37	14.2	-	-	-
Jan. 1964				6	19	6	3.2	29.8	23-35	6
Mar. 1964	1			31	330	10	33.0	28.0	23-34	10
Apr. 1964	4			606	7,422	285	26.0	29.1	24-37	233
Oct. 1964	1			49	599	24	24.9	28.2	23-36	22
Mar. 1965	1	2		210	1,786	33	54.1	28.9	21-37	31
Oct. 1965		2		262	2,694	115	23.4	27.7	22-37	109
Mar. 1966	1	2		702	6,584	182	36.2	27.0	20-36	180
Apr. 1966		1		128	1,117	18	62.1	25.7	22-33	18
Oct. 1966		2		210	2,579	101	25.5	28.0	23-37	92
Feb. 1967	1			137	692	20	34.6	27.5	23-35	20
Mar. 1967	1			201	2,592	43	60.3	28.9	21-38	39
Nov. 1967	1	2		215	2,612	126	20.7	28.1	22-38	118
Mar. 1968		2		291	2,968	58	51.2	27.0	21-34	41
Oct. 1968		1		81	788	60	13.1	25.8	19-44	58
Nov. 1968		1		33	278	20	13.9	28.1	22-37	17
Mar. 1969	1	3		338	2,853	102	28.0	25.2	20-35	100
Oct. 1969		4		266	2,294	66	34.8	25.8	23-31	13
Nov. 1969	8	7		513	3,783	215	17.6	29.9	22-39	165

Table 2. Estimates of Salmon River steelhead catches 1964 to 1970, by month from statewide fishing harvest survey, Idaho.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1970	281	1,522	1,838	748	133	--	--	9	508	3,190	1,547	331	10,107
1969	392	749	1,551	321	134	125	134	53	383	2,906	1,872	308	8,914
1968	422	885	2,018	906	175	93	93	10	257	2,780	2,090	566	10,295
1967	447	1,832	1,832	1,416	138	43	53	11	138	1,885	2,279	564	10,650
1966	390	511	1,832	669	102	65	28	--	186	2,529	2,148	837	9,298
1965	167	150	1,622	705	44	53	--	79	405	3,331	1,912	326	8,813
1964	346	768	2,237	1,700	58	10	--	10	403	2,112	1,584	384	9,602

Table 4. Summary of steelhead check station data collected at North Fork, Salmon River, fall, 1970.

Date	Number Anglers	Hours Fished	Fish Caught by Area *			Hours Per Fish	Eroded Dorsal Only by Areas			Worn or clipped fins			Percent Hatchery Fish		
			4	5	MP		4	5	MF*	LV**RV					
										AD	AD	AD			
Oct.															
10	39	201	7	5	0	16.7	0	2	0				16.7		
11	69	553	10	10	0	27.6	0	1	0				5.0		
14	43	396	6	13	4	17.2	0	3	0				13.0		
15	21	187	6	11	0	11.0	1	1	0				11.8		
16	40	288	12	8	0	14.4	0	3	0				15.0		
17	48	342	0	21	1	15.5	0	4	0			Sec.5 1-22"	22.7		
18	70	492	5	27	0	15.3	1	3	0			Sec.5 1-22"	15.3		
21	33	307	6	4	0	30.7	0	0	0				0		
22	33	344	3	12	2	20.2	0	5	0				29.4		
23	26	258	17	8	0	10.7	0	2	0				8.0		
24	23	144	3	7	0	14.4	0	1	0				10.0		
25	82	880	40	17	0	15.4	1	0	0			Sec.4 1-25"	3.5		
28	20	65	0	10	0	6.5	0	1	0				10.0		
29	31	228	7	7	0	16.3	0	0	0				0		
30	45	717	31	12	0	16.7	5	0	0			Sec.5 1 Sec.4 2	18.6		
31	30	208	0	11	0	18.9	0	7	0				63.6		
Nov.															
1	84	512	10	18	0	18.3	4	5	0				32.1		
4	31	181	1	1	0	90.5	0	0	0				0		
5	16	70	1	6	0	10.0	0	4	0				57.1		
6	14	64	0	5	0	12.8	0	2	0				40.0		
7	43	340	1	10	0	30.9	0	0	0				0		
8	76	872	10	10	0	43.6	0	0	0				0		
11	55	510	5	14	0	26.8	2	4	0				31.6		
12	16	148	0	7	0	21.1	0	2	0				28.6		
13	13	125	6	7	0	9.6	2	1	0				23.1		
14	27	139	0	12	0	11.5	0	1	0				8.3		
15	39	308	7	15	0	14.0	2	3	0			Sec.5 1-27"	31.8		
												Sec.5 1-22"			
TOTAL	1,067	8,879	194	288	7	X=20.6	18	55	0	0	1	0	3	4	16.6

* Middle Fork Salmon River

** Left ventral, right ventral and adipose fin clips; these are included in the total caught by area.

Length frequency distributions of steelhead caught by type of fish, marked or unmarked, in the spring and fall of 1970 at North Fork are shown in Table 5 and 6.

Tom Welsh, Regional Fishery Biologist, McCall, operated the Shorts Bar check station immediately above Riggins to check anglers fishing Salmon-3 section of the river. The station attendant checked 688 anglers with 116 steelhead taken in 6,100 hours between February 27 and April 12, 1970 (Table 7). They caught no marked fish.

The fall fishery was checked on 7 weekends between October 17 and November 29, 1970, at Shorts Bar. The 674 anglers checked fished 3,754 hours and caught 224 steelhead including two with worn fins (Table 8). The length frequency distribution of the 224 steelhead checked in the fall is shown in Table 9.

This report includes only raw statistics gathered by management personnel at check stations. Analysis of the data including expansions of samples to total estimates are presented in two annual reports--the IPC-26, steelhead transplanting project and the Hayden Creek steelhead rearing pond evaluation both by Melvin Reingold (1971) and in Department administrative status reports.

In addition to gathering catch statistics and checking for fin clips, the station operators checked steelhead permits to insure that anglers properly filled in river section data.

Table 5. Length frequency distribution of steelhead trout in creels examined at North Fork check station, Salmon River, spring, 1970.

Total Length Inches	Deformed Dorsal		Marked Fish		Unmarked Fish	
	Females	Males	Females	Males	Females	Males
20	1	--			--	--
21	3	1			1	1
22	14	3			8	--
23	13	2			11	1
24	18	5	1 RVad*	1ad	18	5
25	8	5	1 LV-1 RV		18	5
26	14	--	1 RVad-1 ad		19	3
27	13	1	2 ad		19	9
28	10	1	1 RV		24	5
29	8	2	1 ad		16	3
30	6	1	1 RVad		23	3
31	3	2			24	7
32	1	--			32	3
33	2	--			21	7
34	--	--			17	10
35	--	--			11	5
36	--	1			6	4
37	--	--			1	3
38	--	--			2	4

TOTAL 114 24 8 1 271 78

* Finclips: RV-right ventral; ad-adipose; LV-left ventral

Table 6. Length frequency distribution of steelhead trout in creels of anglers at North Fork station, Salmon River, Fall, 1970.

Length Inches-T.L.	Deformed Dorsal		Marked Fish		Unmarked Fish	
	Females	Males	Females	Males	Females	Males
20					7	
21	4	2			7	2
22	11	1	3 RVad		24	7
23	16	3			34	9
24	10	4	1 ad	1 ad	47	12
25	3	3	2 ad		44	22
26	2	3			33	16
27	4	1		1 RV	30	20
28	1	2	1 RV	1 ad	13	11
29	2	2	1 RV	1 RV	11	15
30					13	3
31	1				9	
32					1	2
33					8	
34						1
35						1
36						1
37						1
38						1
N =	54	21	8	4	281	124

Table 7. Summary of steelhead check station records at Shorts Bar, Salmon River, Spring, 1970.

Date	Number Anglers	Total Hours Fished	Hours Fish Caught	Hours Per Fish
Feb. 27 - March 1	--	950	23	41.3
March 2	8	81	5	16.2
March 7	65	367	7	52.4
March 8	113	807	16	50.4
March 13	18	167	6	27.8
March 14	62	363	3	121.0
March 15	91	801	15	53.4
March 16	22	113	0	--
March 21	73	365	4	91.2
March 22	103	1,128	27	41.8
March 24	11	119	0	0.0
March 28	52	237	0	--
March 29	34	370	10	37.0
April 10 - 12	36	232	0	--
TOTALS	688	6,100	116*	52.6

* No worn fins, indicating hatchery origin, were noted.

Table 8. Summary of steelhead check station records at Shorts Bar, Salmon River, Fall, 1970.

Date	Number Anglers	Hours Fished	Total Fish Caught	Hours Per Fish	Eroded Dorsal Only	Percent Hatchery Fish
October 17	49	110	16	6.9	0	0
October 18	84	348	60	5.8	2	3.3
October 21	58	181	8	22.6	0	0
October 25	52	256	31	8.3	0	0
October 31	26	102	3	34.0	0	0
November 1	99	567	32	17.7	0	0
November 7	47	461	18	25.6	0	0
November 8	66	498	11	44.8	0	0
November 14	30	128	6	21.8	0	0
November 15	45	377	13	29.0	0	0
November 21	33	287	12	24.0	0	0
November 22	20	157	7	22.0	0	0
November 28	21	75	3	25.0	0	0
November 29	44	211	4	53.0	0	0
TOTAL	674	3,753	224	16.8	2	0.9

Table 9. Length frequency distribution of steelhead trout in creels of anglers at Shorts Bar check station, Salmon River, Fall, 1970

FORK LENGTH	TOTAL
(Inches)	
20	1
21	1
22	14
23	5
24	28
25	26
26	51*
27	33*
28	26
29	10
30	9
31	8
32	5
33	2
34	2
35	1
36	1
37	1
TOTAL	224

* One steelhead bearing worn dorsal fin in 26 and 27 inch frequency class.

LITERATURE CITED:

Keating, James F. 1970. Annual Survey of the Salmon and Steelhead Sport Fishery Harvest in Idaho, 1969. Idaho Fish and Game Department. 11 pp.

Bjornn, Ted C. 1966. Statewide Fishing Harvest Survey for 1964. Idaho Fish and Game Department. 26 pp.

Submitted by:

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Submitted by:

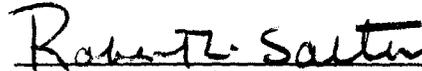
James F. Keating
Fishery Research Supervisor

Melvin Reingold
Senior Fishery Research Biologist

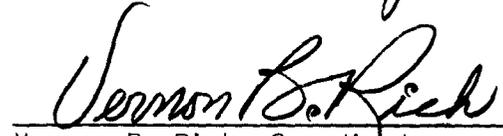
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