

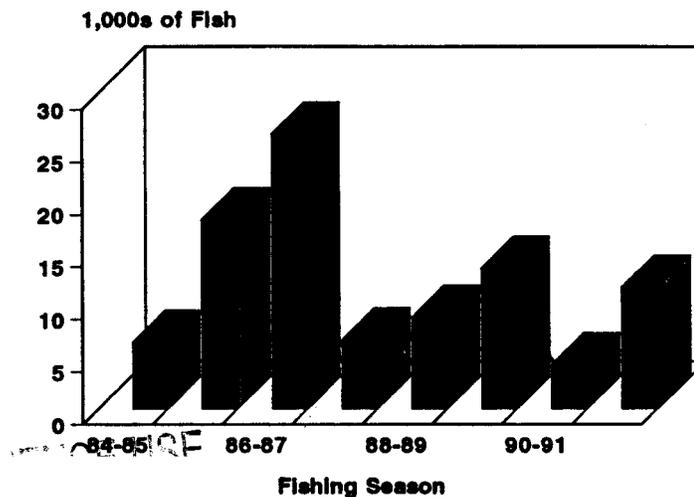


LOWER SNAKE RIVER
COMPENSATION PLAN
Hatchery Program

EVALUATION OF THE HATCHERY-WILD COMPOSITION OF IDAHO SALMON AND STEELHEAD HARVEST

Period Covered: October 1, 1991 to December 31, 1992

SALMON RIVER STEELHEAD HARVEST TOTALS



By

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ABSTRACT

Steelhead trout Oncorhynchus mykiss and chinook salmon O. tshawytscha fisheries in Idaho are monitored to assess hatchery contribution, distribution, and adult return rates from juveniles released from hatcheries in Idaho. Coded wire tags are retrieved from fish harvested by anglers and harvest rates calculated by month and river section.

During the fall 1991 and spring 1992 steelhead seasons, 26,576 anglers were interviewed and 3,965 adult steelhead examined, which was 14.7% of the total steelhead harvest. We retrieved 208 coded wire tags from 74 different tag groups. The total estimated harvest for the 1991-92 season was 29,967 hatchery and 20 wild/natural fish, of which an estimated 9,850 were produced by the U.S. Fish and Wildlife Service Lower Snake River Compensation Plan (LSRCP). An additional 3,204 returned to hatchery racks or to off-site release locations. Adult returns were severely reduced by poor survival during both downstream migration of juveniles and upstream migration of adults.

The estimated total return of A-strain adults from 1,493,851 smolts released at Sawtooth Hatchery in 1989 was 2,269 (0.15%), and 79% of the return was harvested. An estimated 1,916 (0.24%) B-strain adults returned from 789,876 smolts released into the East Fork Salmon River in 1989.

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INTRODUCTION

Chinook salmon *Oncorhynchus tshawytscha* and steelhead trout *O. mykiss* are raised in Idaho hatcheries to mitigate for losses caused by the construction of hydroelectric dams. Adults returning to hatcheries in the Salmon and Clearwater River basins commingle with each other and with wild stocks. In the Snake River, fish destined for Idaho also commingle with adults returning to Oregon and Washington streams.

The main purpose of this project is to determine the composition of the anadromous fish harvest in the Idaho fishery and to estimate the adult harvest contribution from juveniles produced in Lower Snake River Compensation Plan (LSRCP) hatcheries. Contribution to the Idaho fishery is one of the measures of performance of LSRCP fish.

Harvest management of steelhead in Idaho is directed toward harvest of hatchery fish and protection of wild and naturally-produced fish. Currently, wild stocks are below escapement goals, and protection is necessary to perpetuate these fish over the long run. Beginning in 1984, all hatchery-produced steelhead smolts released in Idaho rivers and streams had their adipose fins excised before release so returning adults could be selectively harvested.

In the fall 1991 and spring 1992 seasons, all age groups of hatchery steelhead returning to Idaho were marked by adipose fin clips, and regulations stated that "only steelhead with a missing adipose fin (as evidenced by a healed scar) may be kept." Consequently, the harvest of any wild (unmarked) steelhead was illegal. Table 1 lists the fall 1991 and spring 1992 regulations.

Representative groups of steelhead are marked with coded wire tags prior to release. Anglers are interviewed and fish snouts are retrieved in all major harvest areas to recover these tags from the fishery. Information is collected and used to estimate timing, straying, exploitation, harvest distribution, and relative abundance of wild and hatchery stocks. Total harvested numbers are estimated by a statewide harvest survey, and the harvest contribution for each hatchery program is derived from tag recoveries.

In recent years, harvest opportunity for chinook salmon has been limited to hatchery stocks. Harvest is allowed when returning adult numbers exceed hatchery escapement need. A harvest season for spring chinook salmon on the Clearwater River was opened on June 13, 1992 and closed July 10, 1992. Harvest was directed on LSRCP-reared adults returning to Dworshak National Fish Hatchery. The mainstem Clearwater River was open from Big Canyon Creek to the downstream Ahsahka boat ramp. The North Fork Clearwater River was open from its mouth upstream to Dworshak Dam, except for closed areas adjacent to Dworshak National Fish Hatchery and immediately below the dam. Limits were 2 per day, 2 in possession, and 4 per season. Only hatchery chinook salmon, identified with missing adipose fins, could be kept, and barbless hooks were required. Fishing hours were 5 a.m. to 9 p.m. (PDT).

OBJECTIVES

Identify in the Idaho sport fishery the number and proportion of the harvest that is produced by LSRCP hatcheries.

Determine the spawning escapement of LSRCP stocks in Idaho.

Table 1. Steelhead season dates, bag limits and special restrictions for the Clearwater, Salmon and Snake rivers, 1991-92.

River and Sections	Fall Season Dates	Bag Limits ^a
Clearwater River (03) ^b	Sep 1 - Dec 31	2, 3, 6
Clearwater River (03 - 07) ^{cd}	Oct 15 Dec 31	
Salmon River (10 - 20)	Sept 1 - Dec 31	
Snake River (01)		

River and Sections	Spring Season Dates	Bag Limits ^o
Clearwater River (03 - 07)	Jan 1 - Apr 30	2, 3, 6
Salmon River (10 - 14)	Jan 1 - Mar 31	
Salmon River	Jan 1 - Apr 30	
Salmon River		2, 4, 10
Snake River (01)		

^a Bag limits denotes daily, possession and season totals.

^b Section 03 includes only that portion from its mouth upstream to Memorial Bridge of Highway 12 at Lewiston.

^c Section 03 includes that portion from Memorial Bridge upstream to Clear Creek.

^d Catch and release fishery from Sept. 1 through Oct. 14.

DESCRIPTION OF STUDY AREA

There are three major river systems in Idaho where steelhead are harvested: the Snake, Clearwater, and Salmon rivers (Figure 1; Table 2). All of Idaho's steelhead harvest areas are included in this study, except the upper Snake (section 02) and the Boise River (section 28). These two sections are excluded because no steelhead produced by the LSRCP are harvested there. Steelhead are blocked from reaching the Boise River by dams on the Snake River. However, a portion of the fish returning to Hells Canyon Dam are transplanted and released there for harvest through Idaho Power Company's mitigation program.

METHODS

Creel Survey

Steelhead

Angler interviews were conducted at check stations and from jet boats and roving vehicles. Angler interview schedules and intensity were designed to observe maximum numbers of harvested fish. Techniques were tailored to sportsmen access and harvest methods. For example, on the Clearwater River, a major portion of the fall and winter harvest is taken by boat fishermen, so survey efforts concentrate on interviewing boat anglers. In late spring, the density of boats in a small area is so high it is prohibitive to sample anglers on the water; therefore, survey efforts are divided between major boat ramps. In the roadless area of the Salmon River, almost all of the angler access is by boat, but most of the fishing effort is from shore. Anglers are contacted by census clerks in jet boats or at check stations located at major egress points.

During angler interviews, data are collected on the number of anglers and hours fished, number of fish kept or released, wild or hatchery origin of fish kept or released, fork length of fish kept, and date and river section where fish were caught. Observed fish are inspected for tags and fin clips. Snouts are removed from all fish with abnormalities of their left ventral fins for coded wire tag retrieval, except when anglers desire to keep their fish intact.

Water conditions during the fall season are usually conducive to harvest and the interview schedule can be followed. During the spring season, high turbid flows can reduce harvest to near zero. Anglers are not interviewed during periods of very low harvest.

Interview Schedule

Lower Snake River (01) - by jet boat with Washington Department of Wildlife personnel and at boat ramps on alternating weekends for 10 weekends during the fall and 6 weekends during the spring season.

Lower Clearwater and North Fork Clearwater River (03 and 05) - by roving vehicle 1 day each week and by jet boat 3 days each week for 15 weeks in the fall and 10 weeks in the spring season. Interview from boat ramps for the last 6 weeks of the spring season.

ANNLSRCP

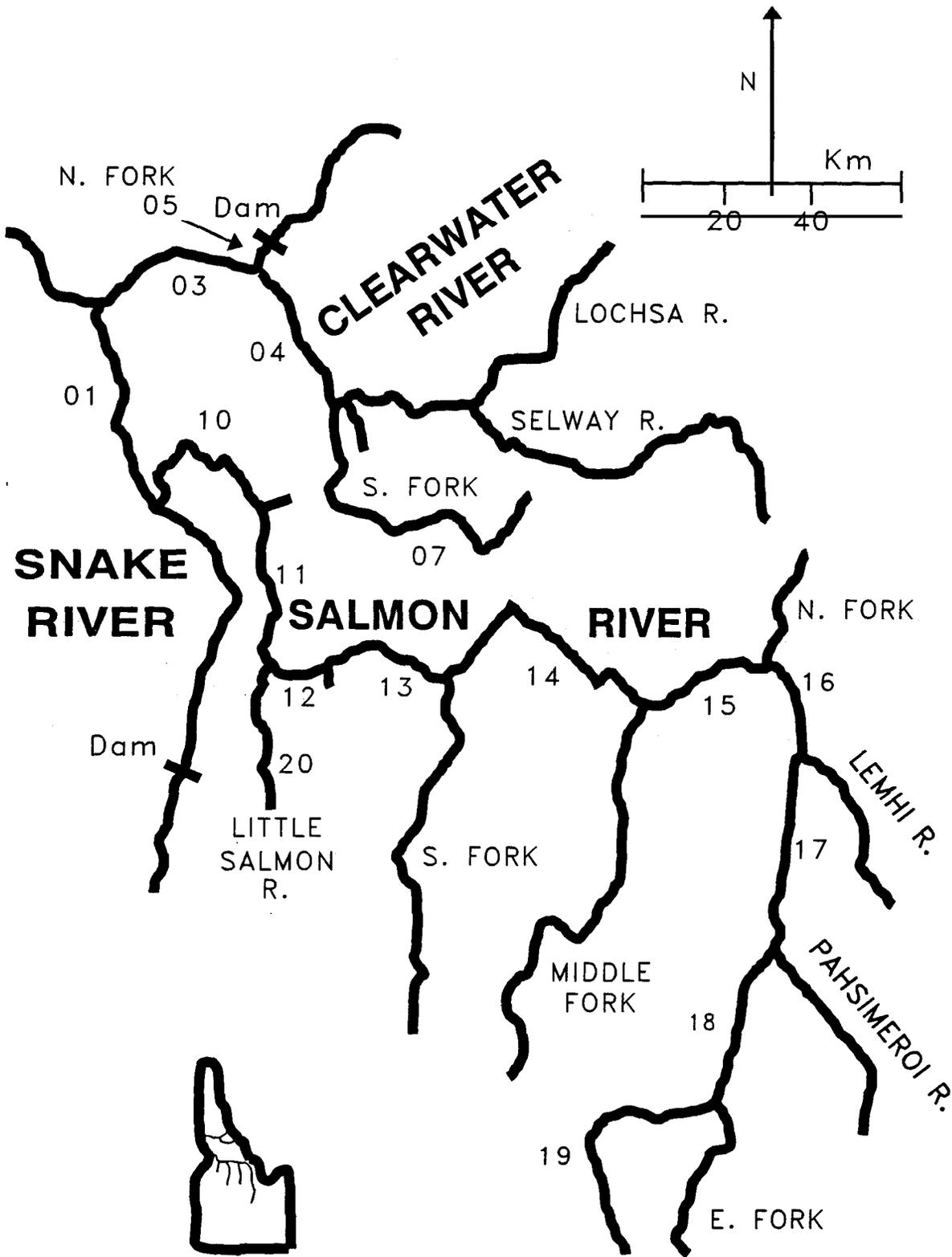


Figure 1. Map of steelhead harvest areas in Idaho.

Table 2. River location codes for Idaho's anadromous fisheries.

River Section	Location Code
Snake River, below Salmon River	01
Snake River, above Salmon River	02
Clearwater River, below Orofino Bridge	03
Clearwater River, above Orofino Bridge	04
North Fork Clearwater River	05
Middle Fork Clearwater River	06
South Fork Clearwater River	07
Selway River	08
Lochsa River	09
Salmon River, below Whitebird Creek	10
Salmon River, Whitebird Creek to Little Salmon	11
Salmon River, Little Salmon to Vinegar Creek	12
Salmon River, Vinegar Creek to South Fork	13
Salmon River, South Fork to Middle Fork	14
Salmon River, Middle Fork to North Fork	15
Salmon River, North Fork to Lemhi River	16
Salmon River, Lemhi River to Pahsimeroi River	17
Salmon River, Pahsimeroi River to East Fork	18
Salmon River, above East Fork	19
Little Salmon River	20
South Fork Salmon River	21
Middle Fork Salmon River	22
North Fork Salmon River	23
Lemhi River	24
Pahsimeroi River	25
East Fork Salmon River	26
Snake River, Oxbow	27
Boise River	28

Upper Clearwater, Middle Fork, and South Fork Clearwater River (04, 06, and 07)
- by roving vehicle on the Upper and Middle Fork Clearwater in the fall and on all three rivers in the spring, 2 weekend days per week, for 8 weeks in the fall and 10 weeks in the spring.

Salmon River

Section 10 - by jet boat 6 weekends in the fall and 5 weekends in the spring season.

Section 11 - by roving vehicle 2 weekdays and 2 weekend days for 10 weeks in the fall and 8 weeks in the spring season.

Sections 12 and 13 - by a check station at the old lumber mill site near Riggins for 10 weekends in the fall and 8 weekends in the spring season.

Sections 14 and 15 - by a check station near North Fork for 10 weekends in the fall and 8 weekends in the spring season.

Section 16 - by roving vehicle for 6 weekends in the fall and 6 weekends in the spring season.

Section 17 - by roving vehicle for 6 weekends in the fall and 6 weekends in the spring season.

Section 18 - by roving vehicle for 6 weekends in the spring season.

Section 19 - by roving vehicle for 6 weekends in the spring season.

Section 20 - by roving vehicle for 6 weekends in the spring season.

Chinook Salmon

A stratified random two-stage sample design was used to estimate angler effort. At the first stage, both weekend days and 2 weekdays were randomly selected to be sampled. Separate angler counts were made for each river section. At the second stage, the times of daily angler counts were determined by randomly selecting the first count time from within the first 4 hours of the angler day, and then making counts systematically every 4 hours thereafter until the end of the angler day.

Angler interviews were conducted by roving clerks and also at a check station at the Ahsahka boat ramp. Data collected during angler interviews included the time of interview, angler type (boat-shore, and resident-nonresident), total hours fished, fishing location, number of chinook salmon caught and kept, fork length of fish kept, numbers of jacks and adults caught and released, and whether the released fish had adipose fin clips. Angler interviews were stratified by boat and shore anglers and by river section (North Fork Clearwater and mainstem Clearwater rivers).

Data Analysis

Steelhead

Harvest estimates for each river section were obtained from statewide telephone survey results (McArthur 1993). Beginning with the fall 1990 season, that portion of the Clearwater River up to the Memorial Bridge of Highway 12 at Lewiston was designated river section 03 during the September 1 to October 15 harvest period. Previously, harvest from this section of the Clearwater River had been included with river section 01 (Ball 1992a).

The number of fish checked for marks from each river section, divided by the harvest estimate, yields the sampling rate for each river section by month. Harvested fish that were not seen during the interviews were not included when expressing the proportion of the estimated harvest that was marked.

During angler interviews, hatchery-wild proportions were recorded for fish kept and for total catch, including released fish when their origin could be determined. The harvest of hatchery fish is the product of the hatchery proportion observed in anglers' creels and the estimated harvest from statewide surveys by month. Seasonal estimates of reported hatchery fish harvest are the summation of monthly estimates. Hatchery harvest estimates for months when harvest was low and no fish were checked were calculated using the hatchery proportion calculated from the last month that data were available. These methods were applied during winter when fish movement was minimal and the proportion of hatchery fish in the harvest was constant. Harvest estimates of various coded wire tag groups were calculated by dividing the number of tags recovered by the sampling rate expressed as a decimal and then rounded to whole numbers. Tag group harvest rates were calculated by dividing the estimated harvest of the group by the release group size. Harvest estimates for unmarked groups were calculated using harvest rates from representative mark groups or companion groups.

Hatchery returns were classified by strain (A or B) and ocean-age using length frequencies of previous known-age coded wire tag returns. Marked returns to hatchery racks were subtracted from total returns by strain and ocean-age. Total harvest of unmarked groups was assumed to parallel the performance of unmarked hatchery rack returns. Where more than one unmarked group returned to a release site, the estimates of harvest and hatchery returns were calculated on the total of the unmarked fish and assumed to apply equally to each group.

Total returns of marked groups are the summation of harvest estimates and hatchery rack returns. However, in 1991-92, returns of some marked groups were insufficient to produce viable estimates. For Sawtooth and the East Fork releases, the average exploitation rate from all marked returns from the previous two years was assumed to approximate the current returns. Returns from Shoup Bridge, Ellis Bridge, and North Fork releases were estimated from returns of marked fish released at Shoup Bridge. Exploitation was assumed to be the same for all groups. Returns from Little Salmon River, Slate Creek, and Hammer Creek releases were calculated from marked returns to the Little Salmon River. Yankee Fork returns were assumed to be synonymous with Sawtooth returns from each respective age group.

Exploitation rates are the harvest estimates divided by the sum of the harvest estimates and the number of fish that returned to the hatchery. No attempts were made to include mortality from causes other than angler harvest or contribution to natural reproduction.

Chinook Salmon

Effort was calculated by entering the instantaneous angler counts into the "Creel Census System" computer program (McArthur 1992). A combined catch rate for both river sections was estimated by dividing the total hours fished in each section by the number of fish caught, whether kept or released (hours/fish caught). These catch rates were applied to the effort estimates to calculate catch and harvest in each river section. The proportion of adults and jacks with or without adipose fin clips was applied to the estimates of fish released.

RESULTS

Steelhead

During the fall 1991 and spring 1992 seasons, we interviewed 26,576 anglers that had harvested 4,275 hatchery and 10 wild fish (Tables 3-17). We physically examined 3,965 hatchery fish for marks and removed 464 snouts from fish with clipped left ventral fins for retrieval of coded wire tags (Table 18).

The composition of the hatchery steelhead harvest by river section and season is compiled in Table 19. All river sections are included except 02 and 28 (Table 2). Total harvest for river sections listed was 26,987 steelhead, of which an estimated 20 fish were of wild/natural origin and were illegally possessed.

From anglers' creels, we recovered 208 coded wire tags. The overall proportion of tags recovered from the number of fish checked for marks was 5.2% (Table 18). Coded wire tags were recovered from 74 mark groups. The number of tags recovered, the estimated harvest of tag code groups by month and river section, and the total estimated harvest of tag code groups for the fall and spring seasons are listed in Appendix A. Of the 74 tag groups that yielded coded wire tags, 45 were from releases in Idaho (Appendices A, B, and C). There were 35 additional coded wire tags from 7 tag groups that returned to hatchery racks, but were not recovered from the fishery.

Coded-wire tags were also recovered from 12 Washington tag groups and 8 Oregon tag groups. Four Washington tag groups were from releases at Lyons Ferry Hatchery, three from the Touchet River, three from the Tucannon River, and two from Asotin Creek. Two Oregon tag groups were from releases at Little Sheep Creek and six others from Wallowa Hatchery (Appendices A and D).

Estimates of total returns of LSRCP-reared fish are summarized in Table 20. All Idaho returns from the LSRCP program that returned in 1991-92 were from releases in the Salmon River drainage. However, they were also recovered from the fishery in the Snake and Clearwater rivers. The total estimated return of adult steelhead to Idaho in 1991-92 from the LSRCP program, which includes harvest by Idaho anglers, hatchery returns, and off-site escapement, was 13,054 fish. The LSRCP contribution to Idaho's total hatchery steelhead harvest (except sections 02 and 28) in 1991-92 was 9,850. This number does not include estimated harvest of 412 LSRCP-reared fish from Oregon and Washington (Appendix A). Additionally, other LSRCP-reared fish released in Idaho, but caught by Oregon and Washington anglers, are not included in this report.

Adult steelhead returning to Sawtooth Hatchery and the Yankee Fork were exploited at 80%. East Fork Salmon River returns were exploited at 79%. In the Little Salmon River, and for off-site releases at Hammer and Slate creeks, exploitation was not quantified, but was assumed to be 50% (Table 20).

ANNLSRCP

Table 3. Steelhead fishery interview data (unexpanded) from lower Snake River (01), September 1991 - February 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	337	1,513	25	0	7	19	51	30	63
October	803	3,189	56	1	19	17	93	34	81
November	917	4,056	126	0	18	27	171	24	84
December	533	2,057	63	1	5	17	86	24	79
Fall total	2,590	10,815	270	2	49	80	401		
Average								27	80
January	353	1,239	53	0	19	22	94	13	77
February	21	83	1	0	0	0	1	83	100
Spring total	374	1,322	54	0	19	22	95		
Average								14	77
Total	2,964	12,137	324	2	68	102	496		
Average								24	79

Table 4. Steelhead fishery interview data (unexpanded) from lower Clearwater River (03) and North Fork Clearwater River (05), September 1991 – April 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	33	188	16	0	3	2	21	9	90
October	1,144	4,814	166	0	35	112	313	15	64
November	2,328	9,915	295	1	23	136	455	22	70
December	1,407	5,133	175	0	9	69	253	20	73
Fall total	4,912	20,050	652	1	70	319	1,042		
Average								19	69
January	1,055	4,108	92	0	15	39	146	28	73
February	2,083	10,145	344	0	60	64	468	22	86
March	1,374	6,889	147	1	41	22	211	33	89
April	38	162	3	0	1	0	4	41	100
Spring total	4,550	21,304	586	1	117	125	829		
Average								26	85
Total	9,462	41,354	1,238	2	187	444	1,871		
Average								22	76

Table 5. Steelhead fishery interview data (unexpanded) from upper Clearwater and Middle Fork Clearwater rivers (04), October 1991 - March 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	45	234	1	0	0	7	8	29	13
November	86	399	6	0	0	5	11	36	55
December	10	45	1	0	0	0	1	45	100
Fall total	141	678	8	0	0	12	20		
Average								34	40
February	95	332	6	0	1	2	9	37	78
March	357	1,545	51	0	14	14	79	20	82
Spring total	452	1,877	57	0	15	16	88		
Average								21	82
Total	593	2,555	65	0	15	28	108		
Average								24	74

Table 6. Steelhead fishery interview data (unexpanded) from South Fork Clearwater River (07), February - March 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kent		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
February	29	86	2	0	0	1	3	29	67
March	195	499	16	0	0	4	20	25	80
Spring total	224	585	18	0	0	5	23		
Average								25	78

Table 7. Steelhead fishery interview data (unexpanded) from Salmon River Section 10, September 1991 - February 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	10	30	2	0	0	0	2	15	100
October	179	698	37	0	9	14	60	12	77
November	147	463	17	0	1	2	20	23	90
Fall total	336	1,191	56	0	10	16	82		
Average								15	80
February	17	31	0	0	0	0	0	0	0
Spring total	17	31	0	0	0	0	0		
Average								0	0
Total	353	1,222	56	0	10	16	82		
Average								15	80

Table 8. Steelhead fishery interview data (unexpanded) from Salmon River Section 11, September 1991 - March 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	3	16	0	0	0	0	0		
October	311	1,252	39	0	31	46	116	11	60
November	511	2,077	73	0	22	39	134	16	71
Fall total	825	3,345	112	0	53	85	250		
Average								13	66
February	228	824	34	0	1	8	43	19	81
March	20	77	0	0	0	0	0	0	0
Spring total	248	901	34	0	1	8	43		
Average								21	81
Total	1,073	4,246	146	0	54	93	293		
Average								15	68

Table 9. Steelhead fishery interview data (unexpanded) from Salmon River Section 12, September 1991 - March 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	3	11	0	0	0	0	0		
October	218	1,873	45	0	31	59	135	14	56
November	886	5,307	111	1	39	62	213	25	70
Fall total	1,107	7,191	156	1	70	121	348		
Average								21	65
February	293	1,581	24	0	3	16	43	37	63
March	117	566	2	0	0	1	3	189	67
Spring total	410	2,147	26	0	3	17	46		
Average								47	63
Total	1,517	9,338	182	1	73	138	394		
Average								24	65

Table 10. Steelhead fishery interview data (unexpanded) from Salmon River Section 13, October 1991 - March 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	63	803	35	0	8	49	92	9	47
November	90	1,172	33	0	7	19	59	20	68
Fall total	153	1,975	68	0	15	68	151		
Average								13	55
March	16	265	1	0	1	20	22	12	9
Spring total	16	265	1	0	1	20	22		
Average								12	9
Total	169	2,240	69	0	16	88	173		
Average								13	49

Table 11. Steelhead fishery interview data (unexpanded) from Salmon River Section 14, September 1991 - March 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	16	138	0	0	0	0	0		
October	186	2,717	40	0	25	185	250	11	26
November	345	4,695	135	0	77	170	382	12	55
Fall total	547	7,550	175	0	102	355	632		
Average								12	78
February	45	680	18	0	0	34	52	13	35
March	199	2,791	37	0	19	120	176	16	32
Spring total	244	3,471	55	0	19	154	228		
Average								15	33
Total	791	11,021	230	0	121	509	860		
Average								13	41

Table 12. Steelhead fishery interview data (unexpanded) from Salmon River Section 15, September 1991 - March 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead				Total	Hours/Fish	Percent Hatchery
			Steelhead	Kept	Released				
			Hatchery	Wild	Hatchery	Wild			
September	26	202	0	0	0	5	5	40	
October	619	6,496	132	3	117	100	352	18	
November	1,011	9,117	249	0	158	75	482	19	
Fall total	1,656	15,815	381	3	275	180	839		
Average								19	
February	271	2,213	80	0	51	21	152	15	
March	1,886	20,822	676	1	745	242	1,664	13	
Spring total	2,157	23,035	756	1	796	263	1,816		
Average								13	
Total	3,813	38,850	1,137	4	1,071	443	2,655		
Average								15	

Table 13. Steelhead fishery interview data (unexpanded) from Salmon River Section 16, October 1991 - March 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	137	406	9	0	4	8	21	19	62
November	172	519	12	0	0	7	19	27	63
Fall total	309	925	21	0	4	15	40		
Average								23	63
February	169	567	15	0	9	2	26	22	92
March	620	3,126	80	0	42	21	143	22	85
Spring total	789	3,693	95	0	51	23	169		
Average								22	86
Total	1,098	4,618	116	0	55	38	209		
Average								22	82

Table 14. Steelhead fishery interview data (unexpanded) from Salmon River Section 17, October 1991 - April 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	4	6	3	0	0	1	4	2	75
November	43	91	2	0	0	1	3	30	67
Fall total	47	97	5	0	0	2	7		
Average								14	71
February	331	1,091	15	0	8	6	29	38	79
March	2,118	11,974	292	0	121	45	458	26	90
April	111	443	3	0	0	2	5	89	60
Spring total	2,560	13,508	310	0	129	53	492		
Average								27	89
Total	2,607	13,605	315	0	129	55	499		
Average								27	89

Table 15. Steelhead fishery interview data (unexpanded) from Salmon River Section 18, March - April 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
March	459	3,710	102	0	70	25	197	19	87
April	70	360	10	0	14	4	28	13	86
Spring total	529	4,070	112	0	84	29	225		
Average								18	87

Table 16. Steelhead fishery interview data (unexpanded) from Salmon River Section 19, March - April 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
March	326	1,617	56	0	63	17	136	12	88
April	269	1,260	18	0	26	3	47	27	94
Spring total	595	2,877	74	0	89	20	183		
Average								16	89

Table 17. Steelhead fishery interview data (unexpanded) from Salmon River Section 20, November 1991 - April 1992.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
November	7	20	2	1	0	0	3	7	67
Fall total	7	20	2	1	0	0	3		
Average								7	67
February	38	83	2	0	1	0	3	28	100
March	634	2,579	174	0	45	32	251	10	87
April	109	242	15	0	2	12	29	8	59
Spring total	781	2,904	191	0	48	44	283		
Average								10	84
Total	788	2,924	193	1	48	44	286		
Average								10	84

Table 18. Proportion of estimated harvest by river section that was examined for marks, 1991-92.

River Section	No. Fish Checked	Estimated Harvest ^a	Sample Rate (%)
01	332	4,056	8.2
03 & 05	1,143	9,493	12.0
04	63	823	7.6
07	17	100	17.0
10	49	1,459	3.4
11	132	1,745	7.6
12	166	659	25.2
13	67	262	25.6
14	213	1,196	17.8
15	1,064	3,905	27.3
16	108	453	23.8
17	277	712	38.9
18	101	636	15.9
19	72	570	12.6
20	161	919	17.5
Total	3,965	26,988	
Average			14.7

^a Data from statewide telephone survey (McArthur 1993).

Table 19. Estimated number of hatchery steelhead harvested in the lower Snake, Clearwater and Salmon rivers during the 1991-92 seasons.

River Section	Fall Season - 1991			Spring Season - 1992			Total Harvest
	Estimated Harvest ^a	Percent Hatchery	No. Hatchery Fish	Estimated Harvest ^a	Percent Hatchery	No. Hatchery Fish	No. Hatchery Fish
Snake 01	3,315	100	3,315	741	100	741	4,056
<u>Clearwater R.</u>							
03 & 05	6,413	100	6,413	3,080	100	3,080	9,493
04	453	100	453	370	100	370	823
07	9	--	9 ^b	91	100	91	100
Clwtr. Total	6,875		6,875	3,541		3,541	10,416
Average		100			100		
<u>Salmon River</u>							
10	1,187	100	1,187	272	0	272 ^b	1,459
11	1,259	100	1,259	486	100	486	1,745
12	453	100	453	206	100	206	659
13	163	100	163	99	100	99	262
14	924	100	924	272	100	272	1,196
15	2,011	100	2,011	1,894	100	1,894	3,905
16	272	100	272	181	100	181	453
17	136	100	136	576	100	576	712
18	18	--	18 ^b	618	100	618	636
19	27	--	27 ^b	543	100	543	570
20	63	67	43	856	100	856	899
Salmon Total	6,512		6,492	6,003		6,003	12,495
Average		100			100		
1991-92 Total	16,702		16,682	10,285		10,285	26,967

^a From statewide surveys.

^b Assumed to be of hatchery origin.

Table 20. Summary of 1991-92 harvest estimates and hatchery returns of steelhead produced by LSRCP hatcheries.

Release Year	Strain and Ocean-Age	No. of Fish Released	Release Site	Hatchery Rearing	Marks	Estimated Number of Fish		
						Harvested	Hatchery Return ^a	Total
1990	A-I	14,597	Sawtooth	HNFH ^b	CWT 10/42/14	76	19	95
1990	A-I	15,482	Sawtooth	HNFH	CWT 10/42/15	48	12	60
1990	A-I	15,218	Sawtooth	HNFH	CWT 10/42/16	60	15	75
1990	A-I	255,859	Sawtooth	HNFH	None	2,072	518	2,590
1990	A-I	39,620	Sawtooth	MVSH ^c	CWT 10/40/59	56	14	70
1990	A-I	1,159,080	Sawtooth	MVSH	None	3,312	828	4,140
1990	A-I	15,528	Shoup Bridge	HNFH	CWT 10/42/27	24	17	41
1990	A-I	15,196	Shoup Bridge	HNFH	CWT 10/42/28	30	23	53
1990	A-I	15,104	Shoup Bridge	HNFH	CWT 10/42/29	19	14	33
1990	A-I	154,418	Shoup Bridge	HNFH	None	179	119	298
1990	A-I	200,295	Ellis Bridge	HNFH	None	252	168	420
1990	A-I	199,602	North Fork	HNFH	None	251	167	418
1990	A-I	80,465	Hazard Creek	HNFH	None	33	33	66
	Subtotal	2,180,464				6,412	1,947	8,359
1989	A-II	14,718	Sawtooth	HNFH	CWT 10/41/38	6	2	8
1989	A-II	14,584	Sawtooth	HNFH	CWT 10/41/39	10	3	13
1989	A-II	16,914	Sawtooth	HNFH	CWT 10/41/40	0	0	0
1989	A-II	590,335	Sawtooth	HNFH	None	435	102	537
1989	A-II	2,838	Sawtooth	MVSH	PIT	4	1	5
1989	A-II	854,462	Sawtooth	MVSH	None	627	147	774
1989	A-II	104,400	Yankee Fork	MVSH	None	77	18	95
1989	A-II	3,058	Little Salmon R.	MVSH	PIT	2	2	4
1989	A-II	15,209	Little Salmon R.	MVSH	CWT 10/41/41	15	15	30
1989	A-II	15,154	Little Salmon R.	MVSH	CWT 10/41/42	9	9	18
1989	A-II	15,927	Little Salmon R.	MVSH	CWT 10/41/43	9	9	18

Table 20. Continued.

Release Year	Strain and Ocean-Age	No. of Fish Released	Release Site	Hatchery Rearing	Marks	Estimated Number of Fish		
						Harvested	Hatchery Return ^a	Total
1989	A-II	401,052	Little Salmon R.	MVSH	None	286	286	572
1989	A-II	300,600	Slate Creek	MVSH	None	214	215	429
1989	A-II	136,000	Hammer Creek	MVSH	None	97	97	194
	Subtotal	2,485,551				1,791	906	2,697
1990	B-I	64,150	East Fork	HNFB	None	3	0	3
1990	B-I	40,905	East Fork	MUSH	CWT 10/40/58	11	4	15
1990	B-I	14,964	East Fork	MUSH	CWT 10/42/33	0	0	0
1990	B-I	15,157	East Fork	MUSH	CWT 10/42/34	0	0	0
1990	B-I	14,642	East Fork	MVSH	CWT 10/42/35	2	0	2
1990	B-I	15,474	East Fork	MVSH	CWT 10/42/36	13	0	13
1990	B-I	15,971	East Fork	MVSH	CWT 10/42/37	5	1	6
1990	B-I	14,958	East Fork	MVSH	CWT 10/42/38	0	3	3
1990	B-I	792,129	East Fork	MVSH	None	112	14	126
1990	B-I	14,841	Hazard Creek	HNFB	CWT 10/42/30	0	0	0
1990	B-I	14,065	Hazard Creek	HNFB	CWT 10/42/31	0	0	0
1990	B-I	13,416	Hazard Creek	HNFB	CWT 10/42/32	0	0	0
1990	B-I	350,490	Hazard Creek	HNFB	None	0	0	0
	Subtotal	1,381,162				146	22	168
1989	B-II	15,624	E. Fk. Salmon R.	MVSH	CWT 10/41/44	19	3	22
1989	B-II	14,126	E. Fk. Salmon R.	MVSH	CWT 10/41/45	3	0	3
1989	B-II	14,314	E. Fk. Salmon R.	MUSH	CWT 10/41/46	8	0	8
1989	B-II	2,930	E. Fk. Salmon R.	MUSH	PIT	6	1	7
1989	B-II	306,306	E. Fk. Salmon R.	MUSH	None	572	51	623
1989	B-II	14,939	E. Fk. Salmon R.	HNFB	CWT 10/41/32	4	0	4
1989	B-II	14,911	E. Fk. Salmon R.	HNFB	CWT 10/41/33	2	1	3

Table 20. Continued.

Release Year	Strain and Ocean-Age	No. of Fish Released	Release Site	Hatchery Rearing	Marks	Estimated Number of Fish		
						Harvested	Hatchery Return ^a	Total
1989	B-II	13,719	E. Fk. Salmon R.	HNFH	CWT 10/41/34	7	0	7
1989	B-II	393,007	E. Fk. Salmon R.	HNFH	None	300	21	321
	Subtotal	789,876				1,501	329	1,830
1988	B-III	51,732	E. Fk. Salmon R.	HNFH	CWT 10/29/38	0	0	0
1988	B-III	251,825	E. Fk. Salmon R.	HNFH	None	0	0	0
	Subtotal	303,557				0	0	0

^a Includes off-site escapement.

^b HNFH = Hagerman National Steelhead Hatchery.

^c MUSH = Magic Valley Steelhead Hatchery.

DISCUSSION

The number of adult steelhead that passed McNary Dam on the Columbia River in 1991 was the fourth highest in the last nine years (Table 21). Of the 169,000 fish that passed McNary Dam, 18.5% were unaccounted for at Priest Rapids and Ice Harbor dams. The 123,800 adults that passed Ice Harbor Dam was more than double the previous year's numbers.

Harvest of Sawtooth Hatchery Releases

Returns of steelhead released from Sawtooth Hatchery in 1989 are now complete. From a total release of 1,493,851 smolts, we estimated a return of 932 adults after one ocean-year and 1,337 after two ocean-years. The total return of 2,269 was 0.15% of the number released, and 79% of the adult returns were harvested (Ball 1992b) (Table 20). The low rate of adult returns after one ocean-year was primarily a function of low flows during outmigration and also poor upstream survival (Ball 1992b).

Adult returns from the 1990 smolt releases have returned after their first ocean-year. From 1,499,856 smolts released, 7,033 (0.47%) returned to the fishery and Sawtooth Hatchery (Table 20).

Harvest of East Fork Salmon River Releases

Adult returns from 303,564 B-strain smolts released in 1988 were reported by Ball (1992a, 1992b). No additional fish returned after three ocean-years, so the total return is 536 adults (0.18%).

From 789,876 smolts released in 1989, we estimated that 86 returned after one ocean-year and 1,830 returned after two ocean-years (Ball 1992b) (Table 20). The total return to date is 1,916 (0.24%) adults.

There were 988,350 smolts released into the East Fork in 1990, and we estimated that 168 returned after one ocean-year.

Harvest of Little Salmon River Releases

Adult returns from 450,400 A-strain smolts released in 1989 are now complete. We estimated that 166 returned after one ocean-year and 642 after two ocean-years. The total return of 808 (0.18%) includes an estimated 50% escapement past the fishery.

In 1990, there were 80,465 A-strain and 392,812 B-strain smolts released in the Little Salmon River as part of the LSRCP program. After one ocean-year, there were 66 returns from the A-strain release. No recoveries were found from the B-strain release, but few of these fish normally return the first year.

Harvest of Hammer and Slate Creek Releases

In addition to the Little Salmon River, there were LSRCP releases in 1989 in Slate Creek and at the Hammer Creek Access. From 300,600 A-strain smolts in

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Table 21. Difference between the number of steelhead passing McNary Dam that can be accounted for upriver at Ice Harbor and Priest Rapids dams, 1983-91^a.

Year	No. of Fish (000's)				Difference
	McNary Dam	Ice Harbor Dam	Priest Rapids Dam	Ice Harbor + Priest Rapids Total	
1983	125.2	88.5	31.1	119.6	5.6 (4.5%)
1984	135.5	94.0	26.0	120.0	15.5 (11.4%)
1985	188.2	128.8	34.5	163.3	24.9 (13.2%)
1986	193.5	144.3	22.4	166.7	26.8 (13.9%)
1987	148.8	74.5	14.0	88.5	60.3 (40.5%)
1988	151.8	99.7	10.2	109.9	41.9 (27.6%)
1989	170.5	151.1	10.7	161.8	8.7 (5.1%)
1990	95.1	54.7	7.8	62.5	32.6 (34.3%)
1991	169.0	123.8	14.0	137.8	31.2 (18.5%)

^a Totals from Army Corps of Engineers annual fish passage reports.

Slate Creek, there were an estimated 120 adults that returned after one ocean-year, and 429 after the second year. The total return of 549 adults was 0.18%. Returns from 136,000 smolts released in Hammer Creek were 54 and 194 after one- and two-ocean years, respectively, and a total return of 248 fish was 0.18% (Ball 1992b) (Table 20).

Off-site Releases

Off-site releases (smolt releases into the river or in tributaries without means or attempts to collect spawning adults) is a technique employed to distribute the harvest and put more hatchery fish into anglers' creels. Lower Salmon River harvest areas are corridors for all fish destined upriver, but are unable to sustain a viable fishery after upriver fish have passed.

Releases into Slate Creek and Hammer Creek during 1989 did not contain any coded wire tags, so harvest performance was not ascertained. Adult returns were estimated from the performance of Little Salmon River marked groups. In 1988, releases into Yankee Fork Salmon River, Panther Creek, French Creek, and near the mouth of the North Fork were also without representative mark groups. Adult returns were estimated from marked groups released nearby.

In 1988, evaluation of in-river releases began with marked fish releases at Shoup Bridge, about 8 km upstream of the city of Salmon. There were no marked LSRCP releases that year, but estimated returns were derived from a companion marked fish group from Niagara Springs Fish Hatchery (Ball 1992a). In 1989, all the, in-river releases, both marked and unmarked, were reared at Niagara Spring Fish Hatchery (Appendix B). In 1990, the fish released at Shoup Bridge were LSRCP-reared fish from Hagerman National Fish Hatchery. From 45,828 marked fish released, anglers harvested an estimated 73 fish (Table 20). The harvest rate of 0.15% after one ocean-year is slightly higher than the 0.12% reported for the 1988 release after two ocean-years (Ball 1992b). More than half of the harvest was taken from section 15 (Appendix A). The relatively small harvest from near the release site may be due to the change in river morphology during the successive drought years since 1986. The stream reach below the Shoup Bridge release site has less holding water for fish since the drought began.

Although no marked fish were released at North Fork or Ellis Bridge, there has been an increase in both effort and harvest at these release sites. Both of these sites have a large, long pool downstream of the release site.

Chinook Salmon

We interviewed 458 anglers, of which 32 were nonresidents (7%). Surveys were conducted on 15 days of the 28-day season, and we physically inspected 10 chinook salmon. On the mainstem Clearwater River, we estimated that anglers expended 1,620 hours to harvest 15 chinook salmon and 41 more were released. From the North Fork Clearwater River, we estimated that in 5,746 hours of fishing effort, anglers kept 39 fish and released 103 more.

We measured and removed snouts for coded wire retrieval from 10 fish; all were classified as adults. Of the estimated 144 fish released from both river sections, 9 (6.3%) were jacks with adipose clips, 18 (12.5%) were jacks without adipose clips, and 79 (56%) were adults without adipose clips. Therefore, of the total 198 fish estimated to be either kept or released, 27 (13.8%) were jacks and 98 (50%) had adipose clips.

Catch rates for the season for both river sections combined were 29 hours per fish caught and 106 hours per fish kept.

Sources of Error

The primary sources of error involved in the steelhead harvest estimates were discussed by Ball (1986), and the quality control of adipose clipping was discussed by Ball (1989).

Left ventral fin clips, which are used on steelhead to identify the presence of coded wire tags, regenerate but leave the fin deformed. Since there is a high proportion of hatchery fish with deformed fins from their life in the hatchery, we attempt to take snouts from all fish with deformed left ventral fins. Although we take additional snouts with these methods, we should not be missing very many coded wire tags. Spot checks at hatcheries with portable coded wire detectors confirm that our methods are detecting greater than 98% of the coded wire tags.

The number of marked fish in each release group and the number of groups released each depends on many factors, but generally are adjusted to produce adequate adult returns under average conditions. Several consecutive low water years and poor migration survival of both juveniles migrating downstream and adults returning upstream have resulted in several poor steelhead runs in the Salmon River. Consequently, the chance of recovering marked fish is very low and the accuracy of return information is diminished. Harvest patterns, exploitation rates, age at return, and other reasonably stable statistics have been aberrant.

It is impossible to predict when poor migration conditions will occur and mark more fish to compensate for poor survival. The reasoning to mark enough fish with average return expectations is still sound, but may not produce sufficient results in very low return years.

Straying

Adult steelhead returning to Idaho rivers in the fall are several months away from spawning and commonly wander into streams other than where they were released. It is not unusual for these wandering fish to spend time in one or more rivers that are not their natal drainage. Adults observed or harvested during the wandering phase should not be considered strays. The majority of them would eventually return to their natal stream, hatchery, or release site.

In 1992, there were 463 coded wire tags recovered from hatchery steelhead at hatchery racks in Idaho. Smolts are marked by National Marine Fisheries Service (NMFS) personnel during outmigration and are from throughout the Snake River drainage. In 1992, 16 NMFS-tagged fish returned to Idaho hatchery racks: 13 to Dworshak National Fish Hatchery and 1 each to the Pahsimeroi Hatchery, East Fork trap, and Sawtooth Hatchery.

There were three strays of Washington's fish that came in to Dworshak Hatchery. One was from a release in the Tucannon River (63/082/41) and two were from a Lyons Ferry release (63/01/32 and 63/39/08).

If the remaining 447 fish considered to a good indication of straying, then they were very successful in returning to their respective release sites. Only one fish (0.2%) returned to a hatchery that was not its release site. An A-strain steelhead released at Sawtooth Hatchery (10/24/14) returned to the

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Pahsimeroi. This straying rate is within the range of straying rates (0.2-0.6%) reported since 1985 (Ball 1986, 1988, 1989, 1990, 1992a, 1992b). Furthermore, there is very little variation between years and no changeover time in the years we have been calculating straying rates.

RECOMMENDATIONS

Steelhead

Continue to include coded wire tags in each major smolt release that are representative in size, time of release, and fish health.

Increase the size of coded wire tag groups from Slate Creek to 80,000 for two consecutive years to evaluate harvest performance.

Continue to evaluate rate of return, contribution to the sport fishery, and distribution of adults returning from off-site releases.

Set up check stations in Salmon River sections 17 and 18 to improve manpower efficiency and to increase the number of fish checked.

Survey upper Salmon River tributaries to document presence or absence of adult returns from off-site releases.

Formulate a marking program for PIT-tag evaluation of adult returns to Lower Granite Dam.

Move Shoup Bridge off-site releases downstream to mouth of Lemhi River.

Chinook Salmon

Continue to include coded wire tags in each major smolt release that are representative in size, time of release, and fish health.

Release all hatchery smolts with identifiable external marks to differentiate hatchery and wild fish.

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APPENDICES

Appendix A. Continued.

TAG CODE - 05/17/13

RELEASE SITE - N. Fk. Clearwater R.

NUMBER RELEASED - 15,425

River Section	Taps	September		October		November		December			
		No. Sample	Est. Rate								
01											
03/05											
04/06											
07											
10											
11											
12											
13											
14											
15											
16											
17											
River Section	Tags	January		February		March		April		1991-92	
		No. Sample	Est. Rate	No. Tags	Est. Harv.						
01											
03/05				1	0.228	4				1	4
04/06											
07											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

Total estimated harvest

Appendix A. Continued.

TAG CODE - 05/18/37

RELEASE SITE - N. Fk. Clearwater R.

NUMBER RELEASED - 16,912

River Section	September			October			November			December		
	No. Tags	Sample Est.	Rate	No. Tags	Sample Est.	Rate	No. Tags	Sample Est.	Rate	No. Tags	Sample Est.	Harv.
01							1	0.092	11			
03/05							1	0.100	10	1	0.098	10
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	January			February			March			April			1991-92	
	No. Tags	Sample Est.	Harv.	Tags	Harv.									
01													1	11
03/05				1	0.228	4							3	24
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

Appendix A Continued

TAG CODE - 05/19147 RELEASE SITE -N. Fk. Clearwater R. NUMBER RELEASED - 18,869

River Section	Tags	<u>September</u>		<u>October</u>			<u>November</u>			<u>December</u>		
		No.	Sample Est. Rate	No. Tag	Sample Est. Rate	Harv.	No. Tags	Sample Est. Rate	Harv.	No. Tag	Sample Est. Rate	
01							1	0.092	11			
03/05				1	0.093	11	2	0.100	20	1	0.098	10
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	Tags	<u>January</u>			<u>February</u>			<u>March</u>			<u>April</u>			<u>1991-92</u>	
		No.	Sample Est. Rate	Harv.	No. Tags	Sample Est. Rate	Harv.	No. Tags	Sample Est. Rate	Harv.	No. Tag	Sample Est. Rate	Harv.	Tags	Est. E
01														1	11
03/05					1	0.228	4	1	0.185	5				6	50
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

Total estimated harvest

61

Appendix A. Continued.

AG CODE - 05/20/41 RELEASE SITE - N. Fk. Clearwater R. NUMBER RELEASED - 20,603

River Section	Tags	<u>September</u>		No. Tags	<u>October</u>		No. Tags	<u>November</u>		No. Tags	<u>December</u>	
		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate
01												
03/05				1	0.093	11	2	0.100	20	1	0.098	10
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	Tags	<u>January</u>		No. Tags	<u>February</u>		No. Tags	<u>March</u>		No. Tags	<u>April</u>		<u>1991-92</u>	
		Sample	Est. Harv. Rate		Sample	Est. Harv. Rate		Sample	Est. Harv. Rate		Sample	Est. Harv. Rate	No. Tags	Est. Harv.
01														
03/05				2	0.228	9							6	50
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

50

Appendix A. Continued.

TAG CODE - 05/20/42 RELEASE SITE - N. Fk. Clearwater R. NUMBER RELEASED - 20.782

River Section	No. Tags	<u>September</u>		No. Tags	<u>October</u>		No. Tags	<u>November</u>		No. Tag	<u>December</u>			
		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate		
01							1	0.092	11					
03/05				1	0.093	11	1	0.100	10					
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
River Section	No. Tags	<u>January</u>		No. Tags	<u>February</u>		No. Tags	<u>March</u>		No. Tags	<u>April</u>		<u>1991-92</u>	
		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate	No. Tags	Est. Rate
01													1	11
03/05	1	0.102	10	4	0.228	18	1	0.185	5				8	54
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

65

Appendix A. Continued.

TAG CODE - 05/20/44 RELEASE SITE - Clearwater R. NUMBER RELEASED - 20,016

River Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December	
		Sample Rate	Est. Harv.									
01												
03/05							1	0.100	10			
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1991-92	
		Sample Rate	Est. Harv.	No. Tags	Est. Harv.									
01														
03/05														
04/06													1	10
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

10

Appendix A. Continued.

TAG CODE - 05/20/47 RELEASE SITE - N. Fk. R. NUMBER RELEASED - 21,387

River	No. Tags	September		No. Tap	October		No. Taps	November		December		1991-92		
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	Sample Rate	Est. Harv.	No. Tags	Est. Harv.	
01														
03/05							1	0.100	10					
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
River	No. Tags	Sample Rate	Est. Harv.	No. Tag	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tag	Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01														
03/05													1	10
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

10

Appendix A. Continued.

TAG CODE - 07/45/43 RELEASE SITE - Wallowa Hatchery NUMBER RELEASED - 26,718

River Section	<u>September</u>			<u>October</u>			<u>November</u>			<u>December</u>				
	No. Tags	Sample	Est. Rate	No. Tag	Sample	Est. Rate	No. Tag	Sample	Est. Rate	No. Tag	Sample	Est. Harv.		
01							1	0.092		11				
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
River Section	<u>January</u>			<u>February</u>			<u>March</u>			<u>April</u>			<u>1991-92</u>	
	No. Tags	Sample	Est. Harv.	No. Tags	Sample	Est. Harv.	No. Tag	Sample	Est. Harv.	No. Tags	Sample	Est. Harv.	No. Tags	Harv.
01													1	11
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

11

Appendix A. Continued.

TAG CODE - 07/46/57 RELEASE SITE - Little Sheep Creek NUMBER RELEASED - 27,235

River Section	Tags	September		Tags	October		Tags	November		Tags	December	
		No.	Sample Est.		No.	Sample Est.		No.	Sample Est.		No.	Sample Est.
01												
03/05												
04/06												
07												
10				1	0.058	17						
11												
12												
13												
14												
15												
16												
17												

River Section	Tags	January		Tags	February		Tags	March		Tags	April		1991-92	
		No.	Sample Est.		No.	Sample Est.		No.	Sample Est.		No.	Sample Est.	No.	Est.
01														
03/05														
04/06														
07														
10												1	17	
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

17

Appendix A. Continued.

TAG CODE - 07/51/19 RELEASE SITE - Wallowa Hatchery NUMBER RELEASED - 26,231

River Section	Tags	September		October		November		December	
		No. Sample	Est. Harv.						
01						1	0.092	11	
03/05									
04/06									
07									
10									
11									
12									
13									
14									
15									
16									
17									

55

River Section	Tags	January		February		March		April		1991-92	
		No. Sample	Est. Harv.								
01										1	11
03/05											
04/06											
07											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

Total estimated harvest

Appendix A. Continued.

TAG CODE - 07/51/21

RELEASE SITE - Wallowa Hatchery

NUMBER RELEASED - 26,473

River Section	September			October			November			December		
	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.
01				2	0.048	42	1	0.092	11			
03/05												
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	January			February			March			April		1991-92	
	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Est.
01													3 53
03/05													
04/06													
07													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

57

Total estimated harvest

53

Appendix A. Continued.

TAG CODE -		07/51/23		RELEASE SITE - Wallowa Hatchery						NUMBER RELEASED - 26,326					
		September			October			November			December				
		No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.		
River	Section	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.		
	01				1	0.048	21								
	03/05														
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
	17														
		January			February			March			April		1991-92		
		No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Est.
River	Section	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Harv.
	01													1	21
	03/05														
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														
Total estimated harvest															21

Appendix A. Continued.

TAG CODE - 10/40/58 RELEASE SITE - East Fork Salmon R. NUMBER RELEASED - 40,905

River Section	Tags	September		October		November		December	
		No. Sample	Est. Harv.						
01									
03/05									
04/06									
07									
10									
11				1	0.356	3	1	0.438	2
12									
13									

61

River Section	January		February		March		April		1991-92	
	No. Sample	Est. Harv.	No. Est.	Tags Hsrv.						
01										
03/05										
04/06										
07										
10										
11										
12									2	5
13										
14										
15					3	0.475	6		3	6
17										
18										
19										
20										
Total estimated harvest									11	

Appendix A. Continued.

TAG CODE - 10/41/34 RELEASE SITE - East Fork Salmon R. NUMBER RELEASED - 13,719

River Section	Tags	September			October			November			December			
		No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	
01														
03/05														
04/06														
07														
10														
11								1	0.438		2			
12														
13														
14														
15														
16														
17														
River Section	Tags	January			February			March			April		1991-92	
		No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.
01														
03/05														
04/06														
07														
10														
11														
12					1	0.200		5					2	7
13														
14														
15														
16														
17														
18														
19														
20														
Total estimated harvest														7

Appendix A. Continued.

TAG CODE - 10/41/39		RELEASE SITE - Sawtooth						NUMBER RELEASED - 14,584	
River Section	Tags	September		October		November		December	
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.
01									
03/05									
04/06									
07									
10									

67

River Section	Sample Est.		Sample Est.		Sample		1991-92		
	Rate	Harv.	Rate	Harv.	Rate	Harv.	Rate	Harv.	Tags
01									
03/05									
04/06									
07									
10									
11									
12									
13									
14									
15					1	0.475	2		1
16									
17									
18									
19									
20									
Total estimated harvest									2

Appendix A. Continued.

TAG CODE - 10/41/40		RELEASE SITE - Sawtooth					NUMBER RELEASED - 16,914		
River Section	Tags	September		October		November		December	
		No. Sample	Est. Rate	No. Sample	Est. Rate	No. Sample	Est. Rate	No. Sample	Est. Rate
	01								
	03/05								
	04/06								
	07								

89

	Sample Est.		Sample Est.		Sample Est.		1991-	
	Rate	Rate	Rate	Rate	Rate	Rate	No. Est.	Harv. Tags
01								
03/05								
04/06								
07								
10								
11								
12								
13								
14							2	9
15							1	5
16								
17								
18								
19								
20								
Total estimated harvest								14

Appendix A. Continued.

TAG CODE - 10/41/43 RELEASE SITE - Little Salmon River NUMBER RELEASED - 15,927

River Section	Tags	September		No. Tag	October		No. Tag	November		No. Tags	December			
		No. Sample	Est. Harv.		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
River Section	Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1991-92	
		No. Sample	Est. Harv.		Sample	Est. Harv.		Sample	Est. Harv.		Sample	Est. Harv.	No. Tags	Est. Tags
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20								2	0.222	9			2	9
Total estimated harvest														9

Appendix A. Continued.

TAG CODE - 10/41/44 RELEASE SITE - East Fork Salmon R. NUMBER RELEASED - 15,624

River Section	Tags	September		Tags	October		Tag	November		Tags	December	
		No. Sample	Est. Harv.		No. Sample	Est. Harv.		No. Sample	Est. Harv.		No. Sample	Est. Harv.
01												
03/05												
04/06												
07												

72

River Section	Tags	January				Sample Rate	1991-92			
		No. Sample	Est. Harv.	No. Sample	Est. Harv.		Sample Rate	No. Harv.	Est. Tags	
01										
03/05										
04/06										
07										
10										
11										
12										
13										
14										
15						5	0.475	11	1	4
16									6	15
17										
18										
19										
20										
Total estimated harvest										19

Appendix A. Continued.

TAG CODE - 10/41/47 RELEASE SITE - Shoup Bridge NUMBER RELEASED - 13,400

River Section	Tags	September		No. Tag	October		No. Tag	November		No. Tag	December		1991-92	
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Tags
01														
03/05	1	0.071		1										
04/06				4										
07														
10														
11														
12														
13														
14														
15														
16														
River Section	Tags	January		Est No. Har Tags	February		No. Tags	March		No. Tags	April		1991-92	
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Tags
01														
03/05													1	14
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
Total estimated harvest													14	

Appendix A. Continued.

TAG CODE - 10/41/50 RELEASE SITE - Pahsimeroi NUMBER RELEASED - 14,465

River Section	September			October			November			December		
	No. Tags	Sample Est.	Harv.	No. Tags	Sample Est.	Rate	No. Tags	Sample Est.	Rate	No. Tags	Sample Est.	Harv.
01												
03/05												
04/06												
07												

77

River Section	Sample Est.		Sample Est.		March		April		1991-92	
	Rate	Harv.	Rate	Harv.	Sample	Rate	Sample Est.	Harv.	No. Tags	Est.
01										
03/05										
04/06										
07										
10										
11										
12										
13										
14										
15						1	0.475		2	
16										
17										
18										
19										
20										
Total estimated harvest										6

Appendix A. Continued.

TAG CODE - 10/41/51 RELEASE SITE - Pahsimeroi NUMBER RELEASED - 13,334

River Section	No. Tags	September		No. Taps	October		November		December		
		Sample	Est.		Sample	Est.	Sample	Est.	Sample	Est.	
		Rate	Harv.		Rate	Taps	Rate	Harv.	Tags	Rate	Harv.
01											
03/05											
04/06											
07											
10				1							

River Section	No. Tags	January		February		March		April		No. Est.	No. Taps
		Sample	Est.	Sample	Est.	Sample	Est.	Sample	Est.		
		Rate	Harv.	Rate	Harv.	Rate	Harv.	Rate	Harv.		
01											
03/05											
04/06											
07											
10											
11										1	14
12											
13											
14											
15										1	4
16											
17											
18											
19											
20											
Total estimated harvest											18

Appendix A. Continued.

TAG CODE - 10/42/21 RELEASE SITE - Pahsimeroi NUMBER RELEASED - 14,909

River Section	September			October			November			December		
	No. Tags	Sample	Est. Rate	No. Tag	Sample	Est. Rate	No. Tag	Sample	Est. Rate	No. Tag	Sample	Est. Harv.
01												
03/05												
04/06												
07												
10												
11												
12												
13												
14												
15							1	0.088		11		
16												
17												

River Section	January			February			March			April			1991-92	
	No. Tags	Sample	Est. Harv.	No. Tags	Sample	Est. Rate	No. Tags	Sample	Est. Harv.	No. Tag	Sample	Est. Harv.	No. Tags	Est.
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16												1		11
17														
18														
19														
20														

Total estimated harvest

11

Appendix A. Continued.

TAG CODE - 10/42/24 RELEASE SITE - Little Salmon River NUMBER RELEASED - 15,501

River	Section	September			October			November			December		
		No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.
	01												
	03/05												
	04/06												
	07												
	10												
	11												
	12												
	13												
	14												
	15												
	16												
	17												

83

River	Section	January			February			March			April		1991-92	
		No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Est.	No. Tags	Est.
	01													
	03/05													
	04/06													
	07													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
	17													
	18													
	19													
	20							3	0.222	14		3		14

Total estimated harvest

14

Appendix A. Continued.

TAG CODE - 10/42/36 RELEASE SITE - East Fork Salmon River NUMBER RELEASED - 15,474

River Section	September			October			November		December	
	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	No. Tags	Sample Est.
01										
03/05										
04/06										
07										
10										

68

River Section	Sample Est.		Sample Est.		Sample		April		
	Rate	Harv.	Rate	Harv.	Rate	Harv.	Sample Rate	Est. Harv.	No. Tags
01									
03/05									
04/06									
07									
10									
11			1	0.135	7				1 7
12									
13									
14									
15						1	0.475	2	2 6
16									
17									
18									
19									
20									
Total estimated harvest									1 3

Appendix A. Continued.

TAG CODE - 10/42/37, RELEASE SITE - East Fork Salmon River NUMBER RELEASED - 15,971

River Section	Tags	September		October		November		December	
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.
		Rate	Harv.	Rate	Harv.	Rate	Harv.	Rate	Harv.
01									
03/05									
04/06									
07									
10									
11									
12									
13									
14						1	0.208	5	
15									
16									
17									

River Section	Tags	January		February		March		April		1991-92	
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Est.
		Rate	Harv.	Rate	Harv.	Rate	Harv.	Rate	Harv.	Rate	Harv.
01											
03/05											
04/06											
07											
10											
11											
12											
13											
14											
15										1	5
16											
17											
18											
19											
20											
Total estimated harvest											5

Appendix A. Continued.

TAG CODE - 23/20/21 RELEASE SITE - Columbia R. @ RM 141 NUMBER RELEASED - 5,020

River Section	Tags	September		Tags	October		Tags	November		Tag	December	
		No. Sample	Est. Harv.		No. Sample	Est. Harv.		No. Sample	Est. Harv.		No. Sample	Est. Harv.
01												
03/05				1	0.093	11				1	0.096	10
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

92

River Section	Tags	January		Tags	February		Tags	March		Tags	April		1991-92	
		No. Sample	Est. Harv.	No. Est.	Tags									
01														
03/05														
04/06							1	0.283	4			2		21
07												1		4
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

25

Appendix A. Continued.

TAG CODE - 23/23/43 RELEASE SITE - Snake R. @ Texas Rapids NUMBER RELEASED - 6,864

River Section	Tags	September		October		November		December	
		No. Sample	Est. Rate						
01									
03/05									
04/06									
07									

96

River Section	Tags	January						1991-92	
		Sample	Est. Rate	Sample	Est. Rate	Sample	Est. Rate	Est. No. Harv.	Tags
01	1	0.115	9					1	9
03/05									
04/06									
07									
10									
11									
12									
13									
14									
15						1	0.475	2	1
16									
17									
18						1	0.214	.5	1
19									
20									
Total estimated harvest									1

Appendix A. Continued.

TAG CODE - 23/23/45 RELEASE SITE - Snake R. @ Texas Rapids NUMBER RELEASED - 7,049

River Section	No. Tags	September		No. Tag	October		No. Tag	November		No. Tag	December	
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.
01												
03/05												
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	No. Tags	January		No. Tags	February		No. Tag	March		No. Tag	April		1991-92	
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est.
01														
03/05														
04/06							1	0.283	4			1		4
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

4

Appendix A. Continued.

TAG CODE - 23/23/46 RELEASE SITE - Snake R. @ Texas Rapids NUMBER RELEASED - 7,088.

River Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tag	December	
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.
01												
03/05				1	0.093	11	1	0.098	10			
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

98

River Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1991-92	
		Sample Rate	Est. Harv.	No. Tags	Est.									
01														
03/05													2	21
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest

21

Appendix A. Continued.

TAG CODE - 23/23/47 RELEASE SITE - Snake R. @ Texas Rapids NUMBER RELEASED - 7,000

River Section	No. Tags	September		October			November			December					
		Sample	Est.	No. Tags	Sample	Est.	Harv.	No. Tags	Sample	Est.	Harv.	No. Tags	Sample	Est.	Harv.
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															

River Section	No. Tags	January		February			March			April			1991-92		
		Sample	Est.	No. Tags	Sample	Est.	Harv.	No. Tags	Sample	Est.	Harv.	No. Tags	Sample	Est.	Harv.
01															
03/05	1	0.102	10											1	10
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

Total estimated harvest

10

Appendix A. Continued.

TAG CODE - 63/02/47

RELEASE SITE - Touchet River

NUMBER RELEASED - 20,444

River Section	September			October			November			December		
	No.	Sample Est.	Harv.	No.	Sample Est.	Harv.	No.	Sample Est.	Harv.	No.	Sample Est.	Harv.
01	1	0.397	3	1	0.048	21						
03/05												
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	January			February			March			April		1991-92	
	No.	Sample Est.	Harv.	No.	Sample Est.	Harv.	No.	Sample Est.	Harv.	No.	Sample Est.	No.	Est.
01												2	24
03/05													
04/06													
07													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Total estimated harvest

24

101

Appendix A. Continued.

TAG CODE - 63/02/49 RELEASE SITE - Touchet River NUMBER RELEASED - 20,224

River Section	No. Tags	September		October		November			December	
		Sample Rate	Est. Harv.	No. Tags	Sample Rate	No. Tags	Sample Rate	Harv.	No. Tags	Sample Rate
01	1	0.397	3							
03/05										
04/06										
07										
10										
11										
12										
13										
14										
15										
16										
17										

River Section	No. Tags	January		February		March		April		1991-92	
		Sample Rate	Est. Harv.	No. Tags	Sample Rate	Harv.	No. Tags	Sample Rate	Harv.	No. Tags	Est.
01										1	3
03/05											
04/06											
07											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

Total estimated harvest

3

Appendix A. Continued.

TAG CODE - 63/07/25

RELEASE SITE - Asotin Creek

NUMBER RELEASED - 20,142

River Section	Tags	September		October			November			December		
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	
01	1	0.397	3						1	0.081	12	
03/05												
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	Tags	January		February			March			April		1991-92	
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Est.		
01										2		15	
03/05													
04/06													
07													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Total estimated harvest

15

Appendix A. Continued.

TAG CODE - 63/14/22

RELEASE SITE - Asotin Creek

NUMBER RELEASED - 19,950

River Section	Tags	September		October			November			December		
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	
01				1	0.048	21			1	0.081	12	
03/05												
04/06												
07												
10												
11												
12												
13												
14												
15												
16												
17												

River Section	Tags	January		February			March			April		1991-92	
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Est.		
01											2	33	
03/05													
04/06													
07													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Total estimated harvest

33

Appendix A. Continued.

TAG CODE - 63/55/08 RELEASE SITE - Lyons Ferry NUMBER RELEASED - 51,152

River Section	Tags	September		No. Tag	October		No. Tag	November		No. Tag	December			
		No. Sample	Est. Harv.		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate		
01	1	0.397	3											
03/05				1	0.093	11	1	0.100	10					
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
River Section	Tags	January		No. Tag	February		No. Tag	March		No. Tag	April		1991-92	
		No. Sample	Est. Harv.		Sample	Est. Rate		Sample	Est. Rate		Sample	Est. Rate	Tags	Harv. Est.
01	1	0.113	9										2	12
03/05													2	21
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

111

Total estimated harvest

Appendix B. Steelhead groups returning to the Salmon River, 1991-92.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
A	I	14,597	Sawtooth	HNFH ^a	CWT 10/42/14
A	I	15,482	Sawtooth	HNFH	CWT 10/42/15
A	I	15,218	Sawtooth	HNFH	CWT 10/42/16
A	I	255,859	Sawtooth	HNFH	None
A	I	39,620	Sawtooth	MVSH ^b	CWT 10/40/59
A	I	1,159,080	Sawtooth	MVSH	None
A	I	14,909	Pahsimeroi	NSPR ^c	CWT 10/42/21
A	I	14,339	Pahsimeroi	NSPR	CWT 10/42/22
A	I	15,127	Pahsimeroi	NSPR	CWT 10/42/23
A	I	457,225	Pahsimeroi	NSPR	None
A	I	200,295	Ellis Bridge	HNFH	None
A	I	15,528	Shoup Bridge	HNFH	CWT 10/42/27
A	I	15,196	Shoup Bridge	HNFH	CWT 10/42/28
A	I	15,104	Shoup Bridge	HNFH	CWT 10/42/29
A	I	154,418	Shoup Bridge	HNFH	None
A	I	199,602	North Fork	HNFH	None
A	I	80,465	Little Salmon R.	HNFH	None
A	I	15,501	Little Salmon R.	NSPR	CWT 10/42/24
A	I	15,004	Little Salmon R.	NSPR	CWT 10/42/25
A	I	15,250	Little Salmon R.	NSPR	CWT 10/42/26
A	I	179,745	Little Salmon R.	NSPR	None
A	I	229,000	Hammer Creek	NSPR	None
	Total	3,136,564			
A	II	14,718	Sawtooth	HNFH	CWT 10/41/38
A	II	14,584	Sawtooth	HNFH	CWT 10/41/39

Appendix B. Continued.

Strain	Age	No. of Fish	Hatchery Release Site	Rearing	Marks
A	II	16,914	Sawtooth	HNFH	CWT 10/41/40
A	II	590,335	Sawtooth	HNFH	None
A	II	2,838	Sawtooth	MVSH	PIT
A	II	854,762	Sawtooth	MVSH	None
A	II	104,400	Yankee Fork	MVSH	None
A	II	14,465	Pahsimeroi	NSPR	CWT 10/41/50
A	II	13,334	Pahsimeroi	NSPR	CWT 10/41/51
A	II	13,107	Pahsimeroi	NSPR	CWT 10/41/52
A	II	5,393	Pahsimeroi	NSPR	CWT 10/41/53
A	II	462,001	Pahsimeroi	NSPR	None
A	II	13,400	Shoup Bridge	NSPR	CWT 10/41/47
A	IZ	13,900	Shoup Bridge	NSPR	CWT 10/41/48
A	II	15,947	Shoup Bridge	NSPR	CWT 10/41/49
A	II	166,453	Shoup Bridge	NSPR	None
A	II	208,500	North Fork	NSPR	None
A	II	3,058	Little Salmon R.	MUSH	PIT
A	II	15,209	Little Salmon R.	MUSH	CWT 10/41/41
A	II	15,154	Little Salmon R.	MUSH	CWT 10/41/42
A	II	15,927	Little Salmon R.	MUSH	CWT 10/41/43
A	II	401,052	Little Salmon R.	MUSH	None
A	II	300,600	Slate Creek	MUSH	None
A	II	7,200	Hammer Creek	NSPR	None
A	II	136,000	Hammer Creek	MUSH	None
	Total	3,419,251			
B	I	64,150	East Fork	HNFH	None

Appendix B. Continued.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	I	40,905	East Fork	MVSH	CWT 10/40/58
B	I	14,964	East Fork	MVSH	CWT 10/42/33
B	I	15,157	East Fork	MVSH	CWT 10/42/34
B	I	14,642	East Fork	MVSH	CWT 10/42/35
B	I	15,474	East Fork	MVSH	CWT 10/42/36
B	I	15,971	East Fork	MVSH	CWT 10/42/37
B	I	14,958	East Fork	MVSH	CWT 10/42/38
B	I	792,129	East Fork	MVSH	None
	Total	988,350			
B	II	14,939	East Fork	HNFH	CWT 10/41/32
B	II	14,911	East Fork	HNFH	CWT 10/41/33
	II	13,719	East Fork	HNFH	CWT 10/41/34
B	II	393,007	East Fork	HNFH	None
B	II	15,624	East Fork	MUSH	CWT 10/41/44
B	II	14,126	East Fork	MVSH	CWT 10/41/45
B	II	14,314	East Fork	MVSH	CWT 10/41/46
B	II	2,930	East Fork	MVSH	PIT
B	II	306,306	East Fork	MVSH	None
	Total	789,876			
B	III	251,825	East Fork	HNFH	None
B	III	51,732	East Fork	HNFH	CWT 10/29/38
	Total	303,557			

^a HNFH = Hagerman National Fish Hatchery.

^b MVSH = Magic Valley Steelhead Hatchery.

^c NSPR = Niagara Springs Fish Hatchery.

Appendix C. Steelhead groups returning to the Clearwater River, 1991-92.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	I	209,847	American River	DNFH ^a	None
B	I	374,040	Clear Creek	DNFH	None
B	I	214,633	Crooked River	DNFH	None
B	I	199,700	Eldorado Creek	DNFH	None
B	I	20,016	Clearwater River	DNFH	CWT 05/20/44
B	I	19,797	Clearwater River	DNFH	CWT 05/20/45
B	I	20,279	Clearwater River	DNFH	CWT 05/20/46
B	I	21,290	North Fork	DNFH	CWT 05/20/47
B	I	20,888	Clearwater River	DNFH	CWT 05/20/48
B	Z	21,387	North Fork	DNFH	CWT 05/20/49
	I	1,043,007	Clearwater River	DNFH	None
B	I	210,836	Newsome Creek	DNFH	None
B	I	287,830	South Fork	DNFH	None
	Total	2,663,550			
B	II	15,294	Clear Creek	HNFB ^b	CWT 10/41/35
B	II	15,482	Clear Creek	HNFB	CWT 10/41/36
B	II	14,375	Clear Creek	HNFB	CWT 10/41/37
B	II	3,996	Clear Creek	HNFB	None
B	II	208,201	Clear Creek	DNFB	None
B	II	109,898	Crooked River	DNFB	None
B	II	109,480	Eldorado Creek	DNFB	None
B	II	16,912	North Fork	DNFB	CWT 05/18/37
B	II	17,789	North Fork	DNFB	CWT 05/18/38
B	II	20,339	North Fork	DNFB	CWT 05/19/45
B	II	19,894	North Fork	DNFB	CWT 05/19/46

Appendix C. Continued.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	II	18,869	North Fork	DNFH	CWT 05/19/47
B	II	20,603	North Fork	DNFH	CWT 05/20/41
B	II	20,782	North Fork	DNFH	CWT 05/20/42
B	II	20,497	North Fork	DNFH	CWT 05/20/43
B	II	918,215	North Fork	DNFH	None
B	II	103,273	Newsome Creek	HNFH	None
B	II	143,803	South Fork	HNFH	None
Total		1,797,702			
B	III	56,885	American River	DNFH	None
B	III	201,325	Crooked River	DNFH	None
B	III	254,898	Clear Creek	DNFH	None
B	III	200,425	Lolo Creek	DNFH	None
B	III	200,806	Eldorado Creek	DNFH	None
B	III	1,210,738	North Fork	DNFH	None
B	III	15,425	North Fork	DNFH	CWT 05/17/11
B	III	15,550	North Fork	DNFH	CWT 05/17/12
B	III	15,425	North Fork	DNFH	CWT 05/17/13
B	III	12,950	North Fork	DNFH	CWT 05/17/14
B	III	12,900	North Fork	DNFH	CWT 05/17/39
B	III	14,325	North Fork	DNFH	CWT 05/18/46
B	III	16,600	North Fork	DNFH	CWT 05/18/49
B	III	19,800	North Fork	DNFH	CWT 05/18/50
	III	19,875	North Fork	DNFH	CWT 05/18/51
B	III	19,850	North Fork	DNFH	CWT 05/18/52
B	III	18,850	North Fork	DNFH	CWT 05/18/53

Appendix C. Continued.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	III	21,050	North Fork	DNFH	CWT 05/18/54
B	III	8,150	North Fork	DNFH	CWT 10/29/28
B	III	8,025	North Fork	DNFH	CWT 10/29/29
B	III	190,708	Newsome Creek	DNFH	None
B	III	165,055	South Fork	DNFH	None
Total		2,699,615			

^a DNFH = Dworshak National Fish Hatchery.
^B HNFH = Hagerman National Fish Hatchery.

Appendix D. Miscellaneous coded wire tag steelhead groups that were recovered by Idaho anglers in 1991-92.

Strain	Age	No. of Fish	Release Site	Agencv	Marks
A	I	26,231	Wallowa Hatchery	ODFW ^a	CWT 07/51/19
A	I	26,347	Wallowa Hatchery	ODFW	CWT 07/51/20
A	I	26,473	Wallowa Hatchery	ODFW	CWT 07/51/21
A	I	26,771	Wallowa Hatchery	ODFW	CWT 07/51/22
A	I	26,326	Wallowa Hatchery	ODFW	CWT 07/51/23
A	I	26,363	Little Sheep Creek	ODFW	CWr 07/51/24
A	I	20,142	Asotin Creek	WDW ^b	CWT 63/07/25
A	I	20,805	Lyons Ferry Hatchery	WDW	CWT 63/08/42
A	I	18,150	Lyons Ferry Hatchery	WDW	CWT 63/14/21
A	I	19,950	Asotin Creek	WDW	CWT 63/14/22
	I	20,065	Tucannon River	WDW	CWT 63/39/11
A	II	26,718	Wallowa Hatchery	ODFW	CWT 07/45/43
A	II	27,235	Little Sheep Creek	ODFW	CWT 07/46/57
A	II	5,000	Columbia R. @ RM 141	NMFS ^c	CWT 23/20/20
A	II	5,020	Columbia R. @ RM 141	NMFS	CWT 23/20/21
A	II	4,732	Columbia R. @ RM 141	NMFS	CWT 23/20/24
A	II	4,823	Columbia R. @ RM 141	NMFS	CWT 23/20/26
A	II	4,914	Columbia R. @ RM 141	NMFS	CWT 23/20/27
A	II	6,864	Snake R. @ Texas Rapids	NMFS	CWT 23/23/43
A	II	7,049	Snake R. @ Texas Rapids	NMFS	CWT 23/23/45
A	II	7,088	Snake R. @ Texas Rapids	NMFS	CWT 23/23/46
A	II	7,000	Snake R. @ Texas Rapids	NMFS	CWT 23/23/47

Appendix D. Continued.

<u>Strain</u>	<u>Age</u>	<u>No. of Fish</u>	<u>Release Site</u>	<u>Agency</u>	<u>Marks</u>
A	II	47,352	Lyons Ferry Hatchery	WDW	CWT 63/01/32
A	II	20,444	Touchet River	WDW	CWT 63/02/47
A	II	20,224	Touchet River	WDW	CWT 63/02/49
A	II	20,261	Tucannon River	WDW	CWT 63/50/35
A	II	20,502	Tucannon River	WDW	CWT 63/50/49
A	II	20,421	Touchet River	WDW	CWT63/50/52
A	II	51,152	Lyons Ferry Hatchery	WDW	CWT 63/55/08

^a ODFW = Oregon Department of Fish and Wildlife.
^b WDW = Washington Department of Wildlife.
^c NMFS = National Marine Fisheries Service.

Submitted by:

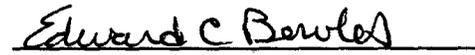
Kent Ball
Senior Fishery Research Biologist

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME



Steven M. Huffaker, Chief
Fisheries Bureau



Edward C. Bowles
Anadromous Fishery Coordinator