



**EVALUATION OF IDAHO STEELHEAD HARVEST FOR  
LOWER SNAKE RIVER COMPENSATION PLAN  
HATCHERY PROGRAMS**

**Project Progress Report**

**Report Period September 1, 1998 to April 30, 1999**



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December 2004**

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## ABSTRACT

Steelhead *Oncorhynchus mykiss* in Idaho are monitored to assess hatchery contribution, distribution, and return rates. Coded-wire tags (CWT) are retrieved from fish harvested by anglers, and harvest rates are calculated by month and river section.

Creel clerks interviewed 14,942 anglers and examined 2,856 steelhead, or 11.9% of the total steelhead harvest, during the fall of 1998 and spring of 1999. We also retrieved 387 CWT from 82 of the 144 unique mark groups released in Idaho through creel efforts. We recovered 59 of the 93 steelhead mark groups produced by the Lower Snake River Compensation Plan (LSRCP), or 63.4% of the total LSRCP groups released. Idaho anglers also harvested fish from four CWT groups released in Washington and Oregon.

The total estimated harvest for the 1998-99 season was 24,100 hatchery steelhead, of which an estimated 4,003 (21.8%) were produced by the Lower Snake River Compensation Plan (LSRCP). An additional 4,065 LSRCP-reared fish returned to hatchery racks or to offsite release locations. Therefore, we accounted for 9,266 steelhead from the LSRCP program, 56.8% of which were harvested.

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## INTRODUCTION

Steelhead *Oncorhynchus mykiss* and Chinook salmon *O. tshawytscha* are raised in Idaho hatcheries to mitigate for losses caused by the construction of hydroelectric dams. Adults returning to the Salmon River 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 report is to show the composition of steelhead in the Idaho fishery and to estimate the adult harvest contribution from juveniles produced in Lower Snake River Compensation Plan (LSRCP) hatcheries. The LSRCP mitigates for four federal dams on the lower Snake River. Contribution to the Idaho fishery is one of the measures of performance of LSRCP fish.

Steelhead are also cultured by Idaho Power Company (IPC) and the U.S. Fish and Wildlife Service (USFWS). IPC fish are released into the Salmon River and Snake River drainages, and USFWS fish are released into the Salmon River and Clearwater River drainages. A summary and discussion of the harvest contribution of these fish is not included in this report. However, harvest data for IPC and USFWS is incorporated into Appendix A tables by CWT release group. IPC and USFWS release groups are also identified by their rearing hatchery, Niagara Springs Fish Hatchery and Dworshak National Fish Hatchery, respectively, in Appendix B and Appendix C. CWT fish from IPC and USFWS programs provided the basis for in-river return estimates in some instances.

Currently, wild stocks are below escapement goals, and protection is necessary to perpetuate those fish. Harvest management of steelhead in Idaho is directed toward harvest of hatchery fish and protection of wild (unmarked) fish. Beginning in 1984, all hatchery-produced steelhead smolts released into Idaho rivers and streams had their adipose fins excised before release so that returning adults could be selectively harvested. Regulations stated, "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 and spring steelhead fishing season dates, bag limits, and special restrictions in effect for Idaho during 1998–1999.

Representative groups of steelhead were marked with CWT prior to release as juveniles. Anglers were interviewed and fish snouts were retrieved in all major harvest areas to recover CWT from the fishery. Information was collected and used to estimate timing, straying, exploitation, harvest distribution, and relative abundance of hatchery stocks. Total harvested numbers were estimated by statewide harvest survey, and the harvest contribution for each hatchery program was derived from tag recoveries. Offsite smolt releases were used as a tool for distributing angler effort and harvest. This report documents some of the behavior and distribution of the returning fish.

Table 1. Steelhead season dates, bag limits, and special restrictions for the Clearwater River drainage, Salmon River drainage, and Snake River, 1998-99.

<b>River (and Sections)</b>	<b>Fall Season Dates<sup>a</sup></b>	<b>Bag Limits<sup>b</sup></b>
Snake River (01)	Sep 1-Dec 31	2, 4, 10
Clearwater River (03 <sup>c</sup> , 04)	Oct 15-Dec 31	2, 4, 10
North Fork Clearwater River (05)	Oct 15-Dec 31	2, 4, 10
South Fork Clearwater River (07)	Oct 15-Dec 31	2, 4, 10
Salmon River (10-19)	Sep 1-Dec 31	2, 4, 10
Little Salmon River (20)	Sep 1-Dec 31	2, 4, 10

<b>River (and Sections)</b>	<b>Spring Season Dates</b>	<b>Bag Limits</b>
Snake River (01)	Jan 1-Apr 30	2, 4, 10
Clearwater River (03, 04)	Jan 1-Apr 30	2, 4, 10
North Fork Clearwater River (05)	Jan 1-Apr 30	2, 4, 10
South Fork Clearwater River (07)	Jan 1-Apr 30	2, 4, 10
Salmon River (10-14)	Jan 1-Mar 31	2, 4, 10
Salmon River (15-19)	Jan 1-Apr 30	2, 4, 10
Little Salmon River (20)	Jan 1-Apr 30	2, 4, 10

<sup>a</sup> Fall season dates are for catch and keep fishing. Catch and release fishing open from August 1, 1998 in any water open for fishing for other species except in the Middle Fork Salmon River and South Fork Salmon River. See footnote c for river section exception regarding season dates.

<sup>b</sup> Bag limits denote daily, possession, and season totals.

<sup>c</sup> Catch and keep fishing open from September 1–December 31, 1998 on downriver portion of Section 03 from the mouth to Memorial Bridge of Highway 12 at Lewiston.

## OBJECTIVES

1. Identify the number and proportion of steelhead harvested in the Idaho sport fishery that are produced by LSRCP hatcheries.
2. Determine adult returns of LSRCP steelhead to Idaho hatcheries and offsite release areas.

## DESCRIPTION OF STUDY AREA

Juvenile steelhead are released into the Salmon River drainage and Clearwater River drainage by the LSRCP program. Consequently, Idaho's harvest of LSRCP produced steelhead primarily occurs in the Snake River, the Clearwater River, and the Salmon River. While additional harvest of LSRCP produced steelhead occasionally occurs in other locations, such as the Boise River and Oxbow Reservoir, the majority of Idaho's steelhead harvest occurs within the central portion of the state (Figure 1; Table 2).

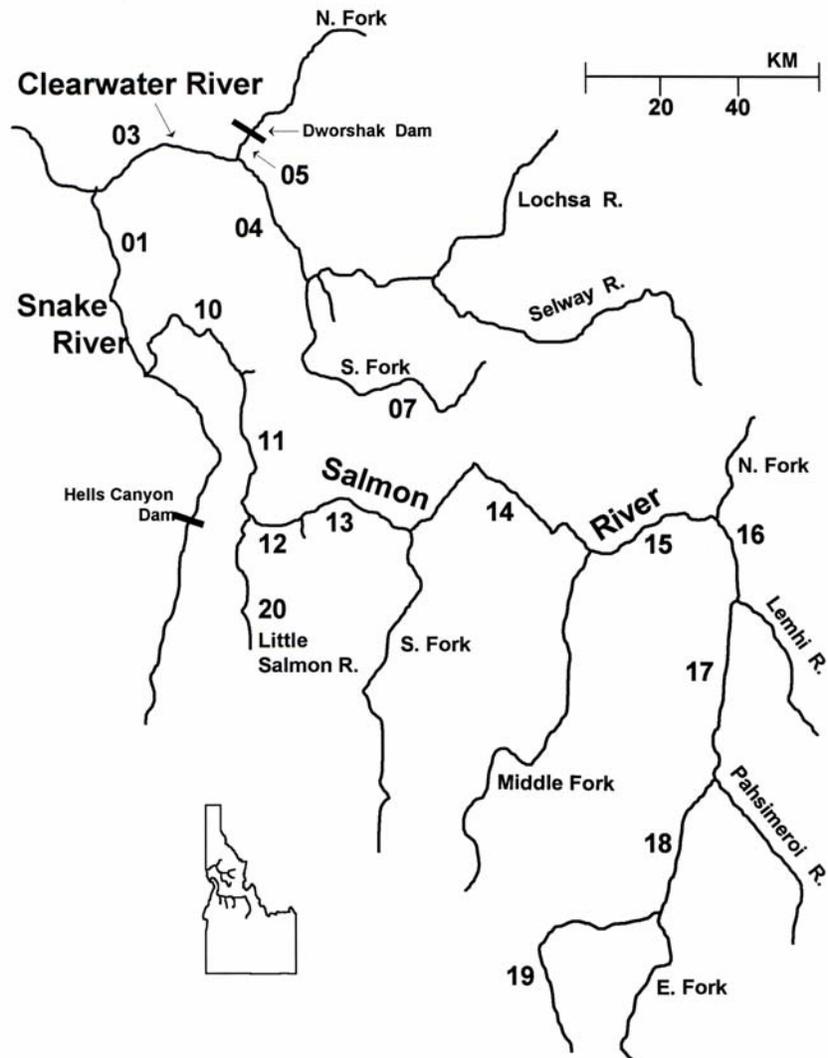


Figure 1. Map of steelhead harvest areas surveyed for the LSRCP program by IDFG.

Table 2. River location codes for steelhead fisheries surveyed for the LSRCP program in Idaho.

<b>River Section</b>	<b>Location Code</b>
Snake River, below Salmon River	01
Clearwater River, below Orofino Bridge	03
Clearwater River, above Orofino Bridge	04
North Fork Clearwater River	05
South Fork Clearwater River	07
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

## **METHODS**

### **Creel Survey**

Angler interviews were conducted at check stations, from jet boats, and from roving vehicles. Angler interview schedules and intensity were designed to observe maximum numbers of harvested fish. A jet boat was typically used to census anglers on the Clearwater River during the fall and winter months. However, in spring, boat density renders boat census methods impractical, so creel checks were conducted at boat ramps. We used check stations and roving techniques to census anglers fishing in the lower and upper Salmon River portions of the project. We used jet boat and boat ramp surveys to census anglers on the Snake River.

Data collected during creel surveys includes the number of anglers and hours fished, the number of fish kept or released, wild or hatchery origin of fish kept and released, fork length and sex of fish kept, and the date and river sections where fish were caught. Fish were inspected for tags and fin clips. The snout was removed for CWT retrieval from all fish with an abnormality of its left ventral fin or when use of a portable CWT hand wand detector signaled the presence of a CWT. Snouts were not excised from CWT fish when anglers desired to keep their fish intact.

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

### **Interview Schedule**

**Lower Snake River (01)**—by jet boat with Washington Department of Fish and Wildlife personnel and at boat ramps on alternating weekends for eight weekends during the fall season.

**Lower Clearwater River and North Fork Clearwater River (03 and 05)**—by jet boat for nine weekends and at boat ramps for two weekends in the fall. By roving vehicle, jet boat, and at boat ramps for 14 weeks during spring.

**Upper Clearwater River (including the Middle Fork) and South Fork Clearwater River (04 and 07)**—by roving vehicle for eight weekends in spring in section 04 and by roving vehicle for eight weekends and two weekdays in section 07.

#### **Salmon River and Little Salmon River**

**Section 10**—by roving vehicle for seven weekends in the fall and one weekend during the spring season (upper roaded portion only).

**Section 11**—by roving vehicle for eight weekends in the fall and six weekends in the spring.

**Sections 12 and 13**—by a check station at the old lumber mill site near Riggins for eight weekends in the fall and six weekends in the spring.

**Sections 14 and 15**—by a check station near North Fork for seven weekends in the fall and five weekends in the spring.

**Section 16**—by roving vehicle for seven weekends in the fall and seven weekends in the spring.

**Section 17**—by roving vehicle for three weekends in the spring.

**Sections 17 and 18**—by a check station near Challis for four weekends during spring (portion of section 18 downriver from Challis).

**Section 18**—by roving vehicle for five weekends in the spring (upper portion of section 18 from Challis to the East Fork Salmon River).

**Section 19**—by roving vehicle for five weekends in the spring.

**Section 20**—by roving vehicle for eight weekends in the fall and 10 weekends in the spring.

#### **Data Analysis**

Monthly harvest estimates by river section were obtained from a statewide telephone survey (Appendix D). We calculated a monthly sample rate by dividing the sum of fish checked for marks from each river section by the corresponding monthly statewide harvest estimate. Fish that were not seen by creel clerks during angler interviews were not included in sample rate calculations. The harvest of hatchery fish by CWT code was calculated as the number of tags recovered divided by the monthly sampling rate (Appendix A). We estimated harvest of unmarked release groups by using harvest rates from marked companion release groups. Total returns were the sum of harvest and hatchery returns by release group. We defined the

exploitation rate as the harvest estimate divided by the total return of fish. No attempt was made to estimate the number of fish that spawned naturally or died prior to spawning.

## **Stock Separation**

We categorized steelhead as either A-strain (<77.5 cm FL) or B-strain (>77.5 cm FL) for dam count purposes (Ball and White 2001). The data was adjusted for size overlap between the two groups after it was separated by category. For a more detailed discussion regarding dam counts and overlap adjustments, see Ball and White (2001).

Oregon Department of Fish and Wildlife (ODFW) personnel trap steelhead at the Bonneville Dam fish ladder. They measure fork length, record the presence or absence of an adipose fin, and take scales from the fish samples. ODFW then supplies Idaho Department of Fish and Game (IDFG) with copies of the data, including scale readings (Appendix E).

National Marine Fisheries Service (NMFS) personnel sample steelhead at Lower Granite Dam each week through the steelhead run. NMFS supplies IDFG with the numbers of fish in each of four categories: wild steelhead <77.5 cm FL, hatchery steelhead <77.5 cm FL, wild steelhead >77.5 cm FL, and hatchery steelhead >77.5 cm FL (Appendix F).

We categorized fish into four length groups based on fishery type, strain, age, and sex for harvest purposes. We developed the following categories where mixed stock fisheries of A and B fish occur, such as in the Salmon River and Snake River: A-strain 1-ocean males are <68 cm FL; A-strain 2-ocean males are  $\geq$ 68 cm FL; A-strain 1-ocean females are  $\leq$ 65 cm FL; and A-strain 2-ocean females are >65 cm FL. Likewise, B-strain 2-ocean and 3-ocean males are >79 cm FL, and B-strain 2-ocean and 3-ocean females are >75 cm FL. Currently, we are unable to separate B-strain 1-ocean fish from A-strain 2-ocean fish based on length frequencies where mixed stock fisheries occur.

Where fishery stocks are separate, such as in the Clearwater River drainage, we developed the following categories: B-strain 1-ocean males are  $\leq$ 73 cm FL, and B-strain 2-ocean and 3-ocean males are >73 cm FL. Likewise, B-strain 1-ocean females are  $\leq$ 68 cm FL, and B-strain 2-ocean and 3-ocean females are >68 cm FL.

## **RESULTS**

### **Creel Survey**

We interviewed 14,942 anglers who had harvested 3,092 hatchery fish and released 1,458 and 622 hatchery and wild fish, respectively, during the fall of 1998 and spring 1999 seasons (Tables 3-17). We physically examined 2,856 hatchery fish for marks, which represented 11.9% of the total steelhead harvest of 24,100 fish for river sections creeled for the LSRCP (Table 18).

We removed 443 snouts for CWT retrieval from fish with clipped left ventral fins or from fish that triggered positive detection signals using a portable CWT detector. We recovered 392 CWT from 86 different mark groups from the sampled snouts. The overall proportion of tags recovered from the number of fish checked for marks was 13.7%. 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 also listed in Appendix A. Of the 86 mark groups that yielded CWT in the fishery, 82 were from releases in Idaho (Appendices A, B, and C). Several A-strain 5-year-old fish from CWT groups 10/30/46 and 10/30/47 returned to Salmon River hatchery racks and were not detected in the fishery. We do not know if the 5-year-old fish held over in freshwater or the ocean. Nine B-strain fish from CWT groups 10/46/53, 10/51/45, 10/20/25, and 10/20/27 returned to Clearwater River hatchery racks and were not detected in the fishery.

Coded-wire tags were also recovered from one Oregon and three Washington wire groups (Appendices A and G). Oregon tag group 07/11/59 was from a release on the Wallowa River. The three Washington tag groups were from releases in the Touchet River.

Table 3. Steelhead fishery interview data (unexpanded) from lower Snake River Section 01, October—November 1998.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	334	1,202	43	0	8	15	66	18	77
November	535	1,473	48	0	0	12	60	25	80
Total	869	2,675	91	0	8	27	126		
Average								21	79

Table 4. Steelhead fishery interview data (unexpanded) from lower Clearwater River Section 03 and North Fork Clearwater River Section 05, October 1998—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	728	2,674	121	0	52	46	219	12	79
November	654	2,697	93	0	37	11	141	19	92
December	393	1,515	100	0	44	16	160	9	90
Fall Total	1,775	6,886	314	0	133	73	520		
Average								13	86
January	659	2,774	148	0	36	39	223	12	83
February	950	4,367	225	0	35	35	295	15	88
March	342	1,231	37	0	4	3	44	28	93
April	9	40	0	0	0	0	0	—	—
Spring Total	1,960	8,412	410	0	75	77	562		
Average								15	86
Total	3,735	15,298	724	0	208	150	1,082		
Average								14	86

Table 5. Steelhead fishery interview data (unexpanded) from upper Clearwater River and Middle Fork Clearwater River Section 04, February—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
February	140	523	20	0	6	4	30	17	87
March	167	759	22	0	11	13	46	17	72
April	3	4	0	0	0	0	0	—	—
Total	310	1,286	42	0	17	17	76		
Average								17	78

Table 6. Steelhead fishery interview data (unexpanded) from South Fork Clearwater River Section 07, February—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
February	54	154	6	0	3	1	10	15	90
March	132	398	20	0	23	2	45	9	96
April	70	284	15	0	8	3	26	11	88
Total	256	836	41	0	34	6	81		
Average								10	93

Table 7. Steelhead fishery interview data (unexpanded) from Salmon River Section 10, October 1998—March 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	52	185	7	0	0	1	8	23	88
November	29	91	1	0	0	0	1	91	100
Fall total	81	276	8	0	0	1	9		
Average								31	89
March	6	15	1	0	1	0	2	8	100
Spring total	6	15	1	0	1	0	2		
Average								8	100
Total	87	291	9	0	1	1	11		
Average								29	91

Table 8. Steelhead fishery interview data (unexpanded) from Salmon River Section 11, October 1998—March 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	175	521	18	0	4	8	30	17	73
November	281	888	26	0	4	13	43	21	70
Fall total	456	1,409	44	0	8	21	73		
Average								19	71
February	154	369	18	0	4	1	23	16	96
March	92	291	8	0	3	1	12	24	92
Spring total	246	660	26	0	7	2	35		
Average								19	94
Total	702	2,069	70	0	15	23	108		
Average								19	79

Table 9. Steelhead fishery interview data (unexpanded) from Salmon River Section 12, October 1998—March 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	308	1,360	38	0	8	19	65	21	71
November	822	4,114	173	0	40	38	251	16	85
Fall total	1,130	5,474	211	0	48	57	316		
Average								17	82
February	371	1284	37	0	5	13	55	23	76
March	468	1734	44	0	2	16	62	28	74
Spring total	839	3,018	81	0	7	29	117		
Average								26	75
Total	1,969	8,492	292	0	55	86	433		
Average								20	80

Table 10. Steelhead fishery interview data (unexpanded) from Salmon River Section 13, October 1998—March 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	71	606	18	0	0	4	22	28	82
November	120	757	47	0	2	18	67	11	73
Fall total	191	1,363	65	0	2	22	89		
Average								15	75
February	11	64	12	0	0	4	16	4	75
March	56	297	13	0	5	9	27	11	67
Spring total	67	361	25	0	5	13	43		
Average								8	70
Total	258	1,724	90	0	7	35	132		
Average								13	73

Table 11. Steelhead fishery interview data (unexpanded) from Salmon River Section 14, October 1998—March 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	134	2,220	29	0	12	18	59	38	69
November	202	3,986	171	1	50	59	281	14	79
Fall total	336	6,206	200	1	62	77	340		
Average								18	77
February	61	862	59	0	17	9	85	10	89
March	101	1,337	44	0	11	11	66	20	83
Spring total	162	2,199	103	0	28	20	151		
Average								15	87
Total	498	8,405	303	1	90	97	491		
Average								17	80

Table 12. Steelhead fishery interview data (unexpanded) from Salmon River Section 15, October 1998—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	297	3,063	46	0	25	8	79	39	90
November	670	7,347	241	0	101	38	380	19	90
Fall total	967	10,410	287	0	126	46	459		
Average								23	90
February	411	3,505	145	1	43	16	205	17	92
March	1,303	13,824	391	0	291	37	719	19	95
April	36	200	3	0	3	2	8	25	75
Spring total	1,750	17,529	539	1	337	55	932		
Average								19	94
Total	2,717	27,939	826	1	463	101	1,391		
Average								20	93

Table 13. Steelhead fishery interview data (unexpanded) from Salmon River Section 16, October 1998—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	3	14	0	0	0	0	0	—	—
November	112	458	12	0	3	1	16	29	94
Fall total	115	472	12	0	3	1	16		
Average								29	94
February	4	25	0	0	0	0	0	—	—
March	572	2,462	82	0	40	2	124	20	98
April	242	1,013	63	0	39	6	108	9	94
Spring total	818	3,500	145	0	79	8	232		
Average								15	97
Total	933	3,972	157	0	82	9	248		
Average								16	96

Table 14. Steelhead fishery interview data (unexpanded) from Salmon River Section 17, November 1998—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
November	1	2	0	0	0	0	0	—	—
Fall total	1	2	0	0	0	0	0	—	—
Average								—	—
March	414	2,563	51	0	36	8	95	27	92
April	365	4,266	109	0	157	11	277	15	96
Spring total	779	6,829	160	0	193	19	372		
Average								18	95
Total	780	6,831	160	0	193	19	372		
Average								18	95

Table 15. Steelhead fishery interview data (unexpanded) from Salmon River Section 18, November 1998—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
November	4	12	0	0	0	0	0	—	—
Fall total	4	12	0	0	0	0	0	—	—
Average								—	—
March	131	841	19	0	26	2	47	18	96
April	473	3,837	104	0	122	15	241	16	94
Spring total	604	4,678	123	0	148	17	288		
Average								16	94
Total	608	4,690	123	0	148	17	288		
Average								16	94

Table 16. Steelhead fishery interview data (unexpanded) from Salmon River Section 19, March—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
March	52	193	13	0	31	1	45	4	98
April	451	2,118	69	0	66	4	139	15	97
Total	503	2,311	82	0	97	5	184		
Average								13	97

Table 17. Steelhead fishery interview data (unexpanded) from Little Salmon River Section 20, October 1998—April 1999.

Months	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	22	40	3	0	0	0	3	13	100
November	88	183	9	0	1	2	12	15	83
Fall total	110	223	12	0	1	2	15		
Average								15	87
February	60	157	6	0	3	0	9	17	100
March	202	934	9	0	4	6	19	49	68
April	345	1,236	55	0	32	21	108	11	81
Spring total	607	2,327	70	0	39	27	136		
Average								17	80
Total	717	2,550	82	0	40	29	151		
Average								17	81

Table 18. Proportion of estimated steelhead harvest by river section that was examined for marks, 1998—1999.

River Section	No. Fish Checked <sup>a</sup>	Estimated Harvest <sup>b</sup>	Sample Rate (%)
01	87	2,200	4.0
03 & 05	693	6,212	11.2
04	40	1,427	2.8
07	40	1,134	3.5
10	4	1,615	0.2
11	65	1,787	3.6
12	271	851	31.8
13	73	435	16.8
14	287	1,716	16.7
15	778	3,196	24.3
16	131	645	20.3
17	131	815	16.1
18	106	458	23.1
19	77	437	17.6
20	73	1,172	6.2
Total	2,856	24,100	
Average			11.9

<sup>a</sup> Excludes fish not seen, fish where snouts were not collected, and illegally harvested wild fish.

<sup>b</sup> Statewide steelhead harvest survey data from Thomas J. McArthur, IDFG, (unpublished).

## **Adult Returns To Idaho**

We estimated that at least 6,922 A-strain steelhead and 2,344 B-strain steelhead reared by LSRCP hatcheries returned to Idaho during 1998-99 (Table 19). Adult returns from the LSRCP program, verified by CWT recoveries, were from releases into the Salmon River and Clearwater River drainages. However, CWT from LSRCP releases were also recovered from the fishery in the Snake River bordering Idaho and Oregon-Washington. CWT recoveries form the basis of estimating adult returns from the LSRCP program in Idaho. The estimated return of adult steelhead to Idaho during 1998-1999 from the LSRCP program was 9,266 fish (Table 19). The return estimate was comprised of harvest by Idaho anglers, hatchery returns, and offsite escapement estimates, which are included with the hatchery return data. The LSRCP contribution to Idaho's hatchery steelhead harvest was 5,263 fish during 1998-99. This number does not include an estimated 76 LSRCP-reared fish from Oregon and Washington harvested by Idaho anglers (Appendix A and G). Additionally, Oregon and Washington sport anglers and tribal fisheries caught LSRCP-reared fish released in Idaho in the Columbia River and Snake River corridors as well as in the ocean during 1998-99. We queried the Pacific States Marine Fisheries Commission (PSMFC) CWT database to determine tag recoveries of these LSRCP fish in harvest areas outside Idaho. As of November 7, 2001, 49 CWT fish from LSRCP-reared hatcheries in Idaho were reported caught from sport fisheries in the lower Columbia River and its tributaries and in Zone 6 tribal fisheries (Appendix H). The 49 CWT recoveries represent only those tag groups expected to return as adults during 1998-99. Harvest of LSRCP-reared fish from Idaho that occurred downstream of Snake River section 01 was reported by Washington and is not included in this report.

Table 19. Summary of 1998-1999 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		
						Harvest	Hatchery Return <sup>a</sup>	Total
1997	A-I	84,715	Sawtooth Hatchery	MVFH <sup>b</sup>	None <sup>c</sup>	122	99	221
1997	A-I	31,770	Sawtooth Hatchery	HNFH <sup>d</sup>	CWT 10/51/47	40	31	71
1997	A-I	27,798	Sawtooth Hatchery	HNFH	CWT 10/51/48	32	24	56
1997	A-I	20,498	Sawtooth Hatchery	HNFH	CWT 10/51/51 <sup>e</sup>	35	19	54
1997	A-I	20,267	Sawtooth Hatchery	HNFH	CWT 10/51/52 <sup>e</sup>	20	11	31
1997	A-I	20,038	Sawtooth Hatchery	HNFH	CWT 10/51/53 <sup>e</sup>	36	17	53
1997	A-I	19,301	Sawtooth Hatchery	HNFH	CWT 10/51/54 <sup>e</sup>	39	33	72
1997	A-I	19,480	Sawtooth Hatchery	HNFH	CWT 10/51/55 <sup>e</sup>	35	17	52
1997	A-I	20,464	Sawtooth Hatchery	HNFH	CWT 10/51/56 <sup>e</sup>	51	12	63
1997	A-I	20,507	Sawtooth Hatchery	HNFH	CWT 10/51/57 <sup>e</sup>	18	11	29
1997	A-I	19,792	Sawtooth Hatchery	HNFH	CWT 10/51/58 <sup>e</sup>	13	14	27
1997	A-I	19,619	Sawtooth Hatchery	HNFH	CWT 10/51/59 <sup>e</sup>	30	11	41
1997	A-I	418,211	Sawtooth Hatchery	HNFH	None <sup>e</sup>	604	489	1,093
1997	A-I	57,115	Salmon R. @ Torrey's Hole	HNFH	CWT 10/51/46 <sup>f</sup>	112	49	161
1997	A-I	6,801	Salmon R. @ Torrey's Hole	HNFH	None	13	6	19
1997	A-I	17,402	Salmon R. @ McNabb's Point	MVFH	CWT 10/52/10 <sup>f</sup>	12	19	31
1997	A-I	17,574	Salmon R. @ McNabb's Point	MVFH	CWT 10/52/11 <sup>f</sup>	22	20	42
1997	A-I	14,694	Salmon R. @ McNabb's Point	MVFH	CWT 10/52/12 <sup>f</sup>	19	16	35
1997	A-I	104,801	Salmon R. @ McNabb's Point	MVFH	None	112	118	230
1997	A-I	75,946	Salmon R. @ McNabb's Point	HNFH	None	81	85	166
1997	A-I	150,280	Salmon R. @ Bruno's Bridge	MVFH	None <sup>f</sup>	160	169	329
1997	A-I	20,560	Salmon R. @ Lemhi River	MVFH	CWT 10/52/13 <sup>f</sup>	60	23	83
1997	A-I	20,628	Salmon R. @ Lemhi River	MVFH	CWT 10/52/14 <sup>f</sup>	36	23	59
1997	A-I	15,226	Salmon R. @ Lemhi River	MVFH	CWT 10/52/15 <sup>f</sup>	28	17	45
1997	A-I	185,096	Salmon R. @ Lemhi River	MVFH	None	397	208	605
1997	A-I	20,026	Salmon R. @ North Fork	MVFH	CWT 10/52/16 <sup>f</sup>	84	22	106
1997	A-I	19,979	Salmon R. @ North Fork	MVFH	CWT 10/52/17 <sup>f</sup>	38	22	60
1997	A-I	17,633	Salmon R. @ North Fork	MVFH	CWT 10/52/18 <sup>f</sup>	22	20	42
1997	A-I	76,672	Salmon R. @ North Fork	MVFH	None	185	86	271
1997	A-I	10,977	Little Salmon River	HNFH	CWT 10/51/05 <sup>f</sup>	15	15	30
1997	A-I	20,939	Little Salmon River	HNFH	CWT 10/52/05 <sup>f</sup>	0	0	0
1997	A-I	310,365	Little Salmon River	HNFH	None	146	146	292
	Subtotal	1,905,174				2,617	1,852	4,469
1996	A-II	21,941	Sawtooth Hatchery	HNFH	CWT 10/45/23 <sup>e</sup>	24	4	28
1996	A-II	21,491	Sawtooth Hatchery	HNFH	CWT 10/45/24 <sup>e</sup>	5	3	8
1996	A-II	21,420	Sawtooth Hatchery	HNFH	CWT 10/45/25 <sup>e,f</sup>	7	1	8
1996	A-II	22,036	Sawtooth Hatchery	HNFH	CWT 10/45/29 <sup>e</sup>	8	3	11
1996	A-II	21,716	Sawtooth Hatchery	HNFH	CWT 10/45/30 <sup>e</sup>	29	1	30
1996	A-II	21,305	Sawtooth Hatchery	HNFH	CWT 10/45/31 <sup>e</sup>	13	2	15
1996	A-II	21,682	Sawtooth Hatchery	HNFH	CWT 10/45/32 <sup>c</sup>	22	3	25
1996	A-II	22,297	Sawtooth Hatchery	HNFH	CWT 10/45/33 <sup>c</sup>	24	1	25
1996	A-II	20,379	Sawtooth Hatchery	HNFH	CWT 10/45/34 <sup>c,f</sup>	15	0	15
1996	A-II	513,842	Sawtooth Hatchery	HNFH	None <sup>c,e</sup>	389	117	506
1996	A-II	21,185	Salmon R. @ Torrey's Hole	HNFH	CWT 10/45/26 <sup>e</sup>	26	2	28
1996	A-II	21,558	Salmon R. @ Torrey's Hole	HNFH	CWT 10/45/27 <sup>e</sup>	9	1	10
1996	A-II	21,298	Salmon R. @ Torrey's Hole	HNFH	CWT 10/45/28 <sup>e,f</sup>	4	2	6
1996	A-II	1,981	Salmon R. @ Torrey's Hole	HNFH	None	1	0	1
1996	A-II	61,552	Salmon R. @ McNabb's Point	MVFH	CWT 10/35/11 <sup>f</sup>	30	26	56
1996	A-II	140,416	Salmon R. @ McNabb's Point	MVFH	None	68	60	128
1996	A-II	62,686	Salmon R. @ Bruno's Bridge	MVFH	CWT 10/35/13 <sup>f</sup>	22	27	49
1996	A-II	144,559	Salmon R. @ Bruno's Bridge	MVFH	None	55	62	117
1996	A-II	21,196	Pahsimeroi Ponds	HNFH	None <sup>f</sup>	22	9	31
1996	A-II	61,673	Salmon R. @ Lemhi River	MVFH	CWT 10/35/12 <sup>f</sup>	17	26	43
1996	A-II	139,539	Salmon R. @ Lemhi River	MVFH	None	39	59	98
1996	A-II	61,852	Salmon R. @ North Fork	MVFH	CWT 10/35/10 <sup>f</sup>	75	26	101
1996	A-II	65,856	Salmon R. @ North Fork	MVFH	None	80	28	108
1996	A-II	20,699	Little Salmon River	HNFH	CWT 10/45/35 <sup>c</sup>	10	10	20
1996	A-II	20,825	Little Salmon River	HNFH	CWT 10/45/36 <sup>c</sup>	5	5	10
1996	A-II	19,762	Little Salmon River	HNFH	CWT 10/45/37 <sup>c,f</sup>	32	32	64
1996	A-II	20,068	Little Salmon River	HNFH	CWT 10/45/38 <sup>g</sup>	5	5	10
1996	A-II	21,012	Little Salmon River	HNFH	CWT 10/45/39 <sup>g</sup>	40	40	80

Table 19. Continued.

Release Year	Strain and Ocean-Age	No. of Fish Released	Release Site	Hatchery Rearing	Marks	Estimated Number of Fish		
						Harvest	Hatchery Return <sup>a</sup>	Total
1996	A-II	20,389	Little Salmon River	HNFH	CWT 10/45/40 <sup>c,g</sup>	11	11	22
1996	A-II	406,511	Little Salmon River	HNFH	None <sup>c,g</sup>	341	341	682
	Subtotal	2,062,726				1,428	907	2,335
1995	A-III <sup>h</sup>	18,109	Sawtooth Hatchery	HNFH	CWT 10/45/20 <sup>c,f</sup>	3	0	3
1995	A-III	79,387	Sawtooth Hatchery	HNFH	None <sup>e</sup>	13	2	15
1995	A-III	19,340	Salmon R. @ Lemhi River	MVFH	CWT 10/20/08 <sup>f</sup>	4	8	12
1995	A-III	137,905	Salmon R. @ Lemhi River	MVFH	None <sup>f</sup>	29	59	88
	Subtotal	254,741				49	69	118
1997	B-I	20,273	Slate Creek	MVFH	CWT 10/51/60 <sup>f</sup>	0	—	0
1997	B-I	21,448	Slate Creek	MVFH	CWT 10/51/61 <sup>f</sup>	0	—	0
1997	B-I	15,480	Slate Creek	MVFH	CWT 10/51/62 <sup>f</sup>	0	—	0
1997	B-I	156,010	Slate Creek	MVFH	None	0	—	0
1997	B-I	19,376	East Fork Trap	MVFH	CWT 10/52/19 <sup>f,j</sup>	10	4	14
1997	B-I	20,667	East Fork Trap	MVFH	CWT 10/52/20 <sup>f,j</sup>	17	2	19
1997	B-I	15,007	East Fork Trap	MVFH	CWT 10/52/21 <sup>f,j</sup>	18	5	23
1997	B-I	76,170	East Fork Salmon River	MVFH	None <sup>j</sup>	62	27	89
1997	B-I	19,347	East Fork Salmon River	MVFH	CWT 10/52/22 <sup>f,i</sup>	0	0	0
1997	B-I	19,797	East Fork Salmon River	MVFH	CWT 10/52/23 <sup>f,i</sup>	0	0	0
1997	B-I	13,032	East Fork Salmon River	MVFH	CWT 10/52/24 <sup>f,i</sup>	0	0	0
1997	B-I	240,778	East Fork Salmon River	MVFH	None <sup>i</sup>	0	0	0
1997	B-I	9,505	Little Salmon River	MVFH	CWT 10/51/06 <sup>f,i</sup>	0	0	0
1997	B-I	19,407	Little Salmon River	MVFH	CWT 10/52/06 <sup>f,i</sup>	0	0	0
1997	B-I	211,618	Little Salmon River	MVFH	None <sup>e</sup>	0	0	0
1997	B-I	32,575	Clear Creek (Clearwater River)	CAFH <sup>k</sup>	CWT 10/46/63	0	4	4
1997	B-I	31,672	Clear Creek (Clearwater River)	CAFH	CWT 10/51/45	0	3	3
1997	B-I	114,966	Clear Creek (Clearwater River)	CAFH	None	0	13	13
1997	B-I	21,292	South Fork Clearwater River	CAFH	CWT 10/21/29 <sup>f</sup>	0	2	2
1997	B-I	21,163	South Fork Clearwater River	CAFH	CWT 10/21/30 <sup>f</sup>	0	2	2
1997	B-I	21,451	South Fork Clearwater River	CAFH	CWT 10/46/10 <sup>f</sup>	0	2	2
1997	B-I	357,267	South Fork Clearwater River	CAFH	None	0	36	36
1997	B-I	75,894	Crooked River	CAFH	None	0	0	0
1997	B-I	4,991	Red River	CAFH	None <sup>f</sup>	0	0	0
1997	B-I	42,426	South Fork Red River	CAFH	CWT 10/51/20 <sup>i</sup>	0	0	0
1997	B-I	6,304	South Fork Red River	CAFH	None <sup>i</sup>	0	0	0
	Subtotal	1,607,916				107	100	207
1996	B-II	61,695	Slate Creek	MVFH	CWT 10/35/07 <sup>f</sup>	7	2	9
1996	B-II	174,602	Slate Creek	MVFH	None	20	5	25
1996	B-II	63,013	East Fork Salmon River	MVFH	CWT 10/35/08 <sup>f,i</sup>	17	4	21
1996	B-II	326,121	East Fork Salmon River	MVFH	None <sup>e</sup>	88	22	110
1996	B-II	10,806	East Fork Trap	MVFH	CWT 10/46/13 <sup>f,i</sup>	3	1	4
1996	B-II	22,050	East Fork Trap	MVFH	CWT 10/47/09 <sup>j</sup>	7	2	9
1996	B-II	30,064	East Fork Salmon River	MVFH	None <sup>i</sup>	9	5	14
1996	B-II	38,320	East Fork Salmon River @ Herd Creek	MVFH	None <sup>i</sup>	12	3	15
1996	B-II	62,227	Little Salmon River	MVFH	CWT 10/35/09 <sup>f</sup>	47	47	94
1996	B-II	341,054	Little Salmon River	MVFH	None	258	258	516
1996	B-II	63,556	Clear Creek (Clearwater River)	CAFH	CWT 10/30/53 <sup>f</sup>	26	44	70
1996	B-II	234,886	Clear Creek (Clearwater River)	CAFH	None	96	163	259
1996	B-II	6,164	Red River	CAFH	CWT 10/46/30	0	0	0
1996	B-II	8,198	Red River	CAFH	None	0	2	2
1996	B-II	40,970	South Fork Red River	CAFH	CWT 10/20/22 <sup>f,l,m</sup>	—	—	—
1996	B-II	6,256	South Fork Red River	CAFH	None <sup>l,m</sup>	—	—	—
1996	B-II	46,018	Crooked River	CAFH	None <sup>f</sup>	0	0	0
1996	B-II	63,743	South Fork Clearwater River	CAFH	CWT 10/20/29 <sup>f</sup>	61	72	133
1996	B-II	63,551	South Fork Clearwater River	CAFH	CWT 10/35/14 <sup>f</sup>	56	72	128
1996	B-II	64,254	South Fork Clearwater River	CAFH	CWT 10/35/15 <sup>f</sup>	94	73	167
1996	B-II	236,965	South Fork Clearwater River	CAFH	None	256	268	524
	Subtotal	1,964,513				1,057	1,043	2,100
1995	B-III	20,328	Slate Creek	MVFH	CWT 10/20/01 <sup>f</sup>	0	—	0
1995	B-III	20,983	Slate Creek	MVFH	CWT 10/20/02 <sup>f</sup>	0	—	0
1995	B-III	20,391	Slate Creek	MVFH	CWT 10/20/05 <sup>f</sup>	0	—	0
1995	B-III	154,233	Slate Creek	MVFH	None	—	—	—

Table 19. Continued.

Release Year	Strain and Ocean-Age	No. of Fish Released	Release Site	Hatchery Rearing	Marks	Estimated Number of Fish		
						Harvest	Hatchery Return <sup>a</sup>	Total
1995	B-III	21,337	East Fork Salmon River	MVFH	CWT 10/20/03 <sup>f,i</sup>	0	0	0
1995	B-III	19,328	East Fork Salmon River	MVFH	CWT 10/20/04 <sup>f,i</sup>	0	0	0
1995	B-III	20,414	East Fork Salmon River	MVFH	CWT 10/20/12 <sup>f,i</sup>	0	0	0
1995	B-III	362,626	East Fork Salmon River	MVFH	None <sup>i</sup>	0	0	0
1995	B-III	61,767	East Fork Salmon River	MVFH	CWT 10/20/24 <sup>f,i</sup>	0	0	0
1995	B-III	3,233	East Fork Salmon River	MVFH	None <sup>i</sup>	0	0	0
1995	B-III	19,430	Little Salmon River	MVFH	CWT 10/20/06 <sup>f,i</sup>	0	0	0
1995	B-III	19,546	Little Salmon River	MVFH	CWT 10/20/13 <sup>f,i</sup>	0	0	0
1995	B-III	19,998	Little Salmon River	MVFH	CWT 10/20/14 <sup>f,i</sup>	0	0	0
1995	B-III	283,706	Little Salmon River	MVFH	None <sup>i</sup>	0	0	0
1995	B-III	56,573	Clear Creek (Clearwater River)	CAFH	CWT 10/20/25 <sup>f</sup>	5	1	6
1995	B-III	62,835	Clear Creek (Clearwater River)	CAFH	CWT 10/20/26 <sup>f</sup>	0	0	0
1995	B-III	58,316	Clear Creek (Clearwater River)	CAFH	CWT 10/20/27 <sup>f</sup>	0	1	1
1995	B-III	5,988	Clear Creek (Clearwater River)	CAFH	None	0	0	0
1995 <sup>l</sup>	B-III	22,056	Red River	CAFH	CWT 10/45/05 <sup>l,m</sup>	—	—	—
1995 <sup>l</sup>	B-III	21,585	Red River	CAFH	CWT 10/45/06 <sup>l,m</sup>	—	—	—
1995 <sup>l</sup>	B-III	6,140	Red River	CAFH	None <sup>f,i,m</sup>	—	—	—
1995	B-III	42,595	South Fork Clearwater River	CAFH	CWT 10/46/21 <sup>f</sup>	0	3	3
1995	B-III	21,242	South Fork Clearwater River	CAFH	CWT 10/47/27 <sup>f</sup>	0	2	2
1995	B-III	21,350	South Fork Clearwater River	CAFH	CWT 10/47/28 <sup>f</sup>	0	2	2
1995	B-III	319,063	South Fork Clearwater River	CAFH	None	0	23	23
	Subtotal	1,685,063				5	32	37
	Total	9,480,133				5,263	4,003	9,266

- <sup>a</sup> Includes offsite escapement and strays to hatchery racks.  
<sup>b</sup> MVFH = Magic Valley Fish Hatchery.  
<sup>c</sup> Pahsimeroi stock.  
<sup>d</sup> HNFH = Hagerman National Fish Hatchery.  
<sup>e</sup> Sawtooth stock.  
<sup>f</sup> Release group includes fish marked with passive integrated transponder (PIT) tags.  
<sup>g</sup> Hell's Canyon stock.  
<sup>h</sup> Returns of 3-ocean age A-strain steelhead occur infrequently.  
<sup>i</sup> Dworshak National Fish Hatchery stock.  
<sup>j</sup> East Fork Salmon River stock.  
<sup>k</sup> CAFH = Clearwater Anadromous Fish Hatchery.  
<sup>l</sup> Fall release. Thus, actual release year is one year prior to year listed in Table 19.  
<sup>m</sup> Fingerling release.

### Release Group Exploitation By Run Year

#### **Sawtooth Hatchery and East Fork Satellite Facility**

The exploitation rate for A-strain 1- and 2-ocean adult steelhead from Sawtooth Hatchery releases was 64% during 1998-99 (Table 19). The exploitation rate was 76% for B-strain adults from East Fork Salmon River trap releases.

#### **Salmon River and Associated Tributary Offsite Areas**

Exploitation rates for A-strain adults from offsite releases at Torreys Hole, McNabbs Point, Brunos Bridge, Pahsimeroi ponds, Lemhi River, North Fork Salmon River and the Little

Salmon River were 74%, 49%, 45%, 69%, 60%, 71% and 50%, respectively. Exploitation rates for B-strain fish from offsite releases at Slate Creek (upper Salmon River) were 79%.

### **Clearwater Fish Hatchery**

Exploitation rates for B-strain adults from offsite releases at Clear Creek and the South Fork Clearwater River were 32% and 48%, respectively. We did not estimate exploitation rates for releases at Crooked River, Red River, and the South Fork Red River, because we did not recover CWT in the fishery.

### **Completed Adult Returns By Release Year**

#### **Sawtooth Hatchery and East Fork Satellite Facility**

Returns are now complete for A-strain steelhead released from Sawtooth Hatchery during 1996. We estimated a return of 2,167 1-ocean adults (Hansen and White 2003) and 671 2-ocean adults from the release of 708,109 smolts (Table 19). We calculated a smolt-to-adult-return rate (SAR) of 0.40% from a total return of 2,838 adult fish.

Returns are now complete for B-strain steelhead released from the East Fork Salmon River satellite facility during 1995. We estimated a return of 43 1-ocean adults (Ball and White 2001), 550 2-ocean adults (Hansen and White 2003), and no 3-ocean adults from the release of 488,705 smolts (Table 19). We calculated an SAR of 0.12% from a total return of 593 adult fish.

#### **Salmon River and Associated Tributary Offsite Areas**

Returns are now complete for A-strain steelhead released into nine offsite areas during 1996. We estimated a return of 203 1-ocean fish (Hansen and White 2003) and 45 2-ocean fish (Table 19) from the release of 66,022 smolts at Torreys Hole. We calculated an SAR of 0.37% from a total return of 248 adult fish.

We estimated a return of 961 1-ocean fish (Hansen and White 2003) and 184 2-ocean fish (Table 19) from the release of 201,968 smolts at McNabbs Point. We calculated an SAR of 0.57% from a total return of 1,145 adult fish.

We estimated a return of 575 1-ocean fish (Hansen and White 2003) and 166 2-ocean fish (Table 19) from the release of 207,245 smolts at Brunos Bridge. We calculated an SAR of 0.36% from a total return of 741 adult fish.

We estimated a return of 118 1-ocean fish (Hansen and White 2003) and 32 2-ocean fish (Table 19) from the release of 21,196 smolts at the Pahsimeroi Ponds. We calculated an SAR of 0.71% from a total return of 150 adult fish.

We estimated a return of 1,171 1-ocean fish (Hansen and White 2003) and 141 2-ocean fish (Table 19) from the release of 201,212 smolts at the mouth of the Lemhi River. We calculated an SAR of 0.65% from a total return of 1,312 adult fish.

We estimated a return of 1,153 1-ocean fish (Hansen and White 2003) and 209 2-ocean fish (Table 19) from the release of 127,708 smolts near the North Fork Salmon River. We calculated an SAR of 1.07% from a total return of 1,362 adult fish.

We estimated a return of 362 1-ocean fish (Hansen and White 2003) and 206 2-ocean fish (Table 19) from the release of 122,755 smolts into the Little Salmon River. We calculated an SAR of 0.46% from a total return of 568 adult fish.

Occasionally, A-strain fish return as four-year-old fish and spawn at five years old. We do not have enough information to determine if they lived in freshwater or saltwater during the extra year. However, for this discussion we refer to steelhead released in 1995 as 3-ocean fish. One group of fish released from the Sawtooth Hatchery and one group of fish released in the Salmon River at the mouth of the Lemhi River during 1995 returned to the upper Salmon River during the 1998-99 fishery. We estimated a return of 3,404 1-ocean fish (Ball and White 2001), 1,721 2-ocean fish (Hansen and White 2003), and 18 3-ocean fish (Table 19) from the release of 685,006 smolts from Sawtooth Hatchery. We calculated an SAR of 0.75% from a total return of 5,143 adult fish. We estimated a return of 1,075 1-ocean fish (Ball and White 2001), 532 2-ocean fish (Hansen and White 2003), and 100 3-ocean fish (Table 19) from the release of 198,270 smolts at the mouth of the Lemhi River. We calculated an SAR of 0.86% from a total return of 1,707 adult fish.

Returns are now complete for B-strain steelhead released into two offsite areas during 1995. We estimated a return of 18 1-ocean fish (Ball and White 2001), 34 2-ocean fish (Hansen and White 2003), and no 3-ocean fish (Table 19) from the release of 215,935 smolts into Slate Creek (upper Salmon River). We calculated an SAR of 0.02% resulting from a total return of 52 adult fish.

We estimated a return of 165 1-ocean fish (Ball and White 2001), 186 2-ocean fish (Hansen and White 2003), and no 3-ocean fish (Table 19) from the release of 342,680 smolts into the Little Salmon River. We calculated an SAR of 0.10% from a total return of 351 adult fish.

### **Clearwater Fish Hatchery**

Returns are now complete for B-strain steelhead released into the Clearwater River and associated tributaries during 1995. We estimated a return of 153 1-ocean fish (Ball and White 2001), 164 2-ocean fish (Hansen and White 2003), and seven 3-ocean fish (Table 19) from the release of 183,712 smolts into Clear Creek. We calculated an SAR of 0.18% from a total return of 324 adult fish.

We estimated a return of 84 1-ocean fish (Ball and White 2001), 195 2-ocean fish (Hansen and White 2003), and 30 3-ocean fish (Table 19) from the release of 404,250 smolts into the South Fork Clearwater River. We calculated an SAR of 0.08% from a total return of 309 adult fish.

There were no returns from a fall fingerling release of 49,781 smolts into Red River during 1994. Consequently, we did not calculate an SAR for the Red River release groups.

## **Hatchery Straying**

There were 783 coded-wire tags recovered from hatchery steelhead at hatchery racks in Idaho, excluding Hells Canyon, during 1999. A total of 442 CWT were recovered at Dworshak National Fish Hatchery and Kooskia National Fish Hatchery on the Clearwater River, and 341 CWT at Pahsimeroi Hatchery, East Fork trap, and the Sawtooth Hatchery on the upper Salmon River.

None of the direct hatchery released fish from the upper Salmon River strayed to a different hatchery rack in Idaho. Nineteen offsite released fish from the upper Salmon River returned to hatchery racks at the Pahsimeroi Hatchery and Sawtooth Hatchery. None of the direct released fish from Dworshak National Fish Hatchery strayed to different hatchery racks in Idaho. Thirty-two offsite released fish from the Clearwater River returned to hatchery racks at Dworshak National Fish Hatchery and Kooskia National Fish Hatchery.

## **DISCUSSION**

We estimated anglers caught 5,263 (Table 19) LSRCF-reared steelhead during 1998-99 compared to 9,845 fish (Hansen and White 2003) during 1997-98. We saw similar negative trends when making other between year comparisons of angler numbers, the number of fish examined, the number of snouts recovered, and adult escapement over Lower Granite Dam. Managers released similar numbers of juvenile hatchery fish, 9,280,642 (Hansen and White 2003) and 9,480,133 (Table 19), to develop the 1997-98 and 1998-99 return years, respectively. Therefore, we attribute the short-term decline in fishery success to the reduction in adult escapement over Lower Granite Dam and poor fishing conditions as noted by the creel survey during 1998-99. The decline of exploitation rates regarding most release groups that comprised the 1998-99 fishery compared to the 1997-98 fishery supports the conclusion that river conditions negatively influenced the fishery during 1998-99. However, the simultaneous reduction in SAR during the 1998-99 fishery compared to 1997-98 shows survival of hatchery steelhead also contributed to a reduction in fishery success.

We observed a slight increase in escapement of wild A- and B-stock steelhead over Lower Granite Dam during 1998-99 (Appendix F) compared to 1997-98 (Hansen and White 2003). Catch-per-unit effort data also show an increase in wild fish abundance in the fishery. We estimated anglers fished 144 and 154 hours per wild fish caught and released (Tables 3-17) during 1998-99 and 1997-98 (Hansen and White 2003), respectively.

East Fork Salmon River B stock steelhead continued to outperform Dworshak B stock steelhead with regards to adult return numbers to the upper Salmon River (Table 20) as previously noted by Ball and White (2001) and Hansen and White (2003). Although the return years are incomplete, we recovered 29 CWT from East Fork stock released during 1997 compared to one CWT from Dworshak stock. Each release group contained similar numbers of fish and CWT.

Table 20. Coded-wire tag (CWT) recoveries of East Fork Salmon River steelhead releases—  
East Fork stock vs. Dworshak stock.

Release Year, Stock, Tag Codes, and No. of Fish Released	1-Ocean			2-Ocean			3-Ocean			No. Tags Recovered
	Harvest		Rack Returns	Harvest		Rack Returns	Harvest		Rack Returns	
	Downriver <sup>a</sup>	Idaho <sup>b</sup>		Downriver	Idaho		Downriver	Idaho		
<u>1989</u>										
East Fork Stock: CWT 10/41/44, 10/41/45, 10/41046, n = 44,064	1	0	4	18	9	3	0	0	0	35
Dworshak Stock: CWT 10/41/32, 10/41/33, 10/41/34 n = 43,569	0	0	1	0	5	1	0	1	0	8
<u>1990</u>										
East Fork Stock: CWT 10/42/36, 10/42/37, 10/42/38 n = 46,403	1	4	4	24	22	11 <sup>c</sup>	2	1	0	69
Dworshak Stock: CWT 10/42/33, 10/42/34, 10/42/35 n = 44,763	2	1	0	13	7	1	3	0	0	27
<u>1991</u>										
East Fork Stock: CWT 10/43/20, 10/43/21, 10/43/22 n = 66,383	5	1	7	20	12	3 <sup>d</sup>	3	1	0	52
CWT 10/43/14 10/43/15, 10/43/16 n = 61,827	1	2	2	23	12	1	2	1	0	44
<u>1992</u>										
East Fork Stock: CWT 10/44/20 n = 20,821	0	2	1	6	1	2	0	0	0	12
Dworshak Stock: CWT 10/44/18, 10/44/19 n = 43,339	0	0	0	8	2	1 <sup>c</sup>	0	0	0	11
<u>1993</u>										
East Fork Stock: No CWT groups	—	—	—	—	—	—	—	—	—	—
Dworshak Stock: CWT 10/50/05, 10/50/07, 10/50/09 n = 54,076	0	1	1	6	4	0	0	0	1	13
<u>1994</u>										
East Fork Stock: CWT 10/47/11, 10/47/12, 10/47/13 n = 63,394	4	4	12	25	12	36 <sup>c,e</sup>	0	0	0	93
CWT 10/47/10, 10/47/21, 10/47/22 n = 62,713	2	0	0	11	4	0	0	0	0	17

Table 20. Continued.

Release Year, Stock, Tag Codes, and No. of Fish Released	1-Ocean			2-Ocean			3-Ocean			No. Tags Recovered
	Harvest		Rack Returns	Harvest		Rack Returns	Harvest		Rack Returns	
	Downriver <sup>a</sup>	Idaho <sup>b</sup>		Downriver	Idaho		Downriver	Idaho		
<b>1995</b>										
East Fork Stock: CWT 10/20/24 n = 61,767	1	3	11	1	18	3	0	0	0	37
Dworshak Stock: CWT 10/20/03, 10/20/04, 10/20/12 n = 61,079	2	1	0	3	6	0	0	0	0	12
<b>1996</b>										
East Fork Stock: CWT 10/46/13, 10/47/09 n = 32,856	2	1	2	7	3	0	ND <sup>f</sup>	ND	ND	15
Dworshak Stock: CWT 10/35/08 n = 63,013	1	0	0	1	5	0	ND	ND	ND	7
<b>1997</b>										
CWT 10/52/19, 10/52/20, 10/52/21 n = 55,050	8	10	11	ND	ND	ND	ND	ND	ND	29
Dworshak Stock: CWT 10/52/22, 10/52/23, 10/52/24 n = 52,176	1	0	0	ND	ND	ND	ND	ND	ND	1

<sup>a</sup> Downriver recoveries queried from Pacific States Marine Fisheries Commission CWT database on January 2, 2002.

<sup>b</sup> Idaho in-state harvest only.

<sup>c</sup> Includes one stray to Oxbow Hatchery

<sup>d</sup> Includes one stray to Pahsimeroi Hatchery

<sup>e</sup> Includes two strays to Slate Creek temporary weir

<sup>f</sup> ND = No data.

## RECOMMENDATIONS

1. Continue to include coded-wire tags in each major smolt release group that are representative in size, time of release, and fish health.
2. Review coded-wire tag marking rate in terms of likelihood of recovery given creel sampling rates (especially for Clearwater River release groups and “test” groups).
3. Continue to evaluate rate of return, contribution to the sport fishery, and distribution of adults returning from offsite releases.
4. Evaluate adult return contributions to the fishery regarding releases from the Squaw Pond acclimation site (located near the upper Salmon River).

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## **APPENDICES**

Appendix A. Estimated harvest of steelhead by tag code, strain, ocean age, release site, recovery month, and river section, 1998–1999.

Tag Code	Strain and Ocean-age	Release Site	No. Fish Released	Recovery Month	River Section (Total)	No. Tags	Sample Rate	Estimated Harvest
05/24/55	B-III	Clearwater River	19,385	February	03 <b>Total</b>	1 <b>1</b>	0.217	5 <b>5</b>
05/24/59	B-III	Clearwater River	14,763	February	03 <b>Total</b>	1 <b>1</b>	0.217	5 <b>5</b>
05/31/44	B-II	Clearwater River	21,751	January February	03 03 <b>Total</b>	2 3 <b>5</b>	0.125 0.217	16 14 <b>30</b>
05/31/50	B-II	Clearwater River	20,276	November	01 <b>Total</b>	1 <b>1</b>	0.048	21 <b>21</b>
05/32/12	B-II	South Fork Clearwater River	61,878	November January February April	03 03 03 07 <b>Total</b>	1 4 1 1 <b>7</b>	0.070 0.125 0.217 0.038	14 32 5 26 <b>77</b>
05/40/05	B-II	Clearwater River	19,034	October November February	03 03 03 <b>Total</b>	1 1 1 <b>3</b>	0.105 0.070 0.217	10 14 5 <b>29</b>
05/40/06	B-II	Clearwater River	21,197	November February February	03 03 05 <b>Total</b>	2 1 1 <b>4</b>	0.070 0.217 0.217	29 5 5 <b>39</b>
05/40/07	B-II	Clearwater River	18,803	January	03 <b>Total</b>	1 <b>1</b>	0.125	8 <b>8</b>
05/41/48	B-I	Clearwater River	21,758	October	03 <b>Total</b>	1 <b>1</b>	0.105	10 <b>10</b>
05/41/51	B-I	Clearwater River	20,904	December	03 <b>Total</b>	1 <b>1</b>	0.083	12 <b>12</b>
05/41/53	B-I	Clearwater River	20,503	February	03 <b>Total</b>	1 <b>1</b>	0.217	5 <b>5</b>
05/41/56	B-I	Clearwater River	21,267	November	01	1 1	0.048	21 21
07/11/59	A-II	Wallowa River @ Big Canyon Creek	27,223	November	01 <b>Total</b>	1 <b>1</b>	0.048	21 <b>21</b>
10/20/08	A-III	Salmon River @ Lemhi River	19,340	March	16 <b>Total</b>	1 <b>1</b>	0.243	4 <b>4</b>
10/20/25	B-III	Clear Creek	56,573	February	03 <b>Total</b>	1 <b>1</b>	0.217	5 <b>5</b>

## Appendix A. Continued.

Tag Code	Strain and Ocean-age	Release Site	No. Fish Released	Recovery Month	River Section (Total)	No. Tags	Sample Rate	Estimated Harvest
10/20/29	B-II	South Fork Clearwater River	63,743	November	03	1	0.070	14
				January	03	2	0.125	16
				February	03	1	0.217	5
				April	07	1	0.038	26
				<b>Total</b>		<b>5</b>		<b>61</b>
10/30/49	A-II	Pahsimeroi Hatchery	61,077	October	01	1	0.068	15
				November	14	2	0.189	11
				November	15	1	0.196	5
				February	13	1	0.058	17
				February	15	1	0.336	3
				March	17	1	0.110	9
				April	17	1	0.232	4
<b>Total</b>		<b>8</b>		<b>64</b>				
10/30/50	A-II	Little Salmon River	59,507	November	12	2	0.518	4
				<b>Total</b>		<b>2</b>		<b>4</b>
10/30/52	A-II	Salmon River @ Hammer Creek	61,313	November	12	1	0.518	2
				October	13	1	0.267	4
				<b>Total</b>		<b>2</b>		<b>6</b>
10/30/53	B-II	Clear Creek	63,556	April	07	1	0.038	26
				<b>Total</b>		<b>1</b>		<b>26</b>
10/35/07	B-II	Slate Creek	61,695	November	13	1	0.407	2
				February	12	1	0.218	5
				<b>Total</b>		<b>2</b>		<b>7</b>
10/35/08	B-II	East Fork Salmon River	63,013	November	12	1	0.518	2
				November	14	1	0.189	5
				March	15	2	0.349	6
				April	17	1	0.232	4
				<b>Total</b>		<b>5</b>		<b>17</b>
10/35/09	B-II	Little Salmon River	63,013	November	12	6	0.518	12
				February	11	1	0.094	11
				February	12	2	0.218	9
				April	20	1	0.067	15
				<b>Total</b>		<b>10</b>		<b>47</b>
10/35/10	A-II	Salmon River @ North Fork	61,852	October	15	1	0.543	2
				November	14	4	0.189	21
				November	15	4	0.196	20
				February	12	1	0.218	5
				February	15	2	0.336	6
				March	15	7	0.349	20
				April	16	1	1.405	1
				<b>Total</b>		<b>20</b>		<b>75</b>
10/35/11	A-II	Salmon River @ McNabb's Point	61,552	November	13	1	0.407	2
				November	15	1	0.196	5
				February	14	1	0.202	5
				March	14	1	0.225	4
				March	15	2	0.349	6
				April	18	3	0.081	8
				<b>Total</b>		<b>9</b>		<b>30</b>

## Appendix A. Continued.

Tag Code	Strain and Ocean-age	Release Site	No. Fish Released	Recovery Month	River Section (Total)	No. Tags	Sample Rate	Estimated Harvest
10/35/12	A-II	Salmon River @ Lemhi River	61,673	November	14	1	0.189	5
				March	15	2	0.349	6
				March	16	1	0.243	4
				April	16	2	1.405	2
				<b>Total</b>	<b>6</b>	<b>6</b>		<b>17</b>
10/35/13	A-II	Salmon River @ Bruno's Bridge	62,686	November	14	2	0.189	11
				November	15	1	0.196	5
				March	15	2	0.349	6
				<b>Total</b>	<b>5</b>	<b>5</b>		<b>22</b>
10/35/14	B-II	South Fork Clearwater River	63,251	October	03	2	0.105	19
				November	03	1	0.070	14
				February	03	5	0.217	23
				<b>Total</b>	<b>8</b>	<b>8</b>		<b>56</b>
10/35/15	B-II	South Fork Clearwater River	64,254	October	03	3	0.105	29
				November	03	1	0.070	14
				December	03	1	0.083	12
				January	03	2	0.125	16
				March	07	1	0.044	23
				<b>Total</b>	<b>8</b>	<b>8</b>		<b>94</b>
10/45/20	A-III	Sawtooth Hatchery	18,109	February	15	1	0.336	3
<b>Total</b>	<b>1</b>	<b>1</b>		<b>3</b>				
10/45/23	A-II	Sawtooth Hatchery	21,941	November	12	1	0.518	2
				November	15	1	0.196	5
				February	13	1	0.058	17
				<b>Total</b>	<b>3</b>	<b>3</b>		<b>24</b>
10/45/24	A-II	Sawtooth Hatchery	21,491	October	15	1	0.543	2
				March	15	1	0.349	3
				<b>Total</b>	<b>2</b>	<b>2</b>		<b>5</b>
10/45/25	A-II	Sawtooth Hatchery	21,420	October	15	1	0.543	2
				November	14	1	0.189	5
				<b>Total</b>	<b>2</b>	<b>2</b>		<b>7</b>
10/45/26	A-II	Salmon River @ Torreys Hole	21,185	November	01	1	0.048	21
				November	14	1	0.189	5
				<b>Total</b>	<b>2</b>	<b>2</b>		<b>26</b>
10/45/27	A-II	Salmon River @ Torreys Hole	21,558	November	13	1	0.407	2
				March	15	1	0.349	3
				March	16	1	0.243	4
				<b>Total</b>	<b>3</b>	<b>3</b>		<b>9</b>
10/45/28	A-II	Salmon River @ Torreys Hole	21,298	April	19	1	0.254	4
<b>Total</b>	<b>1</b>	<b>1</b>		<b>4</b>				
10/45/29	A-II	Sawtooth Hatchery	22,036	November	15	1	0.196	5
				March	15	1	0.349	3
				<b>Total</b>	<b>2</b>	<b>2</b>		<b>8</b>

## Appendix A. Continued.

Tag Code	Strain and Ocean-age	Release Site	No. Fish Released	Recovery Month	River Section (Total)	No. Tags	Sample Rate	Estimated Harvest
10/45/30	A-II	Sawtooth Hatchery	21,716	October	11	1	0.041	24
				November	14	1	0.189	5
				<b>Total</b>	<b>2</b>	<b>2</b>	<b>29</b>	
10/45/31	A-II	Sawtooth Hatchery	21,305	November	12	1	0.518	2
				February	15	1	0.336	3
				April	19	2	0.254	8
				<b>Total</b>	<b>4</b>	<b>4</b>	<b>13</b>	
10/45/32	A-II	Sawtooth Hatchery	21,682	November	15	1	0.196	5
				February	15	1	0.336	3
				March	14	1	0.225	4
				March	15	2	0.349	6
				April	19	1	0.254	4
				<b>Total</b>	<b>6</b>	<b>6</b>	<b>22</b>	
10/45/33	A-II	Sawtooth Hatchery	22,297	November	14	1	0.189	5
				November	15	1	0.196	5
				March	14	1	0.225	4
				March	15	1	0.349	3
				March	16	1	0.243	4
				April	18	1	0.381	3
				<b>Total</b>	<b>6</b>	<b>6</b>	<b>24</b>	
10/45/34	A-II	Sawtooth Hatchery	20,379	November	15	3	0.196	15
				<b>Total</b>	<b>3</b>	<b>3</b>	<b>15</b>	
10/45/35	A-II	Little Salmon River	20,699	February	20	1	0.102	10
				<b>Total</b>	<b>1</b>	<b>1</b>	<b>10</b>	
10/45/36	A-II	Little Salmon River	20,825	February	12	1	0.218	5
				<b>Total</b>	<b>1</b>	<b>1</b>	<b>5</b>	
10/45/37	A-II	Little Salmon River	19,762	November	12	1	0.518	2
				April	20	2	0.067	30
				<b>Total</b>	<b>3</b>	<b>3</b>	<b>32</b>	
10/45/38	A-II	Little Salmon River	20,068	October	12	1	0.282	4
				March	12	1	1.826	1
				<b>Total</b>	<b>2</b>	<b>2</b>	<b>5</b>	
10/45/39	A-II	Little Salmon River	21,012	November	12	1	0.518	2
				November	13	1	0.407	2
				March	20	1	0.028	36
				<b>Total</b>	<b>3</b>	<b>3</b>	<b>40</b>	
10/45/40	A-II	Little Salmon River	20,389	February	11	1	0.094	11
				<b>Total</b>	<b>1</b>	<b>1</b>	<b>11</b>	
10/46/06	B-I	South Fork Clearwater River	21,794	October	03	1	0.105	10
				<b>Total</b>	<b>1</b>	<b>1</b>	<b>10</b>	
10/46/13	B-II	East Fork Trap	10,806	March	15	1	0.349	3
				<b>Total</b>	<b>1</b>	<b>1</b>	<b>3</b>	

## Appendix A. Continued.

Tag Code	Strain and Ocean-age	Release Site	No. Fish Released	Recovery Month	River Section (Total)	No. Tags	Sample Rate	Estimated Harvest
10/47/09	B-II	East Fork Trap	22,050	March	15	1	0.349	3
				April	17	1	0.232	4
				<b>Total</b>		<b>2</b>		<b>7</b>
10/51/03	A-I	Pahsimeroi Hatchery	10,298	February	14	1	0.202	5
				March	15	1	0.349	3
				<b>Total</b>		<b>2</b>		<b>8</b>
10/51/04	A-I	Pahsimeroi Hatchery	11,021	November	14	1	0.189	5
				November	16	1	0.156	6
				<b>Total</b>		<b>2</b>		<b>11</b>
10/51/05	A-I	Little Salmon River	10,977	April	20	1	0.067	15
				<b>Total</b>		<b>1</b>		<b>15</b>
10/51/46	A-I	Salmon River @ Torreys Hole	58,619	October	11	1	0.041	24
				November	12	1	0.518	2
				November	14	2	0.189	11
				February	14	2	0.202	10
				February	15	5	0.336	15
				March	14	1	0.225	4
				March	15	3	0.349	9
				March	16	2	0.243	8
				March	18	1	0.074	14
				April	18	1	0.381	3
				April	19	3	0.254	12
								<b>Total</b>
10/51/47	A-I	Sawtooth Hatchery	31,771	October	15	1	0.543	2
				November	15	3	0.196	15
				February	15	1	0.336	3
				March	15	3	0.349	9
				March	16	2	0.243	8
				April	18	1	0.381	3
				<b>Total</b>		<b>11</b>		<b>40</b>
10/51/48	A-I	Sawtooth Hatchery	27,975	November	15	3	0.196	15
				March	19	1	0.076	13
				April	19	1	0.254	4
				<b>Total</b>		<b>5</b>		<b>32</b>
10/51/51	A-I	Sawtooth Hatchery	20,498	November	15	3	0.196	15
				February	15	3	0.336	9
				April	18	1	0.381	3
				April	19	2	0.254	8
				<b>Total</b>		<b>9</b>		<b>35</b>
10/51/52	A-I	Sawtooth Hatchery	20,268	November	13	1	0.407	2
				November	15	1	0.196	5
				March	14	1	0.225	4
				March	15	3	0.349	9
				<b>Total</b>		<b>6</b>		<b>20</b>

## Appendix A. Continued.

Tag Code	Strain and Ocean-age	Release Site	No. Fish Released	Recovery Month	River Section (Total)	No. Tags	Sample Rate	Estimated Harvest
10/51/53	A-I	Sawtooth Hatchery	20,038	November	15	2	0.196	10
				February	14	2	0.202	10
				February	15	2	0.336	6
				March	15	2	0.349	6
				March	16	1	0.243	4
				<b>Total</b>	<b>9</b>			<b>36</b>
10/51/54	A-I	Sawtooth Hatchery	19,301	October	13	1	0.267	4
				November	14	1	0.189	5
				March	14	1	0.225	4
				March	15	1	0.349	3
				March	17	1	0.110	9
				March	19	1	0.076	13
				April	16	1	1.405	1
				<b>Total</b>	<b>7</b>			<b>39</b>
10/51/55	A-I	Sawtooth Hatchery	19,480	November	14	1	0.189	5
				November	15	1	0.196	5
				February	14	2	0.202	10
				March	15	2	0.349	6
				April	18	2	0.381	5
				April	19	1	0.254	4
				<b>Total</b>	<b>9</b>			<b>35</b>
10/51/56	A-I	Sawtooth Hatchery	20,464	October	15	1	0.543	2
				November	14	2	0.189	11
				November	15	3	0.196	15
				February	14	1	0.202	5
				February	15	1	0.336	3
				March	15	1	0.349	3
				April	19	3	0.254	12
				<b>Total</b>	<b>12</b>			<b>51</b>
10/51/57	A-I	Sawtooth Hatchery	20,507	October	12	1	0.282	4
				November	14	1	0.189	5
				March	15	3	0.349	9
				<b>Total</b>	<b>5</b>			<b>18</b>
10/51/58	A-I	Sawtooth Hatchery	19,792	November	14	1	0.189	5
				November	15	1	0.196	5
				February	15	1	0.336	3
				<b>Total</b>	<b>3</b>			<b>13</b>
10/51/59	A-I	Sawtooth Hatchery	19,619	November	15	3	0.196	15
				February	15	1	0.336	3
				March	15	3	0.349	9
				April	18	1	0.381	3
				<b>Total</b>	<b>8</b>			<b>30</b>
10/52/03	A-I	Pahsimeroi Hatchery	19,932	October	12	1	0.282	4
				November	13	1	0.407	3
				November	14	2	0.189	11
				November	15	1	0.196	5
				February	15	1	0.336	3
				March	15	1	0.349	3
				March	17	2	0.110	18
				<b>Total</b>	<b>9</b>			<b>47</b>

## Appendix A. Continued.

Tag Code	Strain and Ocean-age	Release Site	No. Fish Released	Recovery Month	River Section (Total)	No. Tags	Sample Rate	Estimated Harvest
10/52/04	A-I	Pahsimeroi Hatchery	19,714	October	15	1	0.543	2
				November	15	3	0.196	15
				March	16	1	0.243	4
				April	17	1	0.232	4
				<b>Total</b>	<b>6</b>	<b>6</b>		<b>25</b>
10/52/07	A-I	Salmon River @ Hammer Creek	22,163	October	12	1	0.282	4
				November	14	1	0.189	5
				March	17	1	0.110	9
				<b>Total</b>	<b>3</b>	<b>3</b>		<b>18</b>
10/52/08	A-I	Salmon River @ Hammer Creek	21,578	October	14	1	0.101	10
				February	11	1	0.094	11
				<b>Total</b>	<b>2</b>	<b>2</b>		<b>21</b>
10/52/09	A-I	Salmon River @ Hammer Creek	18,198	November	14	1	0.189	5
				<b>Total</b>	<b>1</b>	<b>1</b>		<b>5</b>
10/52/10	A-I	Salmon River @ McNabbs Point	17,402	February	15	2	0.336	6
				March	15	1	0.349	3
				April	18	1	0.381	3
				<b>Total</b>	<b>4</b>	<b>4</b>		<b>12</b>
10/52/11	A-I	Salmon River @ McNabbs Point	17,574	November	15	1	0.196	5
				March	18	1	0.074	14
				April	18	1	0.381	3
				<b>Total</b>	<b>3</b>	<b>3</b>		<b>22</b>
10/52/12	A-I	Salmon River @ McNabbs Point	14,694	November	12	1	0.518	2
				February	12	1	0.218	5
				February	15	1	0.336	3
				March	14	1	0.225	4
				April	18	2	0.381	5
				<b>Total</b>	<b>6</b>	<b>6</b>		<b>19</b>
10/52/13	A-I	Salmon River @ Lemhi River	20,560	November	12	3	0.518	6
				November	13	1	0.407	3
				November	14	3	0.189	16
				November	15	1	0.196	5
				February	15	2	0.336	6
				March	15	6	0.349	17
				April	16	7	1.405	7
				<b>Total</b>	<b>23</b>	<b>23</b>		<b>60</b>
				10/52/14	A-I	Salmon River @ Lemhi River	20,628	November
February	12	1	0.218					5
February	15	1	0.336					3
March	15	3	0.349					9
March	16	2	0.243					8
April	16	1	1.405					1
<b>Total</b>	<b>10</b>	<b>10</b>						<b>36</b>

Appendix A. Continued.

Tag Code	Strain and Ocean-age	Release Site	No. Fish Released	Recovery Month	River Section (Total)	No. Tags	Sample Rate	Estimated Harvest
10/52/15	A-I	Salmon River @ Lemhi River	15,226	November	14	1	0.189	5
				February	14	1	0.202	5
				February	15	2	0.336	6
				March	15	2	0.349	6
				March	16	1	0.243	4
				April	16	2	1.405	2
				<b>Total</b>	<b>9</b>			<b>28</b>
10/52/16	A-I	Salmon River @ North Fork	20,026	November	14	3	0.189	16
				February	12	1	0.218	5
				February	14	1	0.202	5
				March	12	1	0.1.826	1
				March	14	1	0.225	4
				April	15	1	0.019	53
				<b>Total</b>	<b>8</b>			<b>84</b>
10/52/17	A-I	Salmon River @ North Fork	19,979	November	14	2	0.189	11
				February	13	1	0.058	17
				March	14	1	0.225	4
				March	15	2	0.349	6
				<b>Total</b>	<b>6</b>			<b>38</b>
10/52/18	A-I	Salmon River @ North Fork	17,633	November	14	1	0.189	5
				November	12	1	0.518	2
				February	11	1	0.094	11
				March	15	1	0.349	3
				April	16	1	1.405	1
				<b>Total</b>	<b>5</b>			<b>22</b>
10/52/19	B-I	East Fork Trap	19,376	November	14	1	0.189	5
				November	15	1	0.196	5
				<b>Total</b>	<b>2</b>			<b>10</b>
10/52/20	B-I	East Fork Trap	20,667	November	15	1	0.196	5
				February	15	1	0.336	3
				March	15	3	0.349	9
				<b>Total</b>	<b>5</b>			<b>17</b>
10/52/21	B-I	East Fork Trap	15,007	November	15	1	0.196	5
				March	14	1	0.225	4
				March	17	1	0.110	9
				<b>Total</b>	<b>3</b>			<b>18</b>
63/60/30	A-II	Touchet River	38,567	November	01	1	0.048	21
				November	03	1	0.070	14
				<b>Total</b>	<b>2</b>			<b>35</b>
63/60/31	A-II	Touchet River	38,729	October	03	1	0.105	10
<b>Total</b>	<b>1</b>			<b>10</b>				
63/61/21	A-I	Touchet River	29,779	October	03	1	0.105	10
<b>Total</b>	<b>1</b>			<b>10</b>				

Appendix B. Steelhead groups expected to return to the Salmon River, 1998-1999.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
A	I	84,715	Sawtooth Hatchery	MVFH <sup>a</sup>	None
A	I	31,770	Sawtooth Hatchery	HNFH <sup>b</sup>	10/51/47
A	I	27,798	Sawtooth Hatchery	HNFH	10/51/48
A	I	20,498	Sawtooth Hatchery	HNFH	10/51/51
A	I	20,268	Sawtooth Hatchery	HNFH	10/51/52
A	I	20,038	Sawtooth Hatchery	HNFH	10/51/53
A	I	19,301	Sawtooth Hatchery	HNFH	10/51/54
A	I	19,480	Sawtooth Hatchery	HNFH	10/51/55
A	I	20,464	Sawtooth Hatchery	HNFH	10/51/56
A	I	20,507	Sawtooth Hatchery	HNFH	10/51/57
A	I	19,792	Sawtooth Hatchery	HNFH	10/51/58
A	I	19,619	Sawtooth Hatchery	HNFH	10/51/59
A	I	361,636	Sawtooth Hatchery	HNFH	None
A	I	57,115	Salmon River @ Torreys Hole	HNFH	10/51/46 <sup>c</sup>
A	I	6,801	Salmon River @ Torreys Hole	HNFH	None
A	I	17,402	Salmon River @ McNabb Point	MVFH	10/52/10
A	I	17,574	Salmon River @ McNabb Point	MVFH	10/52/11
A	I	14,694	Salmon River @ McNabb Point	MVFH	10/52/12
A	I	104,801	Salmon River @ McNabb Point	MVFH	None
A	I	75,946	Salmon River @ McNabb Point	HNFH	None
A	I	150,280	Salmon River @ Brunos Bridge	MVFH	None
A	I	10,298	Pahsimeroi River	NSPR <sup>d</sup>	10/51/03
A	I	11,021	Pahsimeroi River	NSPR	10/51/04
A	I	19,932	Pahsimeroi River	NSPR	10/52/03
A	I	19,714	Pahsimeroi River	NSPR	10/52/04
A	I	768,886	Pahsimeroi River	NSPR	None
A	I	20,560	Salmon River @ Lemhi River	MVFH	10/52/13
A	I	20,628	Salmon River @ Lemhi River	MVFH	10/52/14
A	I	15,228	Salmon River @ Lemhi River	MVFH	10/52/15
A	I	185,096	Salmon River @ Lemhi River	MVFH	None
A	I	20,026	Salmon River @ North Fork	MVFH	10/52/16
A	I	19,979	Salmon River @ North Fork	MVFH	10/52/17
A	I	17,633	Salmon River @ North Fork	MVFH	10/52/18
A	I	76,672	Salmon River @ North Fork	MVFH	None
A	I	21,735	Little Salmon River	NSPR	10/51/63
A	I	73,080	Little Salmon River	NSPR	None
A	I	10,977	Little Salmon River	HNFH	10/51/05
A	I	20,939	Little Salmon River	HNFH	10/52/05
A	I	310,365	Little Salmon River	HNFH	None
A	I	18,198	Salmon River @ Hammer Creek	NSPR	10/52/09
A	I	21,578	Salmon River @ Hammer Creek	NSPR	10/52/08
A	I	22,163	Salmon River @ Hammer Creek	NSPR	10/52/07
A	I	75,494	Salmon River @ Hammer Creek	NSPR	None
A	I	29,700	Salmon River @ Pine Bar Rapids	NSPR	None
<b>Total</b>		<b>2,940,401</b>			
A	II	21,941	Sawtooth Hatchery	HNFH	10/45/23
A	II	21,491	Sawtooth Hatchery	HNFH	10/45/24
A	II	21,420	Sawtooth Hatchery	HNFH	10/45/25 <sup>c</sup>
A	II	22,036	Sawtooth Hatchery	HNFH	10/45/29

## Appendix B. Continued.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
A	II	21,716	Sawtooth Hatchery	HNFH	10/45/30
A	II	21,305	Sawtooth Hatchery	HNFH	10/45/31
A	II	21,682	Sawtooth Hatchery	HNFH	10/45/32
A	II	22,297	Sawtooth Hatchery	HNFH	10/45/33
A	II	20,379	Sawtooth Hatchery	HNFH	10/45/34 <sup>c</sup>
A	II	513,842	Sawtooth Hatchery	HNFH	None <sup>c</sup>
A	II	21,185	Salmon River @ Torreys Hole	HNFH	10/45/26
A	II	21,558	Salmon River @ Torreys Hole	HNFH	10/45/27 <sup>c</sup>
A	II	21,298	Salmon River @ Torreys Hole	HNFH	10/45/28
A	II	1,981	Salmon River @ Torreys Hole	HNFH	None
A	II	61,552	Salmon River @ McNabb Point	MVFH	10/35/11
A	II	140,416	Salmon River @ McNabb Point	MVFH	None
A	II	62,686	Salmon River @ Brunos Bridge	MVFH	10/35/13
A	II	144,559	Salmon River @ Brunos Bridge	MVFH	None
A	II	61,077	Pahsimeroi River	NSPR	10/30/49
A	II	738,143	Pahsimeroi River	NSPR	None
A	II	21,196	Pahsimeroi Ponds	NSPR	None
A	II	61,673	Salmon River @ Lemhi River	MVFH	10/35/12
A	II	139,539	Salmon River @ Lemhi River	MVFH	None
A	II	61,852	Salmon River @ North Fork	MVFH	10/35/10
A	II	65,856	Salmon River @ North Fork	MVFH	None
A	II	59,507	Little Salmon River	NSPR	10/30/50
A	II	98,501	Little Salmon River	NSPR	None
A	II	20,699	Little Salmon River	HNFH	10/45/35 <sup>c</sup>
A	II	20,825	Little Salmon River	HNFH	10/45/36 <sup>c</sup>
A	II	19,762	Little Salmon River	HNFH	10/45/37 <sup>c</sup>
A	II	20,068	Little Salmon River	HNFH	10/45/38
A	II	21,012	Little Salmon River	HNFH	10/45/39
A	II	20,389	Little Salmon River	HNFH	10/45/40
A	II	406,511	Little Salmon River	HNFH	None <sup>c</sup>
A	II	61,313	Salmon River @ Hammer Creek	NSPR	10/30/52
A	II	44,712	Salmon River @ Hammer Creek	NSPR	None
A	II	30,090	Salmon River @ Pine Bar Rapids	NSPR	None
	<b>Total</b>	<b>3,156,069</b>			
B	I	20,273	Slate Creek	MVFH	10/51/60 <sup>e</sup>
B	I	21,448	Slate Creek	MVFH	10/51/61 <sup>e</sup>
B	I	15,480	Slate Creek	MVFH	10/51/62 <sup>e</sup>
B	I	156,010	Slate Creek	MVFH	None <sup>e</sup>
B	I	19,376	East Fork Trap	MVFH	10/52/19 <sup>f</sup>
B	I	20,667	East Fork Trap	MVFH	10/52/20 <sup>f</sup>
B	I	15,007	East Fork Trap	MVFH	10/52/21 <sup>f</sup>
B	I	76,170	East Fork Trap	MVFH	None <sup>f</sup>
B	I	19,347	East Fork Salmon River	MVFH	10/52/22 <sup>e</sup>
B	I	19,797	East Fork Salmon River	MVFH	10/52/23 <sup>e</sup>
B	I	13,032	East Fork Salmon River	MVFH	10/52/24 <sup>e</sup>
B	I	240,778	East Fork Salmon River	MVFH	None <sup>e</sup>
B	I	9,505	Little Salmon River	MVFH	10/51/06 <sup>e</sup>
B	I	19,407	Little Salmon River	MVFH	10/52/06 <sup>e</sup>
B	I	211,618	Little Salmon River	MVFH	None <sup>e</sup>
	<b>Total</b>	<b>877,915</b>			

Appendix B. Continued.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	II	61,695	Slate Creek	MVFH	10/35/07 <sup>c</sup>
B	II	174,602	Slate Creek	MVFH	None
B	II	10,806	East Fork Trap	MVFH	10/46/13 <sup>c</sup>
B	II	22,050	East Fork Trap	MVFH	10/47/09
B	II	30,064	East Fork Trap	MVFH	None
B	II	63,013	East Fork Salmon River	MVFH	10/35/08 <sup>c</sup>
B	II	326,121	East Fork Salmon River	MVFH	None
B	II	38,320	East Fork Salmon River @ Herd Creek	MVFH	None
B	II	62,227	Little Salmon River	MVFH	10/35/09 <sup>c</sup>
B	II	341,054	Little Salmon River	MVFH	None
	<b>Total</b>	<b>1,129,952</b>			
B	III	20,328	Slate Creek	MVFH	10/20/01 <sup>c</sup>
B	III	20,983	Slate Creek	MVFH	10/20/02 <sup>c</sup>
B	III	20,391	Slate Creek	MVFH	10/20/05 <sup>c</sup>
B	III	154,233	Slate Creek	MVFH	None
B	III	21,337	East Fork Salmon River	MVFH	10/20/03 <sup>c</sup>
B	III	19,328	East Fork Salmon River	MVFH	10/20/04 <sup>c</sup>
B	III	20,414	East Fork Salmon River	MVFH	10/20/12 <sup>c</sup>
B	III	362,626	East Fork Salmon River	MVFH	None
B	III	61,767	East Fork Salmon River	MVFH	10/20/24 <sup>c</sup>
B	III	3,233	East Fork Salmon River	MVFH	None
B	III	19,430	Little Salmon River	MVFH	10/20/06 <sup>c</sup>
B	III	19,546	Little Salmon River	MVFH	10/20/13 <sup>c</sup>
B	III	19,998	Little Salmon River	MVFH	10/20/14 <sup>c</sup>
B	III	283,706	Little Salmon River	MVFH	None
	<b>Total</b>	<b>1,047,320</b>			

<sup>a</sup> MVFH = Magic Valley Steelhead Hatchery.

<sup>b</sup> HNFH = Hagerman National Fish Hatchery.

<sup>c</sup> Release group includes fish marked with passive integrated transponder (PIT) tags.

<sup>d</sup> NSFR = Niagara Springs Fish Hatchery.

<sup>e</sup> Dworshak National Fish Hatchery stock.

<sup>f</sup> East Fork Salmon River stock.

Appendix C. Steelhead groups expected to return to the Clearwater River, 1998-1999.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	I	32,575	Clear Creek	CAFH <sup>a</sup>	CWT 10/46/63
B	I	31,672	Clear Creek	CAFH	CWT 10/51/45
B	I	114,966	Clear Creek	CAFH	None
B	I	20,984	Clear Creek	DNFH <sup>c</sup>	CWT 10/45/02
B	I	162,294	Clear Creek	DNFH	None
B	I	21,836	Clearwater River	DNFH	CWT 05/41/47
B	I	21,758	Clearwater River	DNFH	CWT 05/41/48
B	I	21,075	Clearwater River	DNFH	CWT 05/41/49
B	I	20,904	Clearwater River	DNFH	CWT 05/41/51
B	I	20,503	Clearwater River	DNFH	CWT 05/41/53
B	I	20,766	Clearwater River	DNFH	CWT 05/41/54
B	I	20,741	Clearwater River	DNFH	CWT 05/41/55
B	I	21,267	Clearwater River	DNFH	CWT 05/41/56
B	I	21,063	Clearwater River	DNFH	CWT 05/42/06
B	I	20,966	Clearwater River	DNFH	CWT 05/42/07
B	I	1,150,155	Clearwater River	DNFH	None
B	I	215,534	Clearwater River @ Kooskia Bridge	DNFH	None
B	I	21,292	South Fork Clearwater River	CAFH	CWT 10/21/29 <sup>b</sup>
B	I	21,163	South Fork Clearwater River	CAFH	CWT 10/21/30 <sup>b</sup>
B	I	21,451	South Fork Clearwater River	CAFH	CWT 10/46/10 <sup>b</sup>
B	I	357,267	South Fork Clearwater River	CAFH	None
B	I	20,481	South Fork Clearwater River	DNFH	CWT 05/41/50
B	I	21,794	South Fork Clearwater River	DNFH	CWT 10/46/06
B	I	21,041	South Fork Clearwater River	DNFH	CWT 10/46/07
B	I	665,012	South Fork Clearwater River	DNFH	None
B	I	75,894	Crooked River	CAFH	None
B	I	4,991	Red River	CAFH	None
B	I	42,426	South Fork Red River	CAFH	CWT 10/51/20 <sup>e</sup>
B	I	6,304	South Fork Red River	CAFH	None <sup>e</sup>
<b>Total</b>		<b>3,218,175</b>			
B	II	63,556	Clearwater River @ Clear Creek	CAFH	CWT 10/30/53 <sup>b</sup>
B	II	234,886	Clearwater River @ Clear Creek	CAFH	None
B	II	21,913	Clearwater River @ Clear Creek	DNFH	CWT 05/31/46
B	II	344,653	Clearwater River @ Clear Creek	DNFH	None
B	II	21,751	Clearwater River	DNFH	CWT 05/31/44
B	II	21,310	Clearwater River	DNFH	CWT 05/31/45
B	II	20,360	Clearwater River	DNFH	CWT 05/31/49
B	II	20,276	Clearwater River	DNFH	CWT 05/31/50
B	II	18,612	Clearwater River	DNFH	CWT 05/31/51
B	II	20,670	Clearwater River	DNFH	CWT 05/37/22
B	II	20,804	Clearwater River	DNFH	CWT 05/37/23
B	II	19,034	Clearwater River	DNFH	CWT 05/40/05
B	II	21,197	Clearwater River	DNFH	CWT 05/40/06
B	II	18,803	Clearwater River	DNFH	CWT 05/40/07
B	II	1,174,618	Clearwater River	DNFH	None
B	II	6,164	Red River	CAFH	CWT 10/46/30
B	II	8,198	Red River	CAFH	None <sup>b</sup>
B	II	46,018	Crooked River	CAFH	LV Clip <sup>b</sup>
B	II	40,970	South Fork Red River	CAFH	CWT 10/20/22 <sup>d,e</sup>

## Appendix C. Continued.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	II	6,256	South Fork Red River	CAFH	None <sup>b,d,e</sup>
B	II	61,878	South Fork Clearwater River	DNFH	CWT 05/32/12
B	II	520,489	South Fork Clearwater River	DNFH	None
B	II	63,743	South Fork Clearwater River	CAFH	CWT 10/20/29 <sup>b</sup>
B	II	63,551	South Fork Clearwater River	CAFH	CWT 10/35/14 <sup>b</sup>
B	II	64,254	South Fork Clearwater River	CAFH	CWT 10/35/15 <sup>b</sup>
B	II	236,965	South Fork Clearwater River	CAFH	None
<b>Total</b>		<b>3,160,929</b>			
B	III	18,951	Clearwater River @ Button Beach	DNFH	CWT 05/24/54
B	III	131,795	Clearwater River @ Button Beach	DNFH	None
B	III	56,573	Clearwater River @ Clear Creek	CAFH	CWT 10/20/25 <sup>b</sup>
B	III	62,835	Clearwater River @ Clear Creek	CAFH	CWT 10/20/26 <sup>b</sup>
B	III	58,316	Clearwater River @ Clear Creek	CAFH	CWT 10/20/27 <sup>b</sup>
B	III	5,988	Clearwater River @ Clear Creek	CAFH	None
B	III	19,849	Clearwater River @ Clear Creek	DNFH	CWT 05/24/63
B	III	328,269	Clearwater River @ Clear Creek	DNFH	None
B	III	19,385	Clearwater River	DNFH	CWT 05/24/55
B	III	18,437	Clearwater River	DNFH	CWT 05/24/56
B	III	18,573	Clearwater River	DNFH	CWT 05/24/57
B	III	20,488	Clearwater River	DNFH	CWT 05/24/58
B	III	14,763	Clearwater River	DNFH	CWT 05/24/59
B	III	19,635	Clearwater River	DNFH	CWT 05/24/60
B	III	20,372	Clearwater River	DNFH	CWT 05/24/61
B	III	22,297	Clearwater River	DNFH	CWT 05/24/62
B	III	21,747	Clearwater River	DNFH	CWT 05/31/48
B	III	1,037,880	Clearwater River	DNFH	None
B	III	22,056	Red River	CAFH	CWT 10/45/05 <sup>d,e</sup>
B	III	21,585	Red River	CAFH	CWT 10/45/06 <sup>d,e</sup>
B	III	6,140	Red River	CAFH	None <sup>b,d,e</sup>
B	III	21,326	South Fork Clearwater River	DNFH	CWT 05/31/47
B	III	18,893	South Fork Clearwater River	DNFH	CWT 05/33/62
B	III	20,065	South Fork Clearwater River	DNFH	CWT 05/33/63
B	III	614,457	South Fork Clearwater River	DNFH	None
B	III	42,595	South Fork Clearwater River	CAFH	CWT 10/46/21 <sup>b</sup>
B	III	21,242	South Fork Clearwater River	CAFH	CWT 10/47/27 <sup>b</sup>
B	III	21,350	South Fork Clearwater River	CAFH	CWT 10/47/28 <sup>b</sup>
B	III	318,918	South Fork Clearwater River	CAFH	None <sup>b</sup>
<b>Total</b>		<b>3,024,780</b>			

<sup>a</sup> CAFH = Clearwater Anadromous Fish Hatchery.

<sup>b</sup> Release group includes fish marked with passive integrated transponder (PIT) tags.

<sup>c</sup> DNFH = Dworshak National Fish Hatchery.

<sup>d</sup> Fingerling release.

<sup>e</sup> Fall release.

Appendix D. Statewide harvest estimate of steelhead by section and month by resident and nonresident anglers, fall 1998 and spring 1999.

<b>Fall 1998 Steelhead Harvest</b>					
<b>River Section</b>	<b>September</b>	<b>October</b>	<b>November</b>	<b>December</b>	<b>Total</b>
<b>Snake River</b>					
01	32	605	967	305	1,909
02	33	207	316	254	810
<b>Subtotal</b>	<b>65</b>	<b>812</b>	<b>1,283</b>	<b>559</b>	<b>2,719</b>
<b>Clearwater River</b>					
03	97	1,103	1,087	809	3,096
04	0	0	147	65	212
05	0	16	202	371	589
06	0	49	16	31	96
07	0	0	0	16	16
<b>Subtotal</b>	<b>97</b>	<b>1,168</b>	<b>1,452</b>	<b>1,292</b>	<b>4,009</b>
<b>Salmon River</b>					
10	0	532	413	306	1,251
11	15	394	473	261	1,143
12	0	124	305	114	543
13	0	60	81	0	141
14	77	228	892	16	1,213
15	0	81	1,120	81	1,282
16	0	65	32	0	97
17	0	0	0	0	0
18	0	0	0	16	16
19	0	0	0	0	0
20	0	0	0	16	16
<b>Subtotal</b>	<b>92</b>	<b>1,484</b>	<b>3,316</b>	<b>810</b>	<b>5,702</b>
<b>Total</b>	<b>253</b>	<b>3,466</b>	<b>2,750</b>	<b>2,662</b>	<b>12,431</b>

Appendix D. Continued.

<b>Spring 1999 Steelhead Harvest</b>					
<b>River Section</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>	<b>Total</b>
<b>Snake River</b>					
01	145	86	35	25	291
02	0	34	12	12	59
<b>Subtotal</b>	<b>145</b>	<b>120</b>	<b>48</b>	<b>37</b>	<b>350</b>
<b>Clearwater River</b>					
03	764	759	216	60	1,799
04	156	322	214	49	741
05	311	237	179	0	727
06	23	141	116	98	378
07	62	222	436	399	1,118
<b>Subtotal</b>	<b>1,316</b>	<b>1,681</b>	<b>1,160</b>	<b>607</b>	<b>4,765</b>
<b>Salmon River</b>					
10	177	165	0	22	364
11	174	180	202	86	643
12	96	165	23	25	308
13	25	208	62	0	294
14	54	257	191	0	502
15	280	422	1,058	154	1,915
16	49	157	305	37	548
17	0	35	410	370	815
18	0	0	203	239	442
19	0	12	172	252	437
20	93	59	289	716	1,156
<b>Subtotal</b>	<b>948</b>	<b>1,660</b>	<b>2,915</b>	<b>1,901</b>	<b>7,424</b>
<b>Total</b>	<b>2,409</b>	<b>3,462</b>	<b>4,123</b>	<b>2,544</b>	<b>12,563</b>

<sup>a</sup> Statewide harvest survey data from Thomas J. McArthur, IDFG, (unpublished). Only LSRCP creel areas are reported in this table.

Appendix E. Estimated steelhead run composition at Bonneville Dam, April 1—November 15, 1998.

Week	Dam Count	Sample Size	Dam Count %	No. Nat <sup>a</sup>		No. Hatch <sup>c</sup>		No. Nat.		No. Hatch		Estimated Counts			
				<77.5 <sup>b</sup>	%	<77.5	%	>77.5	%	>77.5	%	Nat <77.5	Hatch <77.5	Nat >77.5	Hatch >77.5
4/1-6/7	3,176	128	4.0	11	8.6	98	76.6	1	0.8	18	14.1	273	2,432	25	447
6/8-14	1,001	39	3.9	3	7.7	33	84.6	0	0.0	3	7.7	77	847	0	77
6/15-21	1,549	62	4.0	10	16.1	41	66.1	2	3.2	9	14.5	250	1,024	50	225
6/22-28	2,574	97	3.8	26	26.8	65	67.0	0	0.0	6	6.2	690	1,725	0	159
6/29-7/5	4,054	125	3.1	44	35.2	73	58.4	2	1.6	6	4.8	1,427	2,368	65	195
7/6-12	6,336	156	2.5	60	38.5	87	55.8	5	3.2	4	2.6	2,437	3,534	203	162
7/13-19	7,776	199	2.6	87	43.7	110	55.3	0	0.0	2	1.0	3,400	4,298	0	78
7/20-26 <sup>d</sup>	9,815	—	0.0	—	40.3	—	58.3	—	0.0	—	1.4	3,954	5,723	0	139
7/27-8/2 <sup>d</sup>	10,145	—	0.0	—	40.3	—	58.3	—	0.0	—	1.4	4,087	5,915	0	143
8/3-9	9,904	84	0.8	27	32.1	55	65.5	0	0.0	2	2.4	3,183	6,485	0	236
8/10-16	18,649	120	0.6	34	28.3	81	67.5	0	0.0	5	4.2	5,284	12,588	0	777
8/17-23	4,595	67	1.5	12	17.9	53	79.1	0	0.0	2	3.0	823	3,635	0	137
8/24-30	19,631	143	0.7	18	12.6	117	81.8	1	0.7	7	4.9	2,471	16,062	137	961
8/31-9/6	10,910	159	1.5	28	17.6	112	70.4	6	3.8	13	8.2	1,921	7,685	412	892
9/7-13	20,563	170	0.8	20	11.8	96	56.5	15	8.8	39	22.9	2,419	11,612	1,814	4,717
9/14-20	17,324	175	1.0	16	9.1	67	38.3	8	4.6	84	48.0	1,584	6,633	792	8,316
9/21-27	19,653	163	0.8	12	7.4	43	26.4	3	1.8	105	64.4	1,447	5,185	362	12,660
9/28-10/4	9,364	140	1.5	10	7.1	36	25.7	4	2.9	90	64.3	669	2,408	268	6,020
10/5-11	4,608	137	3.0	8	5.8	59	43.1	3	2.2	67	48.9	269	1,984	101	2,254
10/12-11/15	2,947	67	2.3	7	10.4	40	59.7	1	1.5	19	28.4	308	1,759	44	836
Total	184,574	2,231		433		1,266		51		481		36,972	103,900	4,272	39,430
%			1.2									20.0	56.3	2.3	21.4
Adjusted Total <sup>e</sup>												35,684		5,560	

<sup>a</sup> Nat = Naturally-produced.

<sup>b</sup> All fish measured in centimeter fork length.

<sup>c</sup> Hatch = Hatchery origin.

<sup>d</sup> High water temperatures limited sampling; percentages obtained from U.S. Army Corps of Engineers ladder observations.

<sup>e</sup> Counts adjusted for overlap percentages: 2% for the number of naturally-produced fish <77.5 cm fork length, 36% for the number of naturally-produced fish >77.5 cm fork length.

Appendix F. Estimated steelhead run composition at Lower Granite Dam, June 1—December 15, 1998, and March 1—May 31, 1999.

Week	Dam Count	Sample Size	Dam Count %	No. Nat <sup>a</sup> <77.5 <sup>b</sup>	%	No. Hatch <sup>c</sup>		No. Nat		No. Hatch		Estimated Counts			
						<77.5	%	>77.5	%	>77.5	%	Nat <77.5	Hatch <77.5	Nat >77.5	Hatch >77.5
6/1-9/27	9,295	200	2.2	31	15.5	157	78.5	3	1.5	9	4.5	1,441	7,297	139	418
9/28-10/4	9,905	300	3.0	28	9.3	230	76.7	5	1.7	37	12.3	924	7,594	165	1,222
10/5-11	13,143	300	2.3	35	11.7	185	61.7	18	6.0	62	20.7	1,533	8,105	789	2,716
10/12-18	13,223	300	2.3	23	7.7	170	56.7	11	3.7	96	32.0	1,014	7,493	485	4,231
10/19-25	8,642	300	3.5	26	8.7	169	56.3	7	2.3	98	32.7	749	4,868	202	2,823
10/26-11/1	4,705	250	5.3	19	7.6	141	56.4	5	2.0	85	34.0	358	2,654	94	1,600
11/2-8	2,189	200	9.1	16	8.0	115	57.5	8	4.0	61	30.5	175	1,259	88	668
11/9-15	1,741	100	5.7	11	11.0	46	46.0	3	3.0	40	40.0	192	801	52	696
11/16-11/22	1,502	25	1.7	0	0.0	15	60.0	0	0.0	10	40.0	0	901	0	601
11/23-12/15	3,338	25	0.7	1	4.0	13	52.0	1	4.0	10	40.0	134	1,736	134	1,335
3/1-21	1,522	111	7.3	16	14.4	44	39.6	2	1.8	49	44.1	219	603	27	672
3/22-28	371	41	11.1	7	17.1	15	36.6	2	4.9	17	41.5	63	136	18	154
3/29-4/4	489	41	8.4	8	19.5	10	24.4	5	12.2	18	43.9	95	119	60	215
4/5-5/31	656	67	10.2	19	28.4	32	47.8	5	7.5	11	16.4	186	313	49	108
<b>Total</b>	<b>70,721</b>	<b>2,260</b>		<b>240</b>		<b>1,342</b>		<b>75</b>		<b>603</b>		<b>7,083</b>	<b>43,878</b>	<b>2,301</b>	<b>17,458</b>
<b>%</b>			<b>3.2</b>									<b>10.0</b>	<b>62.0</b>	<b>3.3</b>	<b>24.7</b>
<b>Adjusted Total<sup>d</sup></b>												<b>7,410</b>		<b>1,975</b>	

<sup>a</sup> Nat = Naturally-produced.

<sup>b</sup> All fish measured in centimeter fork length.

<sup>c</sup> Hatch = Hatchery origin.

<sup>d</sup> Counts adjusted for overlap percentages: 2% for the number of naturally-produced fish <77.5 cm fork length, 36% for the number of naturally-produced fish >77.5 cm fork length.

Appendix G. Miscellaneous coded-wire tag steelhead groups that were recovered by Idaho anglers, 1998-1999.

Strain	Age	No. of Fish	Release Site	Tagging Agency	Marks
A	I	27,808	Touchet River	WDFW <sup>a</sup>	CWT 63/61/21
A	II	27,223	Wallowa River @ Big Canyon Creek	ODFW <sup>b</sup>	CWT 07/11/59
A	II	38,567	Touchet River	WDFW	CWT 63/60/30
A	II	38,729	Touchet River	WDFW	CWT 63/60/31

<sup>a</sup> WDFW = Washington Department of Fish and Wildlife.

<sup>b</sup> ODFW = Oregon Department of Fish and Wildlife.

Appendix H. Coded-wire tag recoveries of Idaho's LSRCP steelhead from downriver and ocean fisheries during 1998–1999. Data queried from PSMFC as of November 7, 2001. Sampling rate expansions not available for all harvest areas.

Tag Code	Lower Columbia River								
	Ocean		Sport		Tributary Sport		Strays to OR and WA Hatcheries	Zone 6 Tribal	
	No. Tags	Est. Harv	No. Tags	Est. Harv	No. Tags	Est. Harv		No. Tags	Est. Harv
10/20/29			2	2	1		6	10	
10/21/30							1	2	
10/30/53							5	7	
10/35/07			1	1	1				
10/35/08			1	1					
10/35/09			5	7			10	4	5
10/35/10							1	1	
10/35/14			4	11	1		3	4	
10/35/15			3	3			5	11	
10/45/02							2	2	
10/46/06							1	1	
10/46/13							3	1	1
10/52/06			1	1					
10/52/10							1		
10/52/19							2		
10/52/20							1		
10/52/21							2		
10/52/22							1		
Total Tags Recovered			17		3		20	29	

<sup>a</sup> LSRCP = Lower Snake River Compensation Plan.

<sup>b</sup> PSMFC = Pacific States Marine Fisheries Commission.

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