

LOWER SNAKE RIVER COMPENSATION PLAN:
Summer Steelhead Creel Surveys on the
Grande Ronde, Wallowa, and Imnaha
Rivers for the 2004-05 Run Year

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Fish Research and Development, NE Region



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Front cover photo of steelhead anglers on the lower Grande Ronde River near Troy, OR in September 2007

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PREFACE

This report is for the funding period from 10 October 2005 to 30 September 2006. The sampling period was from 1 September 2004 to 15 April 2005. The report summarizes statistical angler surveys conducted during the summer steelhead angling season in major fishing areas on the Grande Ronde, Wallowa, and Imnaha rivers. Hatchery adult steelhead harvested during the 2004-2005 run year were primarily from the 2001 and 2002 brood years. Results of creel surveys conducted prior to fall 2004 are reported in previous Lower Snake River Compensation Plan evaluation annual reports (Carmichael et al. 1986, 1987, 1988, 1989, 1990; Flesher et al. 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1999, 2000, 2001, 2004a, 2004b, 2005, and 2007). The steelhead angling season surveyed in this report, during which only adipose fin-clipped fish could be harvested, was open from 1 September 2004 to 15 April 2005 in the Grande Ronde and Imnaha river basins.

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SUMMARY

Angler effort, harvest, and catch rates during the 2004-05 run year reached record levels on the lower Grande Ronde River. Catch rates were also some of the highest observed since the mid-1980s during all fisheries in the Grande Ronde and Imnaha river basins. Hatchery fish dominated the catch during the fall and winter months on the lower Grande Ronde River and during the spring months on the Wallowa River and at Rondowa, and hatchery fish contributed substantially to the Imnaha River fishery, although many were not clipped and thus were indistinguishable from wild fish. Anglers harvested more one-ocean than to two-ocean hatchery steelhead, and similar numbers of males and females in Grande Ronde and Imnaha basin fisheries. The percent of local resident anglers participating in summer steelhead fisheries increased in the Imnaha Basin, decreased in the Grande Ronde Basin on the Wallowa River and at Rondowa, and was similar to the previous run year on the lower Grande Ronde River. We sampled adipose and left ventral fin-clipped and coded-wire-tagged (AdLV+CWT) summer steelhead in both the Grande Ronde and Imnaha basin fisheries. Expanded estimates for the Wallowa and Rondowa fisheries will not be determined until statewide angler harvest tag summaries become available, however harvest, catch, and angler effort for the 2003-04 run year are reported in the appendices. Adult steelhead recycled back into the Wallowa River fishery from the Big Canyon Facility provided additional harvest opportunities for anglers and reduced the number of surplus fish at the Big Canyon Facility.

INTRODUCTION

Summer steelhead (*Oncorhynchus mykiss*) fisheries in the Grande Ronde and Imnaha river basins were closed in 1974. This closure was prompted by declining adult returns, as indicated by adult counts at Ice Harbor Dam on the Snake River (U.S. Army Corps of Engineers 1996), and low steelhead redd counts on index streams in the Grande Ronde and Imnaha river basins (Oregon Department of Fish and Wildlife District Annual Reports 1949-1974). The Lower Snake River Compensation Plan (LSRCP), initiated by Congress in 1976, was developed to compensate for losses of anadromous salmonids in the Snake River Basin from construction of the four lower Snake River Dams built between 1962 and 1976. Thus, the focus of the LSRCP is the Snake River above Lower Granite Dam (Rkm 173), the uppermost of these four dams. One of the primary objectives of the LSRCP in Oregon is to restore historic recreational and tribal fisheries for summer steelhead in the Grande Ronde and Imnaha river basins (Carmichael 1989). Approximately 1.68 million steelhead smolts were targeted for release in Oregon each year during April and May in the Grande Ronde and Imnaha river basins between 1984 and 1999. In 2000, we reduced releases to approximately 1.2 million smolts in response to the National Marine Fisheries Service's recommendation to help reduce straying of Wallowa hatchery stock steelhead, primarily into the Deschutes River (mid-Columbia tributary). These fish provide hatchery adult returns that contribute to recreational fisheries and may supplement natural spawning populations in northeast Oregon. Consumptive recreational fisheries for summer steelhead re-opened in 1986, in part as a result of increases in hatchery adult returns.

We began creel surveys for summer steelhead during the fall of 1985 in both the Grande Ronde and Imnaha river basins. The goal of these surveys is to provide annual harvest information needed to assess LSRCP goals (Carmichael and Wagner 1983). In general, the number of summer steelhead in the recreational fishery has been restored to historic values, but the fishery is concentrated at different times and places (Flesher et al. 1994). This report summarizes results of creel surveys conducted during the fall of 2004 and the spring of 2005 in the Grande Ronde and Imnaha river basins. In addition, this report contains estimates of total effort, catch, and harvest for all fisheries in the Grande Ronde and Imnaha river basins not reported in the previous annual report for the 2003-04 run year. The Grande Ronde and Imnaha river basins encompass the major steelhead fisheries that occur in Oregon tributaries to the Snake River upstream of Lower Granite Dam.

STUDY AREA

Creel surveys on the Grande Ronde River were conducted on a lower 24 km section from the Oregon-Washington state line (Rkm 62) upstream to Wildcat Creek (Rkm 86, Figure 1). Surveys on the Wallowa River were conducted on a 6 km section from its confluence with the Grande Ronde River at Rondowa (mouth of the Wallowa River) upstream to Howard Creek (Rkm 6) and a 50 km section from Minam State Park (Rkm 13) upstream to the mouth of Trout Creek (Rkm 63) near Enterprise. Anglers who parked their vehicles at Minam State Park to fish just below the park were included in the Wallowa survey. Because vehicle access into Rondowa was limited, anglers parked their vehicles at Palmer Junction, located 5.6 km upstream of Rondowa on the Grande Ronde River, and on Smith Mountain Road at the Forest Capital Partners gate, located on Smith Mountain which is approximately 16 km by road to Rondowa. Thus, for the Rondowa survey, we interviewed anglers leaving the parking areas at Palmer Junction and at the gate on Smith Mountain Road when they were encountered. The survey on the Imnaha River was conducted on the lower 32 km from its confluence with the Snake River (Rkm 0) upstream to the mouth of Big Sheep Creek (Rkm 32) near the town of Imnaha (Figure 1).

METHODS

For the lower Grande Ronde River survey, we used the methodology described by Carmichael et al. (1988). The survey on the lower Grande Ronde River was conducted from 1 September 2004 through 15 April 2005. Our goal was to sample 50% of the weekends (Saturday and Sunday) and holidays and 30% of the weekdays (Monday through Friday) during each month of each survey. Sample days were chosen randomly in two-day blocks, representing two strata (weekend days and holidays, and weekdays). On each sample day, beginning at a randomly selected start time, the creel surveyor conducted a pressure count by tallying all anglers and vehicles every three hours while driving a vehicle along the entire survey route. Between pressure counts, the surveyor interviewed anglers by recording a description of each angler, what

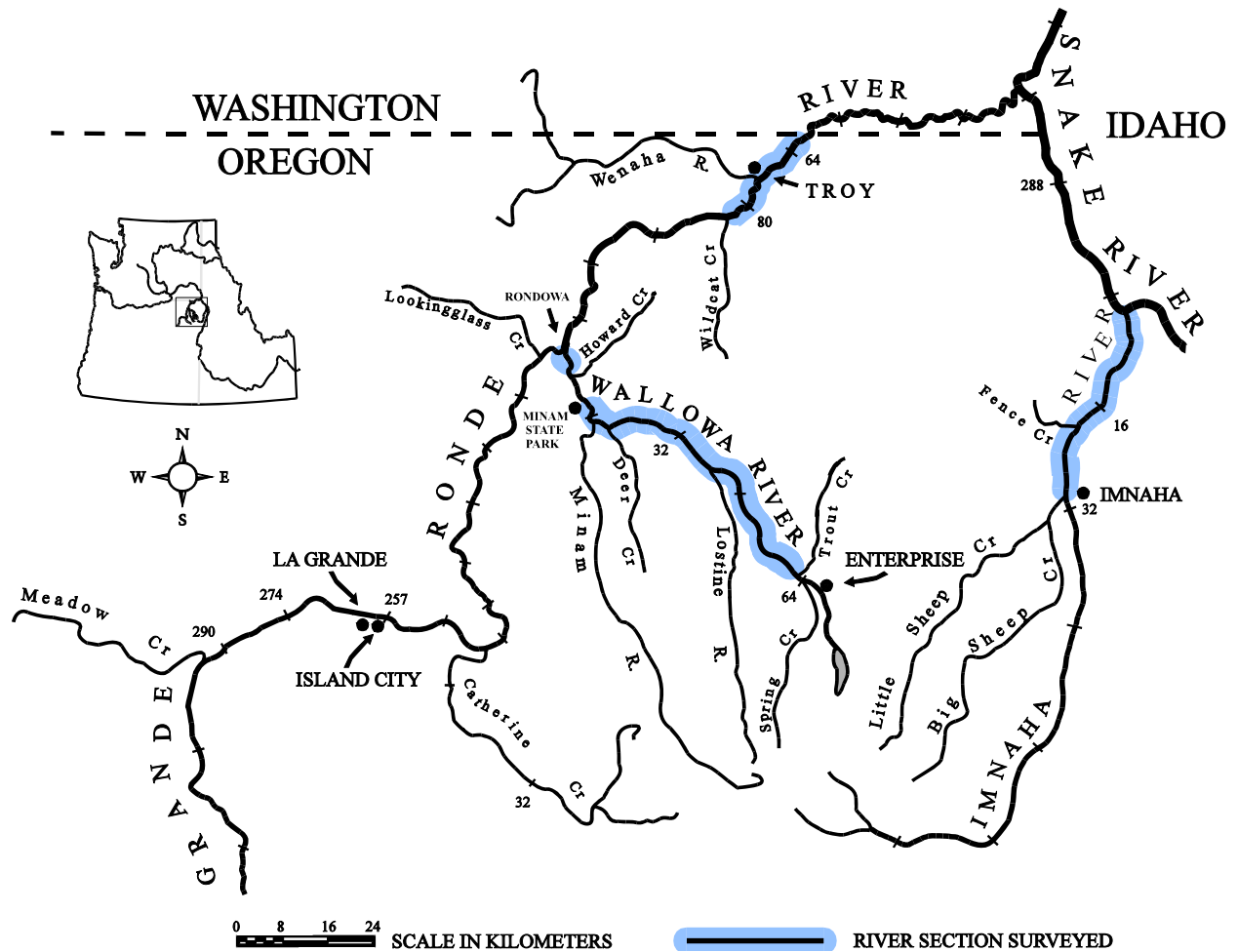


Figure 1. Map of northeastern Oregon showing where summer steelhead creel surveys were conducted in the Grande Ronde and Imnaha river basins during the 2004-05 run year.

species of fish they were angling for, what type of angling gear they were using, their residence, the number of hours they had fished, and the number and species of fish caught. The surveyor also sampled all harvested fish by recording fork length (mm), gender, fin clips, and any external tags. If the fish was coded-wire-tagged (CWT), as indicated by adipose and left ventral fin-clips (AdLV), the surveyor asked permission from the angler to collect the snout, then excised the snout behind the eye and placed it with an identification number in a plastic bag for later processing.

Surveys on the Imnaha River were conducted from 1 February through 15 April 2005. For the Imnaha River survey, we used a check station for the area below Fence Creek (Rkm 23) and a roving survey in the area above Fence Creek. We selected sample days using the same methodology described for the lower Grande Ronde River survey. Our goal was to survey 50% of the weekends and 30% of the weekdays during each month of each survey. For the check station, we used the methodology described by Carmichael et al. (1988). The check station was designed so that anglers leaving the lower river area during a sample day would stop voluntarily and the surveyor would interview each angler and sample all harvested fish. At the end of the second sample day, the surveyor would drive to Cow Creek (Rkm 7) and interview all anglers encountered that fished during the two-day period and did not exit through the check station. For the roving survey, we followed the same procedures as on the lower Grande Ronde River survey except that the surveyor interviewed anglers during pressure counts. For each pressure count, the surveyor closed the check station, interviewed and enumerated all anglers from Fence Creek to the town of Imnaha, and returned. Time spent away from the check station was recorded, and catch and harvest data was expanded to account for the unsampled time.

For the Wallowa River and Rondowa survey areas, one surveyor conducted angler interviews from 1 February to 15 April 2005. We randomly selected the area to survey first, and both areas were surveyed each sample day. Each sample day, the surveyor drove the survey route, stopped to interview anglers, then drove to the next area and repeated this sequence. For Rondowa, the surveyor checked the Palmer Junction and Smith Mountain parking areas that anglers used to access Rondowa. If sufficient time was available, the surveyor returned to interview anglers in the first area surveyed that sample day. All harvested fish observed were sampled. From 1 February to 26 February, we surveyed five days each week (Sunday – Saturday) from 0800-1700. From 27 February to 15 April, we surveyed four days each week from 0700-1800.

For the lower Grande Ronde River creel surveys, we estimated angler effort in hours and days, total catch, harvest, catch rate, percent hatchery fish in the catch, and the number of AdLV+CWT marked fish harvested (see Carmichael et al. 1988). Similar statistics were estimated for the Imnaha River surveys, except the percent of marked fish was substituted for percent of hatchery fish, since unmarked hatchery steelhead were not distinguishable from wild adults. For the Wallowa and Rondowa survey areas, we estimated catch rate and percent hatchery fish in the catch. In addition, we determined age and gender composition and mean fork length of harvested fish in all survey areas. Catch rate was expressed as an index, hours per fish, in which lower

values indicate better angling success and higher values indicate poorer angling success.

For those Grande Ronde Basin spring fisheries that do not have a statistical creel survey in place, we estimated the 2003-2004 total harvest by month using the angler harvest card estimates of harvest and a regression between angler harvest card harvest and creel survey harvest for specific reaches within the Grande Ronde and Imnaha basins for previous years. The regression is updated annually with lower Grande Ronde and Imnaha fishery harvest estimates from angler harvest tag returns and from the statistical surveys that were conducted. However, there is usually a one or two-year delay in obtaining final angler harvest tag estimates of total harvest. To estimate total catch, we multiplied total harvest estimates by the ratio of sampled catch to sampled harvest from creel surveys. To estimate total angler effort in hours, we used total catch divided by the sample catch rate (fish per hour) reported in Flesher et al. (2007).

Some figures and tables in this report also include data from creel surveys conducted on the upper Grande Ronde River from 1993 to 1996 and Catherine Creek from 1992 to 1993, and originally reported on in Flesher et al. (1993, 1994, 1995, 1996).

In spring 2005, we recycled hatchery adult returns from the Big Canyon Facility back into the Wallowa River fishery, using the methodology described by Flesher et al. (2007). On 1 April 2005, 36 Ad-marked adults trapped at the Big Canyon Facility (located at the mouth of Deer Creek) were transported and released into the Wallowa River 1.6 Rkm below the mouth of Deer Creek. As in past years, fish were uniquely marked using an opercle punch to identify them as recycled. Recaptures at the Big Canyon Facility were enumerated by opercle punch and euthanized. The creel surveyor checked for opercle punches on all harvested fish that were sampled after the recycled group was released.

ACCOMPLISHMENTS AND FINDINGS

On the lower Grande Ronde River from 1 September 2004 to 15 April 2005, we sampled 52.1% of the weekends and holidays (37 days) and 30.8% of the weekdays (48 days) for a total of 85 sample days. On the Wallowa River from 1 February to 15 April 2005, we sampled 95.2% of the weekends and holidays (20 days) and 45.3% of the weekdays (24 days) for a total of 44 sample days. During the same time period at Rondowa, we sampled 90.5% of the weekends and holidays (19 days) and 45.5% of the weekdays (24 days) for a total of 43 sample days. On the Imnaha River from 1 February to 15 April 2005, we sampled 52.4% of the weekends and holidays (11 days) and 34.0% of the weekdays (18 days) for a total of 29 sample days.

We estimate that 5,307 anglers fished for 27,575 hours on the lower Grande Ronde River during the 2004-05 season. They caught and released 2,627 wild and 1,468 hatchery steelhead, and harvested 2,381 hatchery steelhead for an average catch rate index of 4 hours per fish (Figures 2-6, Appendix Table A-1). The percent of steelhead

caught that were hatchery origin ranged from 29% in March and April 2005 to 72% in November 2004 (Figure 7, Appendix Table B). Forty percent of harvested hatchery steelhead spent one year in freshwater and one year in saltwater (hereafter designated 1:1) and 60% spent one year in freshwater and two years in saltwater (hereafter designated 1:2; Table 1). Mean fork length ($\pm 95\%$ confidence interval) of harvested hatchery steelhead was 583 (± 3) mm for age 1:1, and 694 (± 6) mm for age 1:2 (Table 1). Steelhead gender composition was 39% male and 61% female (Table 1). Sixty-nine percent of the anglers were local Oregon resident anglers, 18% were non-local Oregon resident anglers, 5% were Washington State residents and 8% resided outside the states of Oregon and Washington (Table 2). On the lower Grande Ronde River, anglers harvested an estimated 217 AdLV+CWT marked steelhead from our hatchery releases and an estimated 20 AdLV+CWT marked steelhead from Washington Department of Fish and Wildlife releases on the Grande Ronde River at the Cottonwood Conditioning Pond, Washington (Table 3).

At Rondowa, the catch rate index averaged 5 hours per fish (Figure 4, Appendix Table A-2). The percent of steelhead caught that were hatchery origin ranged from 40% in April to 85% in February (Figure 7, Appendix Table B). Age composition of harvested hatchery steelhead was 33% 1:1 and 67% 1:2 (Table 1). Mean fork length ($\pm 95\%$ confidence interval) of harvested hatchery steelhead was 580 (± 10) mm for age 1:1 and 687 (± 12) mm for age 1:2 (Table 1). Gender composition was 39% male and 61% female (Table 1). Forty-four percent of the anglers were local Oregon residents, 45% were non-local Oregon resident anglers, 5% were Washington State residents and 6% resided outside the states of Oregon and Washington (Table 2). At Rondowa, anglers harvested 8 AdLV+CWT marked steelhead from our hatchery releases, and 1 AdLV+CWT marked steelhead that was a stray from Washington Department of Fish and Wildlife releases on the Grande Ronde River at the Cottonwood Conditioning Pond, Washington. However, expanded estimates for the entire fishery will not be determined until angler harvest tag data become available (Table 3).

On the Wallowa River, the catch rate index averaged 5 hours per fish (Figure 4, Appendix Table A-3). The percent of steelhead caught that were hatchery origin ranged from 82% in April to 91% in March (Figure 7, Appendix Table B). Age composition of harvested hatchery steelhead was 53% 1:1, and 47% 1:2 (Table 1). Mean fork length ($\pm 95\%$ confidence interval) of harvested hatchery steelhead was 582 (± 3) mm for age 1:1, and 690 (± 7) mm for age 1:2 (Table 1). Gender composition was 47% male and 53% female (Table 1). Sixty-two percent of the anglers were local Oregon residents, 33% were non-local Oregon residents, 2% were Washington State residents and 3% resided outside the states of Oregon and Washington (Table 2). On the Wallowa River, anglers harvested 51 AdLV+CWT marked steelhead from our hatchery releases, and 1 AdLV+CWT marked steelhead that was a stray from Washington Department of Fish and Wildlife releases on the Grande Ronde River at the Cottonwood Conditioning Pond, Washington, however, expanded estimates for the

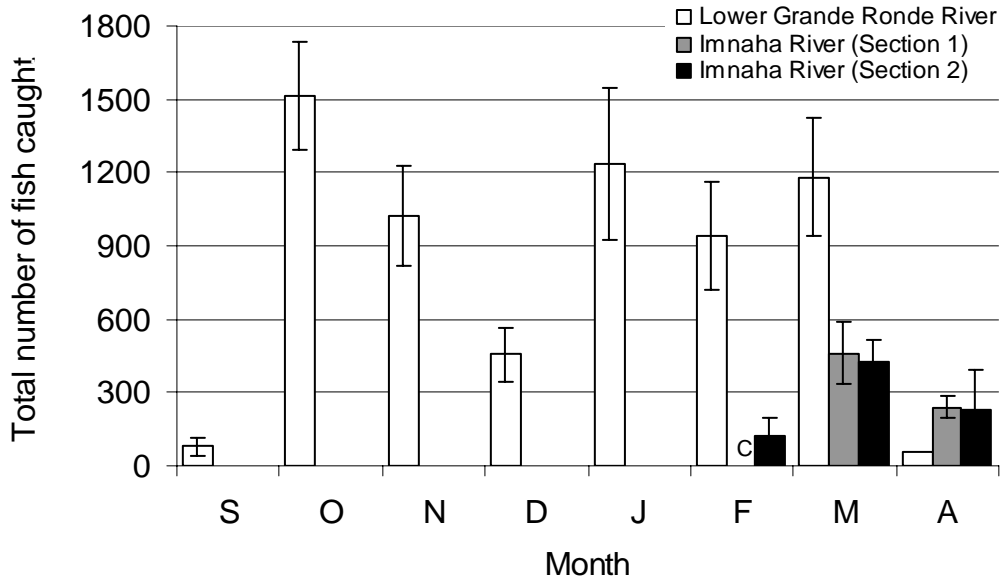


Figure 2. Estimated total catch of summer steelhead (vertical bars show 95% confidence intervals) on the lower Grande Ronde River, and two sections of the Imnaha River during the 2004-05 run year. "C" indicates no catch. Surveys were conducted from 1 September 2004 to 15 April 2005 on the lower Grande Ronde River, and from 1 February to 15 April 2005 on the Imnaha River.

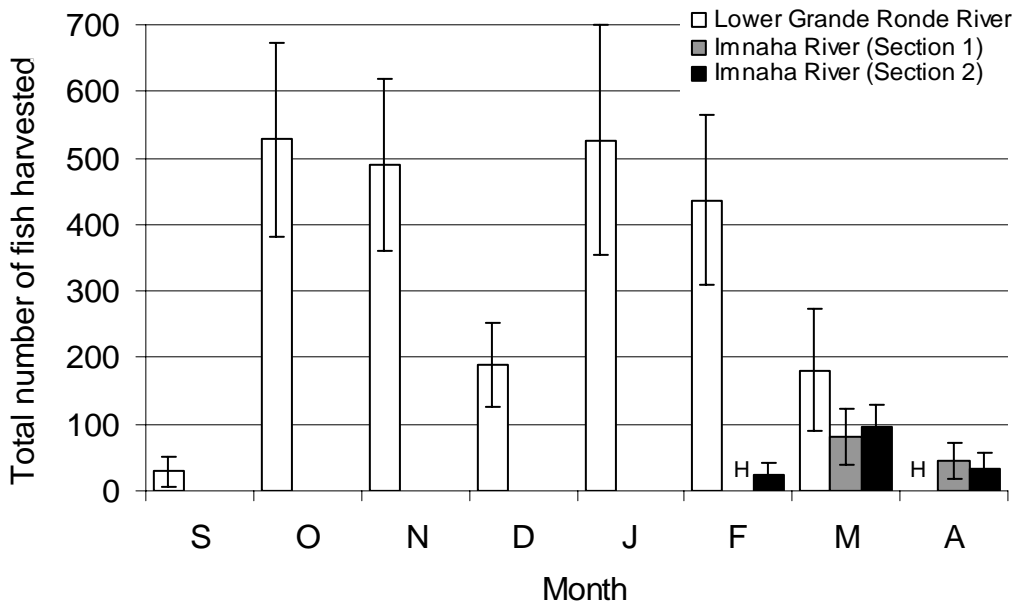


Figure 3. Estimated total harvest of summer steelhead (vertical bars show 95% confidence intervals) on the lower Grande Ronde River, and two sections of the Imnaha River during the 2004-05 run year. "H" indicates no harvest. Surveys were conducted from 1 September 2004 to 15 April 2005 on the lower Grande Ronde River, and from 1 February to 15 April 2005 on the Imnaha River.

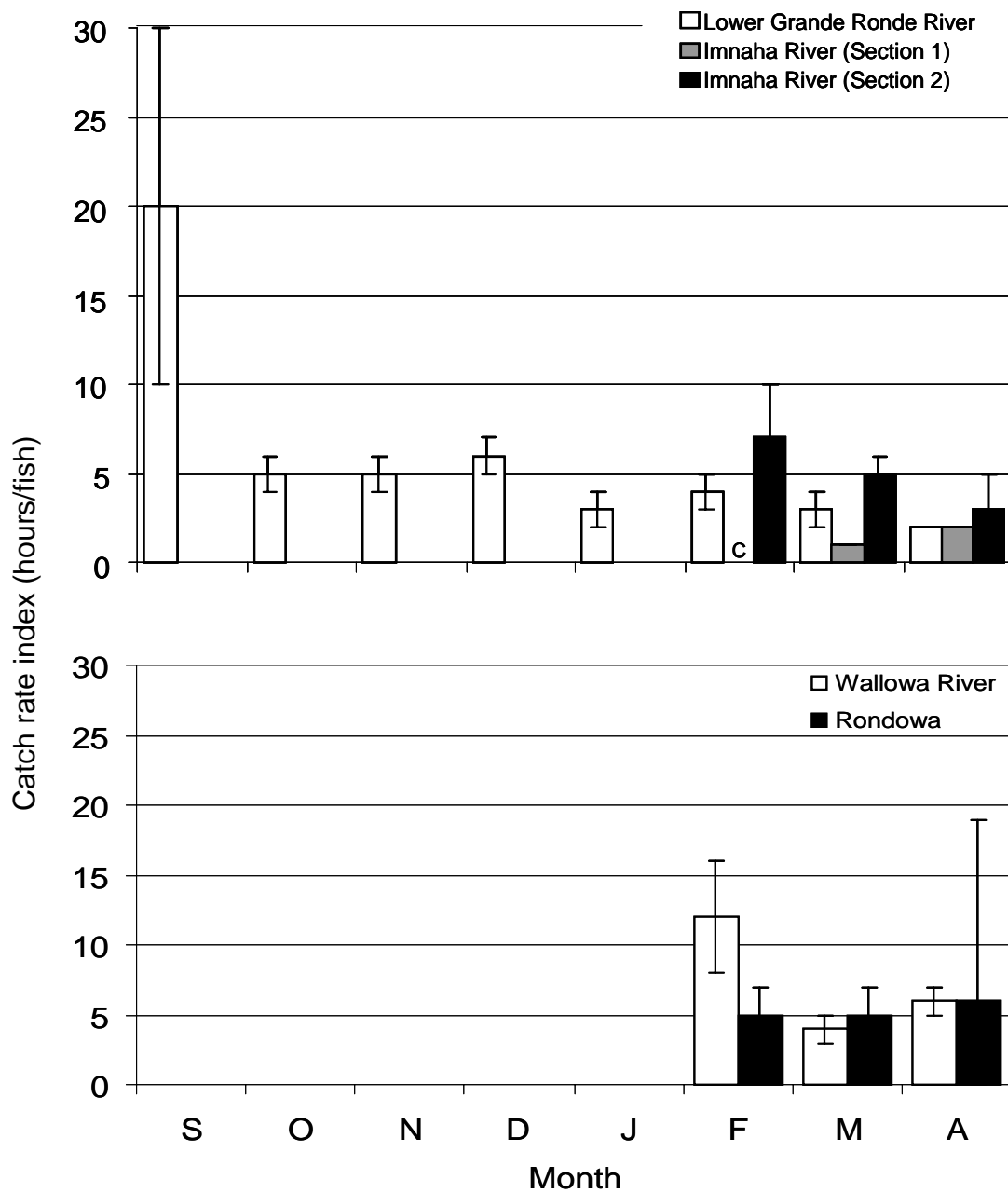


Figure 4. Estimated catch rate index (hours/fish) for summer steelhead (vertical bars show 95% confidence intervals) in the Grande Ronde and Imnaha river basins during the 2004-05 run year. "C" indicates no catch. Survey areas and times include the lower Grande Ronde River (1 September 2004 - 15 April 2005), and Rondowa, Wallowa River, and two sections of the Imnaha River (1 February - 15 April 2005). Note: A lower catch rate index implies better angling success.

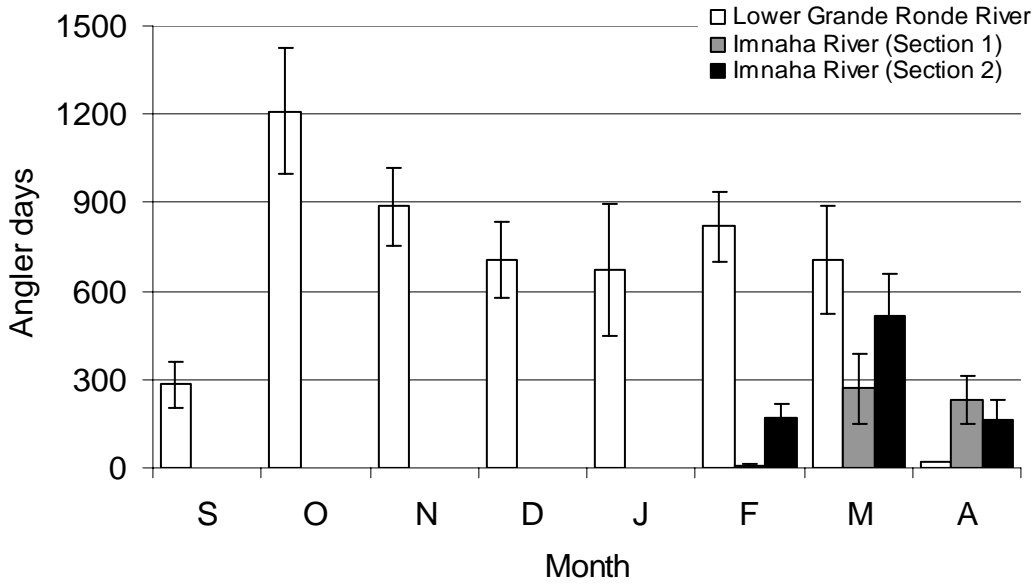


Figure 5. Estimated number of angler days for summer steelhead (vertical bars show 95% confidence intervals) on the lower Grande Ronde River, and two sections of the Imnaha River during the 2004-05 run year. Surveys were conducted from 1 September 2004 to 15 April 2005 on the lower Grande Ronde River, and from 1 February to 15 April 2005 on the Imnaha River.

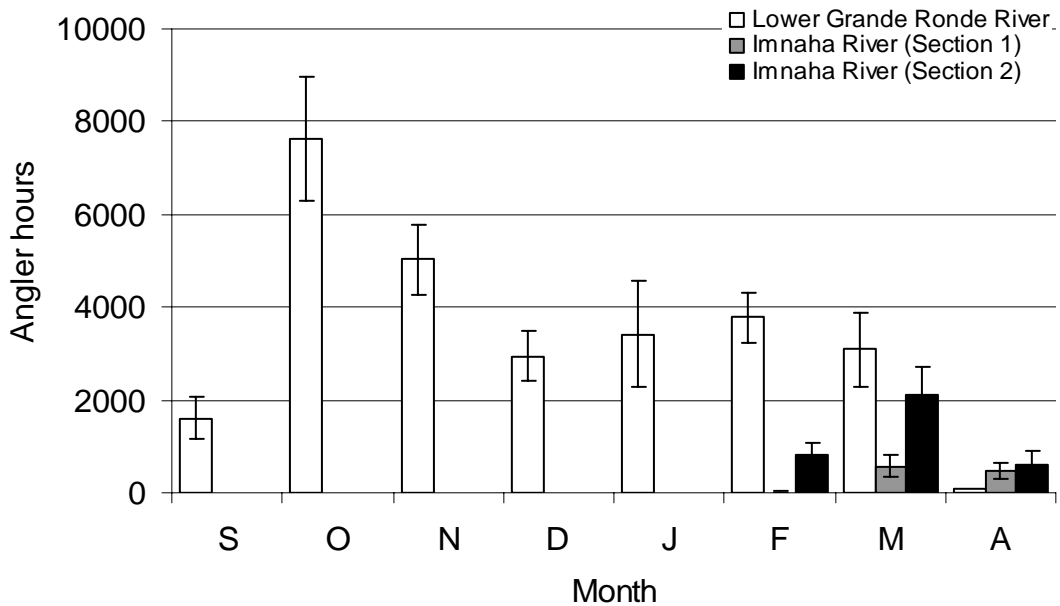


Figure 6. Estimated number of angler hours for summer steelhead (vertical bars show 95% confidence intervals) on the lower Grande Ronde River, and two sections of the Imnaha River during the 2004-05 run year. Surveys were conducted from 1 September 2004 to 15 April 2005 on the lower Grande Ronde River, and from 1 February to 15 April 2005 on the Imnaha River.

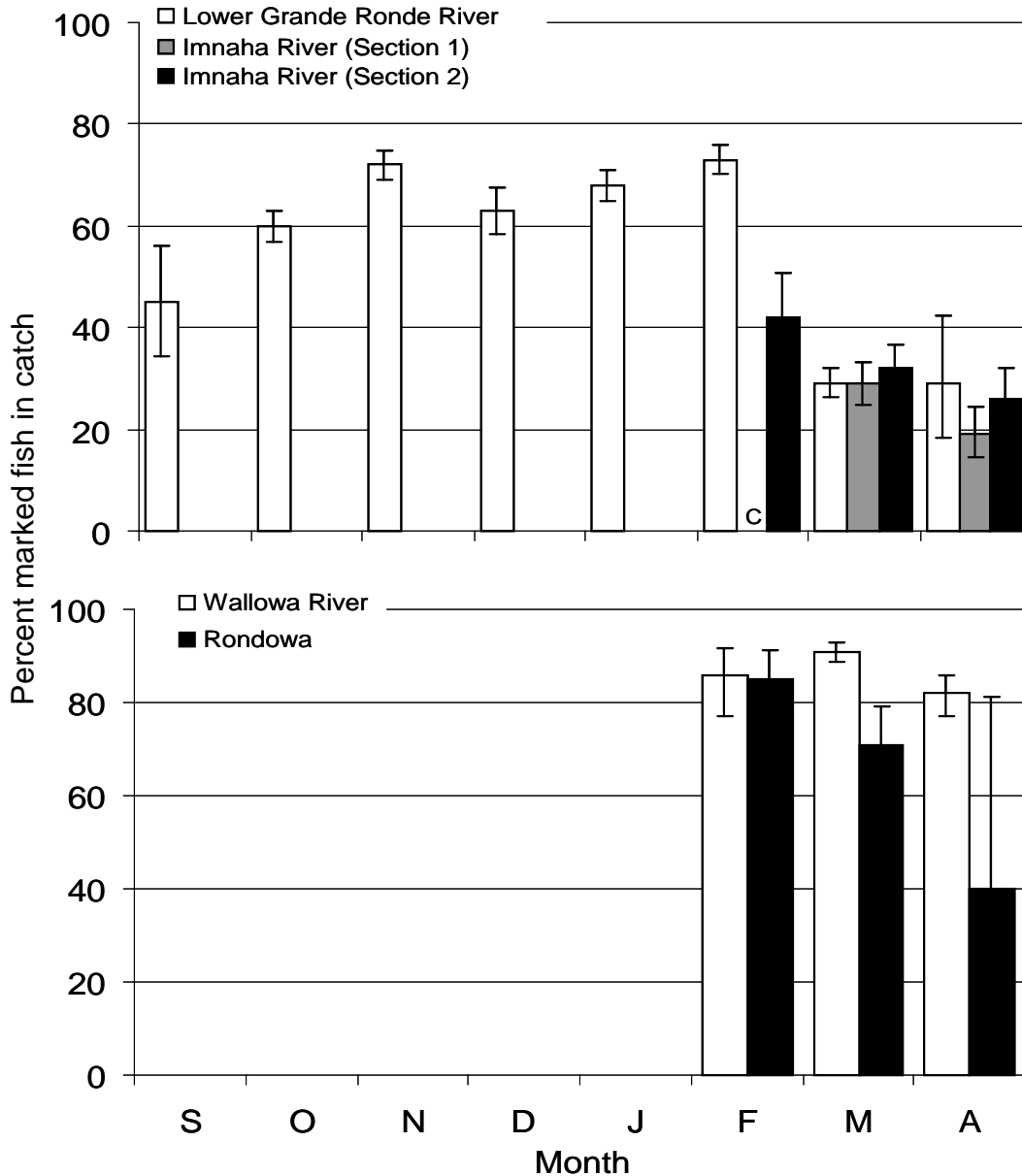


Figure 7. Estimated percent of summer steelhead caught (vertical bars show 95% confidence intervals; using a binomial distribution) in the Grande Ronde and Imnaha river basins during the 2004-05 run year that were marked. In the Grande Ronde Basin all unmarked fish were wild, whereas in the Imnaha Basin unmarked fish were of both wild and hatchery origin. "C" indicates no catch. Survey areas and times include the lower Grande Ronde River (1 September 2004 - 15 April 2005), and Rondowa, Wallowa River, and two sections of the Imnaha River (1 February-15 April 2005).

entire fishery will not be determined until state harvest tag data become available (Table 3).

On the Imnaha River, we estimated that 1,349 anglers fished for 4,636 hours. They caught and released 1,050 unmarked (wild and hatchery) and 154 hatchery steelhead, and harvested 278 hatchery steelhead for an average catch rate index of 3 hours per fish (Figures 2-6, Appendix Tables A-4 and A-5). The percent of steelhead caught that were of known hatchery origin ranged from 19% in April in Section 1 to 42% in February in Section 2 (Figure 7, Appendix Table B). Age composition of harvested hatchery steelhead was 64% 1:1, and 36% 1:2 (Table 1). Mean fork length ($\pm 95\%$ confidence interval) of harvested hatchery steelhead was 590 (± 8) mm for age 1:1, and 693 (± 18) mm for age 1:2 (Table 1). Gender composition was 44% male and 56% female (Table 1). Eighty percent of the anglers were local Oregon residents, 15% were non-local Oregon residents, 2% were Washington State residents and 3% resided outside the states of Oregon and Washington (Table 2). On the Imnaha River, anglers harvested an estimated 112 AdLV+CWT marked steelhead from our hatchery releases (Table 3). In addition, we sampled one blank-wire-tagged steelhead that was adipose fin-clipped, even though our pre-release CWT retention and fin-clip quality checks prior showed that all blank-wire-tagged fish released from Little Sheep Creek Facility were not fin-clipped.

Angler effort on the lower Grande Ronde River was the highest observed since surveys began in 1985 (Figure 8), whereas on the Imnaha River angler effort was lower than last year but higher than the overall average. Harvest on the lower Grande Ronde River was also the highest ever observed (Figure 9), while harvest on the Imnaha River was higher than both the previous year and the overall average. Catch rates in fishery areas on the lower Grande Ronde, Wallowa, and Imnaha rivers were the highest recorded since surveys began in 1985, and at Rondowa they were the second highest ever observed (Table 4).

The percent of local resident anglers participating in summer steelhead fisheries increased in the Imnaha Basin, decreased in the Grande Ronde Basin on the Wallowa River and at Rondowa (mouth of the Wallowa River), and was similar on the lower Grande Ronde River, compared to the previous run year (Table 2). The Imnaha fishery had the highest percent of local resident anglers (80%), and the fishery at Rondowa had the highest percentage (45%) of non-local Oregon resident anglers, while the lower Grande Ronde River fishery had the highest percent (13%) of out-of-state anglers. However, the percent of local resident anglers in the Grande Ronde and Imnaha basin fisheries as a whole has decreased since surveys began (Figure 10).

We found a statistically significant ($P < 0.001$) linear relationship between angler tag harvest estimates and creel harvest estimates for summer steelhead fisheries in the Grande Ronde and Imnaha River basins (Figure 11). Total harvest estimates for spring steelhead fisheries in the 2003-04 run year were 18 fish in the upper Grande Ronde River, 754 fish at Rondowa, 948 fish in the Wallowa River, and 82 fish in the middle Grande Ronde River, for a total harvest estimate of 1,802 fish in the Grande Ronde

Table 1. Percent age composition and mean fork length (\pm 95% confidence intervals) of hatchery summer steelhead sampled in creel surveys in the Grande Ronde and Imnaha river basins during the 2004-05 run year. Age composition and mean fork length by age are estimated from fork lengths of harvested fish and age-length keys developed from hatchery returns to Wallowa Hatchery in 2005 and Little Sheep Creek Facility (for the Imnaha River survey area) in 2004 and 2005. Age is expressed as years spent in freshwater prior to ocean migration:years spent in the ocean prior to spawning migration.

Creel survey area, gender	Age composition (%)			Mean fork length (mm)			
	N	1:1	1:2	N	1:1	N	1:2
Lower GR River							
Males	211	66	34	124	588 \pm 4	63	705 \pm 15
Females	332	23	77	68	575 \pm 4	229	692 \pm 6
Total	543	40	60	192	583 \pm 3	292	694 \pm 6
Rondowa							
Males	34	62	38	18	583 \pm 13	11	698 \pm 34
Females	54	15	85	7	571 \pm 11	38	684 \pm 12
Total	88	33	67	25	580 \pm 10	49	687 \pm 12
Wallowa River							
Males	221	76	24	148	586 \pm 4	46	690 \pm 16
Females	243	31	69	67	572 \pm 5	147	690 \pm 7
Total	464	53	47	215	582 \pm 3	193	690 \pm 7
Imnaha River							
Males	33	79	21	21	594 \pm 11	6	698 \pm 64
Females	42	52	48	18	586 \pm 14	17	692 \pm 17
Total	75	64	36	39	590 \pm 8	23	693 \pm 18

Table 2. Residence of summer steelhead anglers interviewed during creel surveys in the Grande Ronde and Imnaha river basins during the 2004-05 run year. Local Oregon resident anglers were from Union and Wallowa counties.

Creel survey area	Number of anglers	Percent			
		Local Oregon resident anglers	Non-local Oregon resident anglers	Washington resident anglers	Other out-of-state anglers
Lower GR River	1660	69	18	5	8
Rondowa	157	44	45	5	6
Wallowa River	1637	62	33	2	3
Imnaha River	384	80	15	2	3

Table 3. Number of AdLV+CWT marked summer steelhead recovered during creel surveys in the Grande Ronde and Imnaha river basins during the 2004-05 run year. Recoveries were expanded for the entire fishery.

Creel survey area	Tag code	Release site	Experimental group ^a	Brood year	Number recovered	
					Observed	Expanded ^b
Lower Grande Ronde River	09 34 04	Spring Cr.	Prod./April	2001	7	25
	09 34 05	Spring Cr.	Forced/May	2001	5	19
	09 34 06	Spring Cr.	Volitional/May	2001	5	21
	09 34 07	Deer Cr.	Prod./April	2001	6	27
	09 34 08	Deer Cr.	Forced/May	2001	4	19
	09 34 09	Deer Cr.	Volitional/May	2001	4	21
	09 36 30	Spring Cr.	Prod./April	2002	3	15
	09 36 31	Deer Cr.	Prod./April	2002	9	36
	09 36 32	Spring Cr.	Volitional/May	2002	6	24
	09 36 33	Deer Cr.	Volitional/May	2002	3	10
	63 11 78	-	WDFW ^c	2001	6	20
	Wallowa River	09 34 05	Spring Cr.	Forced/May	2001	5
09 34 06		Spring Cr.	Volitional/May	2001	1	ND
09 34 07		Deer Cr.	Prod./April	2001	5	ND
09 34 08		Deer Cr.	Forced/May	2001	5	ND
09 34 09		Deer Cr.	Volitional/May	2001	5	ND
09 36 30		Spring Cr.	Prod./April	2002	4	ND
09 36 31		Deer Cr.	Prod./April	2002	18	ND
09 36 32		Spring Cr.	Volitional/May	2002	3	ND
09 36 33		Deer Cr.	Volitional/May	2002	5	ND
63 11 78		-	WDFW ^c	2001	1	ND
Rondowa	09 34 04	Spring Cr.	Prod./April	2001	1	ND
	09 34 05	Spring Cr.	Forced/May	2001	2	ND
	09 34 07	Deer Cr.	Prod./April	2001	2	ND
	09 34 09	Deer Cr.	Volitional/May	2001	1	ND
	09 36 32	Spring Cr.	Volitional/May	2002	1	ND
	09 36 33	Deer Cr.	Volitional/May	2002	1	ND
	63 15 23	-	WDFW ^c	2002	1	ND
Imnaha River	09 01 25	B. Sheep Cr.	Direct St./April	2001	6	27
	09 34 02	L. Sheep Cr.	Prod./April	2001	1	4
	09 34 03	L. Sheep Cr.	Prod./May	2001	3	16
	09 36 34	L. Sheep Cr.	Prod./April	2002	3	17
	09 36 35	L. Sheep Cr.	Prod./May	2002	3	10
	09 36 36	B. Sheep Cr.	Direct St./April	2002	8	38
	09BLANK	^d	^d	^d	1	3

^a Prod. indicates production releases that are forced-released over a 24-hour period. Direct St. indicates direct stream releases. The volitional releases in May (usually over a one-week period) are a current management strategy designed to help remove steelhead smolts that may residualize.

^b ND indicates expansions not determined until statewide annual harvest card data become available.

^c Steelhead with tag codes 63 11 78 and 63 15 23 were Wallowa stock released by Washington Department of Fish and Wildlife (WDFW) in the lower Grande Ronde River at the Cottonwood Conditioning Pond, Washington, from 1-30 April 2002 and from 15-30 April 2003, respectively.

^d The steelhead with tag code 09BLANK was an Ad-clipped hatchery female harvested 5 March 2005 in Section 2 on the Imnaha River.

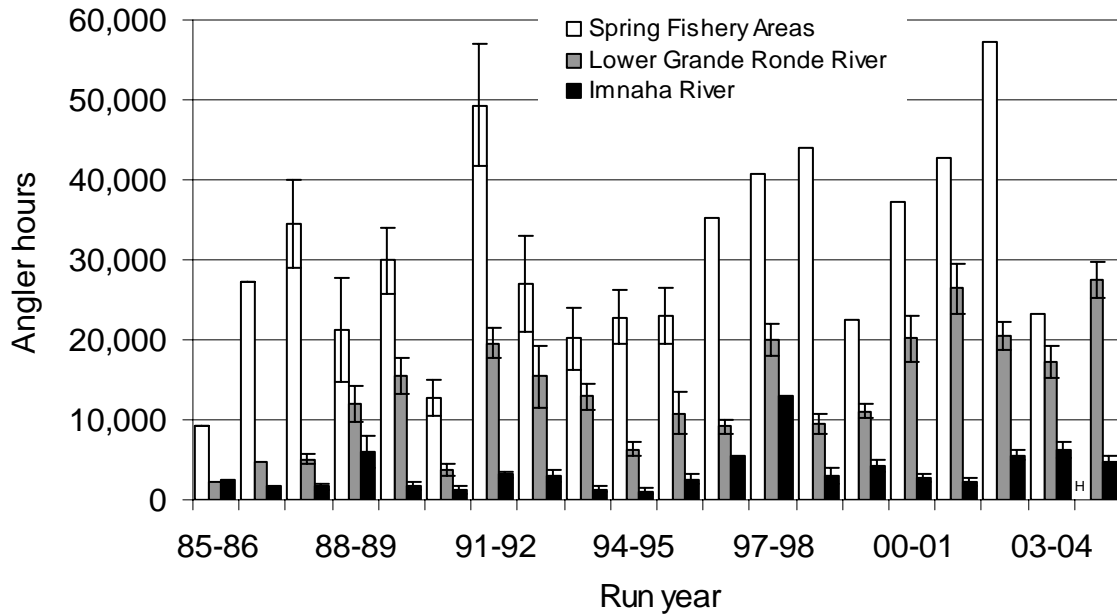


Figure 8. Angler effort for summer steelhead (vertical bars show 95% confidence intervals) in spring fishery areas (upper Grande Ronde River, Wallowa River, Catherine Creek, and Rondowa), the lower Grande Ronde River, and the Imnaha River for the 1985-86 to 2004-05 run years. “H” indicates this value must be estimated from harvest tag data, which was not available when this report was submitted. Confidence intervals not available for the 85-86 and 86-87 run years, the Imnaha fishery for the 96-97 and 97-98 run years, and for spring fishery areas beginning with the 96-97 run year.

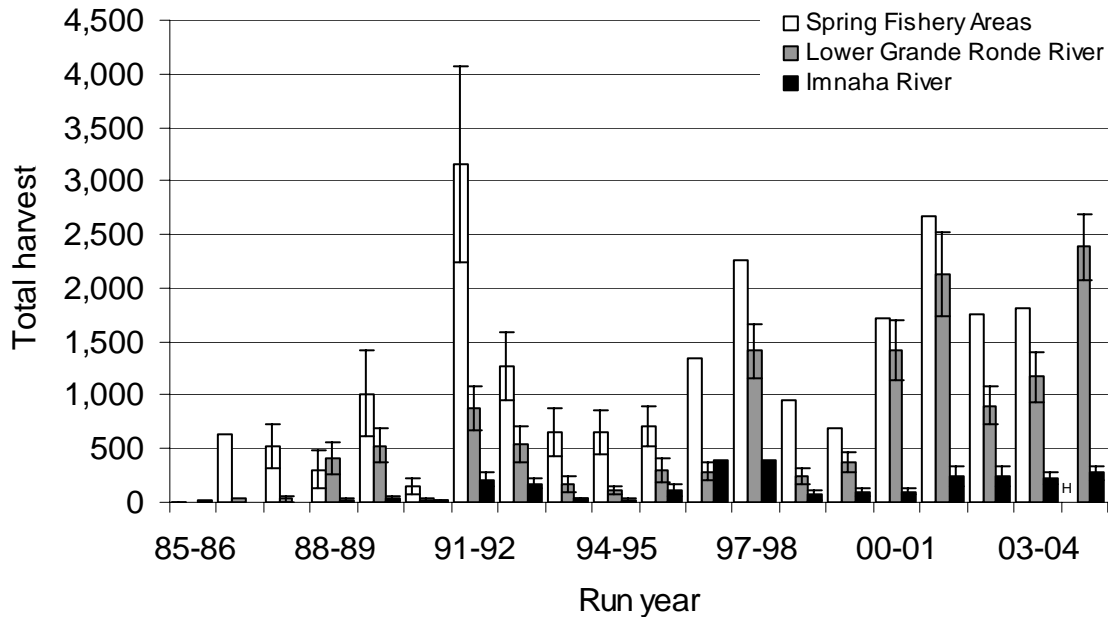


Figure 9. Number of hatchery summer steelhead harvested (vertical bars show 95% confidence intervals) by recreational anglers in spring fishery areas (upper Grande Ronde River, Wallowa River, Catherine Creek, and Rondowa), the lower Grande Ronde River, and the Imnaha River for the 1985-86 to 2004-05 run years. H indicates this value must be estimated using harvest tag data, which was not yet available. Confidence intervals not available for the 85-86 and 86-87 run years, the Imnaha fishery for the 96-97 and 97-98 run years, and for spring fishery areas beginning with the 96-97 run year.

Table 4. Catch rate index (hours/fish \pm 95% confidence intervals) in summer steelhead creel survey areas in the Grande Ronde and Imnaha river basins for the 1985-86 to 2004-05 run years. Note that a lower catch rate index implies greater angling success. "-" indicates not sampled or undefined.

Run year	Catch rate index (hours/fish)					
	Lower GR River	Upper GR River	Catherine Creek	Rondowa	Wallowa River	Imnaha River
85-86	8 \pm 7	-	-	-	7 \pm 7	15 \pm 7
86-87	9 \pm 3	-	-	-	11 \pm 3	9 \pm 8
87-88	10 \pm 4	-	-	11 \pm 9	16 \pm 3	24 \pm 9
88-89	14 \pm 4	40 \pm 55	-	-	43 \pm 21	18 \pm 11
89-90	14 \pm 4	14 \pm 8	-	34 \pm 27	17 \pm 5	20 \pm 8
90-91	19 \pm 8	24 \pm 11	-	-	6 \pm 2	13 \pm 6
91-92	11 \pm 3	10 \pm 3	3 \pm 3	6 \pm 1	10 \pm 2	4 \pm 1
92-93	9 \pm 2	14 \pm 4	49 \pm 49	-	11 \pm 2	8 \pm 1
93-94	18 \pm 5	31 \pm 17	-	12 \pm 4	17 \pm 3	13 \pm 3
94-95	21 \pm 6	25 \pm 13	-	15 \pm 5	17 \pm 3	17 \pm 8
95-96	11 \pm 2	15 \pm 4	-	-	21 \pm 4	7 \pm 2
96-97	14 \pm 4	18 \pm 9	33 \pm 69	-	13 \pm 3	6 \pm 2
97-98	7 \pm 1	13 \pm 9	7 \pm 10	11 \pm 6	10 \pm 1	18 \pm 9
98-99	17 \pm 4	19 \pm 9	14 \pm 20	-	18 \pm 4	20 \pm 7
99-2000	11 \pm 2	25 \pm 19	-	8 \pm 7	17 \pm 4	12 \pm 3
2000-01	6 \pm 1	18 \pm 17	-	6 \pm 4	11 \pm 2	6 \pm 1
2001-02	5 \pm 1	11 \pm 17	-	7 \pm 4	7 \pm 1	3 \pm 1
2002-03	8 \pm 1	-	-	8 \pm 6	12 \pm 2	6 \pm 2
2003-04	6 \pm 1	-	-	3 \pm 2	7 \pm 1	5 \pm 1
2004-05	4 \pm 0	-	-	5 \pm 1	5 \pm 1	3 \pm 0
Average	11 \pm 2	20 \pm 5	21 \pm 18	11 \pm 5	14 \pm 4	11 \pm 3

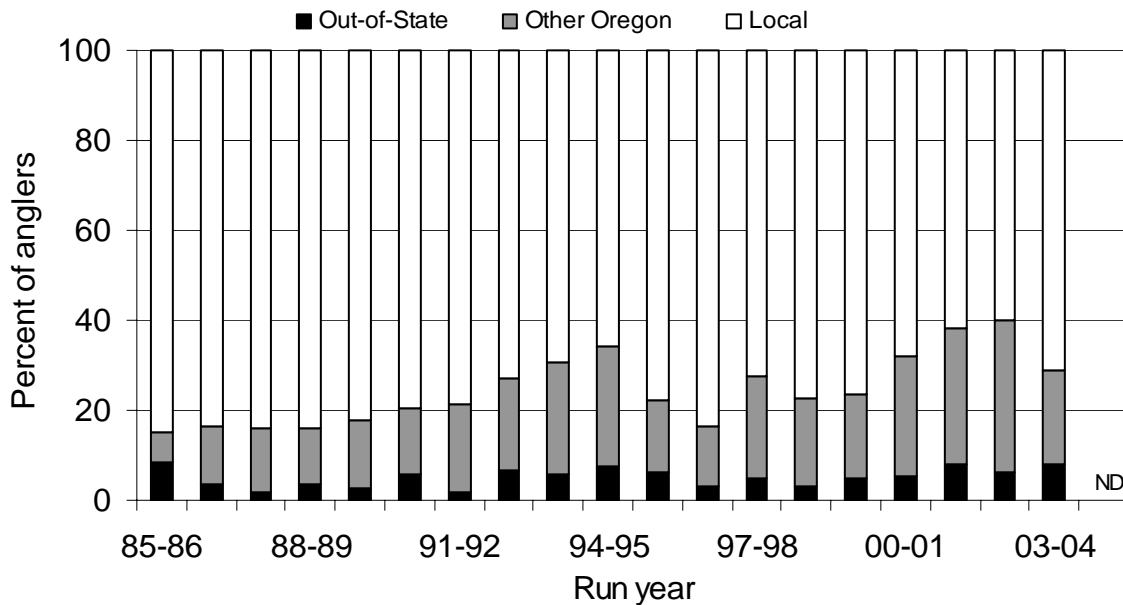


Figure 10. Percent of local resident anglers (Union or Wallowa county residents), non-local Oregon resident anglers, and out-of-state anglers that fished in summer steelhead fisheries in the Grande Ronde and Imnaha river basins for the 1985-86 to 2003-04 run years. ND indicates not determined until statewide annual harvest card data become available.

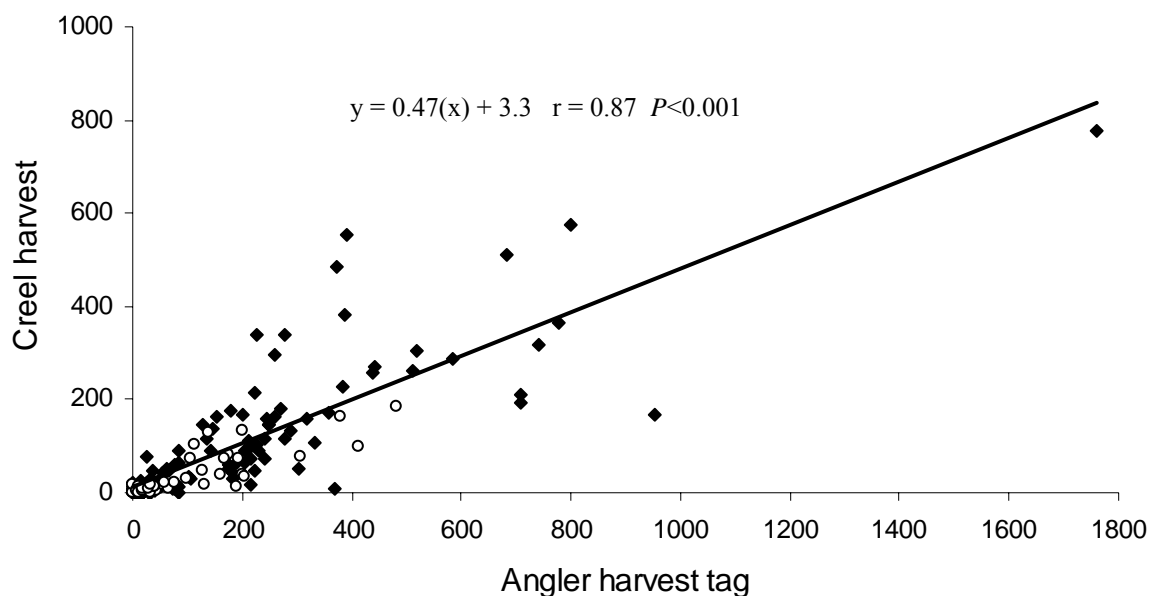


Figure 11. Relation between angler harvest tag (punch card) and creel survey harvest for summer steelhead fisheries in the Grande Ronde (◆) and Imnaha (○) river basins for years when harvest estimates for specific reaches were available (1993-1996 for the upper Grande Ronde, Wallowa, and Rondowa, 1992-1993 for Catherine Creek, 1993-spring 2004 for the lower Grande Ronde, and 1986-2004 for the Imnaha fishery areas).

Basin, excluding the lower Grande Ronde River (Appendix Table C-1). In the 2003-04 run year we estimated 19 coded-wire-tagged fish were harvested at Rondowa, and 79 coded-wire-tagged fish were harvested in the Wallowa River. Total catch estimates for spring steelhead fisheries in the 2003-04 run year were 32 fish in the upper Grande Ronde River, 2,295 fish at Rondowa, 1,803 fish in the Wallowa River, and 149 fish in the middle Grande Ronde River, for a total catch estimate of 4,279 fish in the Grande Ronde Basin, excluding the lower Grande Ronde River (Appendix Table C-2).

Angler effort for the 2003-04 run year was estimated to be 237 hours in the upper Grande Ronde River, 9,174 hours at Rondowa, 12,778 hours in the Wallowa River, and 1,069 hours in the middle Grande Ronde River, for a total effort estimate of 23,258 hours in the Grande Ronde Basin, excluding the lower Grande Ronde River (Appendix Table C-3).

We recycled 36 summer steelhead to the Wallowa River fishery in 2005. Eighteen (50% of release) of them were recaptured at the Big Canyon Facility and an estimated 13 (36%) were harvested in the fishery, for a total estimated recovery of 31 (86%) of all recycled fish (Appendix Table D).

MANAGEMENT IMPLICATIONS AND RECOMMENDATIONS

Angler effort on the lower Grande Ronde River was the highest recorded since we began surveys in 1985. On the Imnaha River, angler effort was lower than the previous run year, but higher than the average since surveys began. Harvest was the highest observed on the lower Grande Ronde River and it was above average on the Imnaha River. Similarly, catch rates in all Grande Ronde and Imnaha basin steelhead fisheries were the best or second best reported since surveys began. Hatchery fish dominated the catch during the fall and winter months on the lower Grande Ronde River and in the spring months on the Wallowa River and at Rondowa. Also, unmarked hatchery fish, which are indistinguishable from natural fish, and marked hatchery fish contributed substantially to the Imnaha River fishery from February through mid-April. These fishery statistics continue to illustrate the importance of current hatchery programs to the success of recreational summer steelhead fisheries in both the Grande Ronde and Imnaha river basins. Statistics for the Wallowa and Rondowa fisheries for the 2004-05 run year will be reported in the 2005-06 annual report.

Recycling adult steelhead returning to the Big Canyon Facility back into the Wallowa River for the 2005 recreational fishery provided additional harvest opportunities for anglers and reduced the number of surplus adults at the facility. We estimate that 86% of the recycled fish were accounted for either by returning to the Big Canyon Facility or in the harvest. We therefore recommend continuing to recycle adipose-only marked steelhead back into the Wallowa River.

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APPENDIX A

Fishery Statistics for the 2004-05 run year

Appendix Table A-1. Fishery statistics for summer steelhead on the lower Grande Ronde River during the 2004-05 run year. Statistics include mean estimates \pm 95% confidence intervals. Only adipose fin-clipped fish were harvested. "h" indicates hour.

Month, day type	Sample size		Total Hours	Total Catch	Total harvest	Catch rate		Angler days
	Days	Anglers				fish/h	h/fish	
September:								
Weekday	6	54	1023 \pm 433	64 \pm 35	20 \pm 20	0.063 \pm 0.034	16 \pm 9	175 \pm 74
Weekend	5	52	585 \pm 117	14 \pm 14	9 \pm 11	0.024 \pm 0.024	42 \pm 42	108 \pm 22
Total	11	106	1608 \pm 449	78 \pm 38	29 \pm 23	0.049 \pm 0.024	20 \pm 10	283 \pm 79
October:								
Weekday	7	190	4880 \pm 1068	971 \pm 193	308 \pm 112	0.199 \pm 0.040	5 \pm 1	811 \pm 177
Weekend	5	124	2734 \pm 800	540 \pm 111	220 \pm 92	0.198 \pm 0.041	5 \pm 1	399 \pm 117
Total	12	314	7614 \pm 1334	1511 \pm 222	528 \pm 145	0.198 \pm 0.029	5 \pm 1	1210 \pm 212
November:								
Weekday	6	151	3101 \pm 628	710 \pm 188	325 \pm 117	0.229 \pm 0.061	4 \pm 1	557 \pm 113
Weekend	5	137	1922 \pm 393	312 \pm 84	166 \pm 54	0.162 \pm 0.044	6 \pm 2	330 \pm 67
Total	11	288	5023 \pm 741	1022 \pm 206	491 \pm 129	0.203 \pm 0.041	5 \pm 1	887 \pm 131
December:								
Weekday	7	135	2023 \pm 480	195 \pm 64	65 \pm 35	0.097 \pm 0.032	10 \pm 3	519 \pm 123
Weekend	5	95	911 \pm 244	260 \pm 91	123 \pm 52	0.286 \pm 0.100	3 \pm 1	185 \pm 50
Total	12	230	2934 \pm 538	455 \pm 112	188 \pm 63	0.155 \pm 0.038	6 \pm 1	704 \pm 129
January:								
Weekday	6	80	1557 \pm 841	745 \pm 285	360 \pm 155	0.478 \pm 0.183	2 \pm 1	313 \pm 169
Weekend	6	134	1864 \pm 766	490 \pm 120	167 \pm 76	0.263 \pm 0.064	4 \pm 1	361 \pm 148
Total	12	214	3421 \pm 1138	1235 \pm 309	527 \pm 173	0.361 \pm 0.090	3 \pm 1	674 \pm 224
February:								
Weekday	6	140	2011 \pm 469	453 \pm 180	240 \pm 108	0.226 \pm 0.090	4 \pm 2	475 \pm 111
Weekend	5	162	1775 \pm 269	487 \pm 132	197 \pm 71	0.274 \pm 0.074	4 \pm 1	343 \pm 52
Total	11	302	3786 \pm 540	940 \pm 223	437 \pm 129	0.248 \pm 0.059	4 \pm 1	818 \pm 117
March:								
Weekday	7	115	1855 \pm 748	648 \pm 210	75 \pm 51	0.349 \pm 0.113	3 \pm 1	478 \pm 193
Weekend	4	86	1233 \pm 272	532 \pm 117	106 \pm 77	0.432 \pm 0.095	2 \pm 0	230 \pm 51
Total	11	201	3088 \pm 796	1180 \pm 240	181 \pm 92	0.382 \pm 0.078	3 \pm 1	708 \pm 183
April:								
Weekday	3	3	75	47	0	0.625	2	18
Weekend	2	2	26	8	0	0.303	3	5
Total	5	5	101	55	0	0.543	2	23
Grand total	85	1660	27575 \pm 2245	6476 \pm 556	2381 \pm 312	0.235 \pm 0.020	4 \pm 0	5307 \pm 432

Appendix Table A-2. Catch rate ($\pm 95\%$ confidence intervals) for summer steelhead at Rondowa during the 2004-05 run year. Only adipose fin-clipped fish were harvested. "-" indicates not sampled or undefined. "h" indicates hour.

Month, day type	Sample size		Catch rate	
	Days	Anglers	fish/h	(h/fish)
February:				
Weekday	10	6	0.548 \pm 0.261	2 \pm 1
Weekend	8	71	0.175 \pm 0.072	6 \pm 2
Total	18	77	0.201 \pm 0.071	5 \pm 2
March:				
Weekday	9	10	0.572 \pm 0.312	2 \pm 1
Weekend	8	64	0.168 \pm 0.064	6 \pm 2
Total	17	74	0.221 \pm 0.072	5 \pm 2
April:				
Weekday	5	2	-	-
Weekend	3	4	0.212 \pm 0.510	5 \pm 11
Total	8	6	0.158 \pm 0.319	6 \pm 13
Grand total	43	157	0.209 \pm 0.049	5 \pm 1

Appendix Table A-3. Catch rate ($\pm 95\%$ confidence intervals) for summer steelhead on the Wallowa River during the 2004-05 run year. Only adipose fin-clipped fish were harvested. "h" indicates hour.

Month, day type	Sample size		Catch rate	
	Days	Anglers	fish/h	(h/fish)
February:				
Weekday	10	126	0.094 \pm 0.044	11 \pm 5
Weekend	8	246	0.078 \pm 0.029	13 \pm 5
Total	18	372	0.083 \pm 0.024	12 \pm 4
March:				
Weekday	9	351	0.258 \pm 0.049	4 \pm 1
Weekend	8	466	0.254 \pm 0.050	4 \pm 1
Total	17	817	0.256 \pm 0.035	4 \pm 1
April:				
Weekday	5	192	0.123 \pm 0.048	8 \pm 3
Weekend	4	256	0.223 \pm 0.065	4 \pm 1
Total	9	448	0.179 \pm 0.042	6 \pm 1
Grand total	44	1637	0.199 \pm 0.023	5 \pm 1

Appendix Table A-4. Fishery statistics for summer steelhead in Section 1 (Fence Creek to town of Imnaha) of the Imnaha River during the 2004-05 run year. Statistics include mean estimates $\pm 95\%$ confidence intervals. Only adipose fin-clipped fish were harvested. "-" indicates not sampled or undefined. "h" indicates hour.

Month, day type	Sample size		Total hours	Total catch	Total harvest	Catch rate		Angler days
	Days	Anglers				fish/h	h/fish	
February:								
Weekday	6	1	11 \pm 19	0	-	-	-	5 \pm 9
Weekend	5	0	0	0	-	-	-	0
Total	11	1	11 \pm 19	0	-	-	-	5 \pm 9
March:								
Weekday	8	30	314 \pm 157	319 \pm 106	54 \pm 38	1.018 \pm 0.204	1 \pm 0	125 \pm 63
Weekend	4	31	259 \pm 193	142 \pm 72	27 \pm 16	0.547 \pm 0.147	2 \pm 1	144 \pm 107
Total	12	61	573 \pm 249	461 \pm 128	81 \pm 41	0.805 \pm 0.130	1 \pm 0	269 \pm 117
April:								
Weekday	4	19	334 \pm 172	181 \pm 41	26 \pm 26	0.541 \pm 0.098	2 \pm 0	132 \pm 68
Weekend	2	13	161 \pm 20	60 \pm 11	20 \pm 8	0.375 \pm 0.049	3 \pm 0	98 \pm 12
Total	6	32	495 \pm 173	241 \pm 43	46 \pm 27	0.487 \pm 0.068	2 \pm 0	230 \pm 80
Grand total	29	94	1079 \pm 304	702 \pm 135	127 \pm 49	0.651 \pm 0.076	2 \pm 0	504 \pm 142

Appendix Table A-5. Fishery statistics for summer steelhead in Section 2 (mouth to Fence Creek) of the Imnaha River during the 2004-05 run year. Statistics include mean estimates $\pm 95\%$ confidence intervals. Only adipose fin-clipped fish were harvested. "h" indicates hour.

Month, day type	Sample size		Total hours	Total catch	Total harvest	Catch rate		Angler days
	Days	Anglers				fish/h	h/fish	
February:								
Weekday	6	22	501 \pm 239	78 \pm 69	18 \pm 17	0.155 \pm 0.116	6 \pm 4	83 \pm 40
Weekend	5	45	318 \pm 78	46 \pm 31	6 \pm 5	0.146 \pm 0.059	7 \pm 3	85 \pm 21
Total	11	67	819 \pm 251	124 \pm 76	24 \pm 18	0.152 \pm 0.074	7 \pm 3	168 \pm 51
March:								
Weekday	8	94	1250 \pm 487	269 \pm 79	52 \pm 31	0.215 \pm 0.051	5 \pm 1	321 \pm 125
Weekend	4	75	877 \pm 305	160 \pm 44	43 \pm 17	0.182 \pm 0.035	5 \pm 1	195 \pm 68
Total	12	169	2127 \pm 574	429 \pm 90	95 \pm 35	0.201 \pm 0.033	5 \pm 1	516 \pm 139
April:								
Weekday	4	31	386 \pm 275	122 \pm 147	17 \pm 21	0.317 \pm 0.304	3 \pm 3	102 \pm 73
Weekend	2	23	226 \pm 43	105 \pm 77	15 \pm 12	0.465 \pm 0.242	2 \pm 1	59 \pm 11
Total	6	54	612 \pm 279	227 \pm 166	32 \pm 24	0.372 \pm 0.211	3 \pm 2	161 \pm 73
Grand total	29	290	3557 \pm 686	780 \pm 203	151 \pm 46	0.219 \pm 0.045	5 \pm 1	845 \pm 163

APPENDIX B

Percent of Summer Steelhead That Were Marked Hatchery Fish and Caught in the 2004-05 Run Year

Appendix Table B. Percent of marked hatchery summer steelhead caught during each survey month in the Grande Ronde and Imnaha River basins during the 2004-05 run year. For the Imnaha River, percentages include catch of marked hatchery fish only. In parentheses are total catch for the Lower Grande Ronde and Imnaha rivers and sampled catch for the Upper Grande Ronde and Wallowa rivers and Rondowa. On the Imnaha River, Section 1 is from Fence Creek upstream to the town of Imnaha, and Section 2 is from the mouth upstream to Fence Creek. "-" indicates not sampled or undefined.

Creel survey area	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Lower GR River	45(78)	60(1511)	72(1022)	63(455)	68(1235)	73(940)	29(1180)	29(55)
Rondowa	-	-	-	-	-	85(85)	71(94)	40(5)
Wallowa River	-	-	-	-	-	86(92)	91(711)	82(281)
Imnaha River (Section 1)	-	-	-	-	-	-(0)	29(461)	19(241)
Imnaha River (Section 2)	-	-	-	-	-	42(124)	32(429)	26(227)

APPENDIX C

Fishery Statistics for Spring Fisheries for the 2003-04 Run Year

Appendix Table C-1. Estimated harvest of summer steelhead, and observed and expanded harvest of AdLV+CWT marked steelhead in spring fisheries in the Grande Ronde Basin for the 2003-04 run year. Total harvest = 0.469 (harvest card) + 3.275. Sample rate expansion = total harvest/sampled fish. A sample rate expansion of 25 or greater was considered unreliable, therefore expanded equals observed. Harvest estimates made only for months when steelhead angling season was open (Sept - April) and angler harvest card data was greater than zero. Does not include the lower Grande Ronde (location code 231) fishery. "-" indicates not sampled or undefined.

Fishery, location code, statistics, tag code	Fishery statistics and number of tags recovered by month									Expanded tags
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	
Upper Grande Ronde (233)										
Angler harvest cards	0	0	20	0	0	4	0	0		
Total harvest	-	-	13	-	-	5	-	-	18	
Catherine Creek (120)										
Angler harvest cards	0	0	0	0	0	0	0	0		
Total harvest	-	-	-	-	-	-	-	-	0	
Rondowa (234)										
Angler harvest cards	0	4	8	79	51	583	733	102		
Sampled fish	0	0	0	0	0	15	5	2		
Total harvest	-	5	7	40	27	277	347	51	754	
Sample rate expansion	-	-	-	-	-	18.5	69.4	25.5		
093212						1	0	0	1	18
093407						0	1	0	1	1
Wallowa (235)										
Angler harvest cards	0	0	8	8	4	406	1265	288		
Sampled fish	0	0	0	0	0	79	171	37		
Total harvest	-	-	7	7	5	194	597	138	948	
Sample rate expansion	-	-	-	-	-	2.5	3.5	3.7		
093404						3	0	0	3	7
093405						3	1.1	0	4.1	11
093406						1	2.2	0	3.2	10
093407						1	3.2	0	4.2	13
093408						3	4.3	0	7.3	22
093409						2	3.2	0	5.2	16
Wenaha (184)										
Angler harvest cards	0	0	0	0	0	0	0	0		
Total harvest	-	-	-	-	-	-	-	-	0	
Middle Grande Ronde (232)										
Angler harvest cards	0	24	20	28	0	24	43	0		
Total harvest	-	15	13	16	-	15	23	-	82	
Total Grande Ronde harvest (excluding lower Grande Ronde)									1,802	

Appendix Table C-2. Estimated catch of summer steelhead in spring fisheries in the Grande Ronde Basin for the 2003-04 run year. Total catch = (sampled catch/sample harvest) x total harvest. For months with little or no sampling, the average proportion was used. For areas with little or no sampling, data from the survey in closest proximity was used. Does not include the lower Grande Ronde fishery. "-" indicates not sampled or undefined.

Fishery ^a , statistics	Fishery statistics by month								
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Upper Grande Ronde									
Sampled harvest	-	-	-	-	-	-	-	-	-
Sampled catch	-	-	-	-	-	-	-	-	-
Total harvest	-	-	13	-	-	5	-	-	18
Total catch	-	-	24	-	-	8	-	-	32
Catherine Creek									
Sampled harvest	-	-	-	-	-	-	-	-	-
Sampled catch	-	-	-	-	-	-	-	-	-
Total harvest	-	-	-	-	-	-	-	-	0
Total catch	-	-	-	-	-	-	-	-	0
Rondowa									
Sampled harvest	-	-	-	-	-	15	5	2	22
Sampled catch	-	-	-	-	-	55	12	7	74
Total harvest	-	5	7	40	27	277	347	51	754
Total catch	-	17	24	135	91	1016	833	179	2295
Wallowa									
Sampled harvest	-	-	-	-	-	79	171	37	287
Sampled catch	-	-	-	-	-	120	330	86	536
Total harvest	-	-	7	7	5	194	597	138	948
Total catch	-	-	13	13	9	295	1152	321	1803
Wenaha									
Sampled harvest	-	-	-	-	-	-	-	-	-
Sampled catch	-	-	-	-	-	-	-	-	-
Total harvest	-	-	-	-	-	-	-	-	0
Total catch	-	-	-	-	-	-	-	-	0
Middle Grande Ronde									
Sampled harvest	-	-	-	-	-	-	-	-	-
Sampled catch	-	-	-	-	-	-	-	-	-
Total harvest	-	15	13	16	-	15	23	-	82
Total catch	-	28	24	30	-	23	44	-	149
Total Grande Ronde catch (excluding lower Grande Ronde)									4279

^a Wallowa data were used for the upper Grande Ronde, middle Grande Ronde, and Catherine Creek; lower Grande Ronde data, in Flesher et al. 2007, were used for the Wenaha.

Appendix Table C-3. Estimated angler effort (hours) for summer steelhead in spring fisheries in the Grande Ronde Basin for the 2003-04 run year. Angler effort in hours = Total catch/sampled catch rate in fish per hour. For months with little or no sampling, the average proportion was used. For areas with little or no sampling, data from the survey in closest proximity was used. Does not include the lower Grande Ronde fishery. "-" indicates not sampled or undefined.

Fishery ^a , statistics	Fishery statistics by month								
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Upper Grande Ronde									
Catch rate	-	-	-	-	-	-	-	-	-
Total catch	-	-	24	-	-	8	-	-	32
Angler effort	-	-	171	-	-	66	-	-	237
Catherine Creek									
Catch rate	-	-	-	-	-	-	-	-	-
Total catch	-	-	-	-	-	-	-	-	0
Angler effort	-	-	-	-	-	-	-	-	0
Rondowa									
Catch rate	-	-	-	-	-	0.618	0.139	0.226	0.358
Total catch	-	17	24	135	91	1016	833	179	2295
Angler effort	-	47	67	377	254	1644	5993	792	9174
Wallowa									
Catch rate	-	-	-	-	-	0.122	0.149	0.135	0.140
Total catch	-	-	13	13	9	295	1152	321	1803
Angler effort	-	-	93	93	64	2418	7732	2378	12778
Wenaha									
Catch rate	-	-	-	-	-	-	-	-	-
Total catch	-	-	-	-	-	-	-	-	0
Angler effort	-	-	-	-	-	-	-	-	0
Middle Grande Ronde									
Catch rate	-	-	-	-	-	-	-	-	-
Total catch	-	28	24	30	-	23	44	-	149
Angler effort	-	200	171	214	-	189	295	-	1069
Total Grande Ronde angler effort (excluding lower Grande Ronde)									23258

^a Wallowa data were used for the upper Grande Ronde, middle Grande Ronde, and Catherine Creek; lower Grande Ronde data, in Flesher et al. 2007, were used for the Wenaha.

APPENDIX D

Summary of Recycled Steelhead for the 2004-05 Run Year

Appendix Table D. Summary of adult steelhead recycled back to the Wallowa River fishery from the Big Canyon Facility for the 2004-05 run year. "-" indicates not sampled or undefined.

Date of release, Percent of Of release	Location and number of fish ^a						Percent of Release
	Upstream		Downstream		Subtotal		
	M	F	M	F	M	F	
	Released						
1 April 2005	0	0	17	19	17	19	36
Subtotal	0	0	17	19			
Total	0		36		17	19	36
	Recaptured at Big Canyon ^b						
1 April 2005	-	-	9	9	9	9	18
Subtotal	-	-	9	9			
Total	-		18		9	9	18
% of release	-		50%		53%	47%	50%
	Observed and estimated (in parentheses) harvest ^c						
1 April 2005	-	-	1(4)	2(9)	1(4)	2(9)	3(13)
Subtotal	-	-	1(4)	2(9)			
Total	-		3(13)		1(4)	2(9)	3(13)
% of release	-		36%		24%	47%	36%
	Total recovered (Big Canyon + estimated harvest)						
1 April 2005	-	-	13	18	13	18	31
Subtotal	-	-	13	18			
Total	-		31		13	18	31
% of release	-		86%		76%	95%	86%

^a Release site is located 1.6 km downstream of Deer Creek (Rkm 18) on the Wallowa River.

^b Recaptures of recycled fish were euthanized.

^c Expanded for unsampled fish kept by sampled anglers, unsampled anglers on sample days and unsampled days.