

**SMOLT MONITORING AT THE HEAD OF LOWER GRANITE
RESERVOIR AND LOWER GRANITE DAM**

**Annual Report
2008 Operations**

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TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT.....	1
INTRODUCTION	3
OBJECTIVES	4
METHODS.....	4
Releases of Hatchery-Produced Smolts	4
Smolt Monitoring Traps.....	4
Snake River Trap	5
Salmon River Trap	6
Trap Efficiency.....	7
Travel Time and Migration Rates.....	7
Interrogation Rates of PIT-Tagged Fish.....	8
RESULTS AND DISCUSSION.....	8
Hatchery Releases	8
Chinook Salmon.....	8
Steelhead Trout	8
Coho and Sockeye Salmon.....	8
Smolt Monitoring Traps.....	14
Snake River Trap Operation.....	14
Salmon River Trap Operations.....	15
Travel Time and Migration Rates.....	23
Release Sites to Snake River Trap	23
Release Sites to Salmon River Trap	25
Snake River Trap to Lower Granite Dam.....	32
Salmon River Trap to Lower Granite Dam.....	33
Interrogation of PIT-Tagged Fish.....	34
SUMMARY	40
LITERATURE CITED.....	41
APPENDICES.....	42

LIST OF TABLES

Table 1.	Hatchery Chinook salmon released into the Snake River system upriver from Lower Granite Dam contributing to the 2008 out-migration.....	10
Table 2.	Hatchery steelhead trout released into the Snake River system upriver from Lower Granite Dam contributing to the 2008 out-migration.....	12
Table 3.	Hatchery coho and sockeye salmon released into the Snake River system upstream from Lower Granite Dam contributing to the 2008 out-migration.	14

Table 4.	Historical catch of hatchery Chinook salmon (HC), wild Chinook salmon (WC), hatchery steelhead trout (HS), and wild steelhead trout (WS) collected at the Snake, Clearwater, and Salmon River traps for the out-migration years of 1998 through 2008.	17
Table 5.	Monthly Snake River discharge at Anatone, Washington, and 2008 comparison with previous three years. Comparison data is reported as 2008 discharge minus annual interval discharge.	20
Table 6.	Monthly Salmon River discharge at White Bird, Idaho, and 2008 comparison with previous three years. Comparison data is reported as 2008 discharge minus annual interval discharge.	23
Table 7.	Travel time, separated by species, run and rearing type, from the point of release to the Snake River trap, 2008.....	27
Table 8.	Travel time, separated by species, run and rearing type, from the point of release to the Salmon River trap, 2008.....	30
Table 9.	Migration rates (km/day) stratified by 5 kcfs intervals from the Snake River trap to Lower Granite Dam, 2008.....	35
Table 10.	Linear regression statistics for migration rate/discharge relations by species rearing type and trap using data stratifies by 5-kcfs intervals, 2008.	35
Table 11.	Migration rates (km/day) stratified by 5 kcfs intervals from the Salmon River trap to Lower Granite Dam, 2008.....	36
Table 12.	Interrogations of PIT-tagged fish from the Snake River trap, 1987-2008; Clearwater River trap, 1989-1995; and Salmon River trap 1993-2008, at downstream collection facilities.....	37

LIST OF FIGURES

Figure 1.	Map of study area.....	6
Figure 2.	Snake River trap daily catch of hatchery Chinook salmon and wild Chinook salmon overlaid by Snake River and Lower Granite discharge, 2008	18
Figure 3.	Snake River trap daily catch of hatchery steelhead trout and wild steelhead trout overlaid by Snake River and Lower Granite discharge, 2008.....	19
Figure 4.	Daily river water temperature and Secchi disk transparency at the Snake River trap, 2008.....	20
Figure 5.	Salmon River trap daily catch of hatchery Chinook salmon and wild Chinook salmon overlaid by Salmon River discharge, 2008.	21

Figure 6.	Salmon River trap daily catch of hatchery steelhead trout and wild steelhead trout overlaid by Salmon River discharge, 2008.....	22
Figure 7.	Daily river water temperature and Secchi disk transparency at the Salmon River trap, 2008.....	23

LIST OF APPENDICES

Appendix A. Table 1.	River mile and kilometer location for the Snake River drainage.....	43
Appendix B. Table 1.	PIT-tagged hatchery Chinook salmon travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam 2008.....	46
Appendix B. Table 2.	PIT-tagged wild Chinook salmon travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2008.....	47
Appendix B. Table 3.	PIT-tagged hatchery steelhead trout travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2008.....	48
Appendix B. Table 4.	PIT-tagged wild steelhead trout travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2008.....	49
Appendix B. Table 5.	PIT-tagged hatchery Chinook salmon travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2008.....	50
Appendix B. Table 6.	PIT-tagged wild Chinook salmon travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2008.....	51
Appendix B. Table 7.	PIT-tagged hatchery steelhead trout travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2008.....	53
Appendix B. Table 8.	PIT-tagged wild steelhead trout travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2008.....	54
Appendix C. Table 1.	PIT-tagged hatchery Chinook salmon interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Snake River Trap, 2008.....	55
Appendix C. Table 2.	PIT-tagged wild Chinook salmon interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Snake River Trap, 2008.....	60
Appendix C. Table 3.	PIT-tagged hatchery steelhead trout interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Snake River Trap, 2008.....	61

Appendix C. Table 4. PIT-tagged wild steelhead trout interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Snake River Trap, 2008.58

Appendix C. Table 5. PIT-tagged hatchery Chinook salmon interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Salmon River Trap,2008.....59

Appendix C. Table 6. PIT-tagged wild Chinook salmon interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Salmon River trap, 2008.64

Appendix C. Table 7. PIT-tagged hatchery steelhead trout interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Salmon River trap, 2008.....66

Appendix C. Table 8. PIT-tagged wild steelhead trout interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Salmon River trap, 2008638

ABSTRACT

This project monitored the daily passage of Chinook salmon *Oncorhynchus tshawytscha*, steelhead trout *O. mykiss*, and sockeye salmon *O. nerka* smolts during the 2008 spring out-migration at migrant traps on the Snake and Salmon rivers.

In 2008 fish management agencies released significant numbers of hatchery Chinook salmon and steelhead trout above Lower Granite Dam that were not marked with a fin clip or coded-wire tag. Generally, the age-1 and older hatchery fish were distinguishable from wild fish by the occurrence of fin erosion. Age-0 Chinook salmon are more difficult to distinguish between wild and non-adclipped hatchery fish and therefore are classified as unknown rearing.

The 2008 total annual hatchery spring/summer Chinook salmon catch at the Snake River trap was 1.9 times greater than in 2007 catch. The wild spring/summer Chinook catch was 4.3 times greater than the previous year's catch. Hatchery steelhead trout catch was 1.4 times greater than in 2007. Wild steelhead trout catch was 1.4 times greater than the previous year. The Snake River trap collected 119 age-0 Chinook salmon of unknown rearing. During 2008, the Snake River trap captured 84 hatchery and 27 unknown rearing sockeye salmon and 326 coho salmon *O. kisutch* of unknown rearing. Differences in trap catch between years are due to fluctuations not only in smolt production, but also differences in trap efficiency and duration of trap operation associated with flow. Trap operations began on March 10 and were terminated on May 19. The trap was operational for the entire season with no down days due to debris or high flow.

Hatchery Chinook salmon catch at the Salmon River trap was 1.3 times greater and wild Chinook salmon catch was 1.1 times greater than in 2007. The hatchery steelhead trout collection in 2008 was 1.9 times greater and wild steelhead trout collection was 0.9 times the previous year. Trap operations began on March 10 and were terminated on May 15 due to high flows. There were four days when the trap was taken out of service because of high flows and debris during this period.

Travel time (d) and migration rate (km/d) through Lower Granite Reservoir for PIT-tagged Chinook salmon and steelhead trout marked at the Snake and Salmon rivers' traps were affected by discharge. Statistical analysis of 2008 data detected a significant relationship between migration rate and discharge for hatchery and wild Chinook salmon. As Lower Granite discharge increased from 50 kcfs to 100 kcfs, there was a 2.5-fold and a 2.1-fold increase in migration rate for hatchery and wild Chinook salmon respectively, marked at the Snake River trap, and a 4.8-fold and 5.7-fold increase in migration rate for hatchery and wild Chinook salmon respectively, marked at the Salmon River trap.

Statistical analysis detected a significant relationship between migration rate and lower Granite Reservoir discharge for steelhead trout tagged at the Snake and Salmon rivers' traps. As Lower Granite discharge increased from 50 kcfs to 100 kcfs, there was a 1.8-fold and a 1.7-fold increase in migration rate for hatchery and wild steelhead trout respectively, marked at the Snake River trap, and there was a 2.8-fold and a 2.1-fold increase in migration rate for hatchery and wild steelhead trout respectively, marked at the Salmon River trap.

Fish tagged with passive integrated transponder (PIT) tags at the Snake River and Salmon River traps were interrogated by PIT tag detection systems at the four dams where smolt transportation is a management option (Lower Granite, Little Goose, Lower Monumental and McNary dams). Because of the addition of the fourth interrogation site (Lower Monumental) in 1993, the installation of a Removable Spillway Weir at Lower Granite Dam in 2001, two Top Spillway Weirs at McNary Dam in 2007, and a Removable Spillway Weir at Lower Monumental Dam in 2008; caution must be used in comparing cumulative interrogation data among years. Cumulative interrogation rates at the four dams for fish marked at the Snake River trap were 68% for hatchery Chinook, 71% for wild Chinook, 62% for hatchery steelhead, and 64% for wild steelhead. Cumulative interrogation rates at the four dams for fish marked at the Salmon River trap were 61% for hatchery Chinook, 69% for wild Chinook salmon, 59% for hatchery steelhead trout, and 59% for wild steelhead trout.

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INTRODUCTION

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 (P.L. 96-501) directed the Northwest Power Planning Council (NWPPC) to develop programs to mitigate for fish and wildlife losses on the Columbia River system resulting from hydroelectric projects. Section 4(h) of the Act explicitly gives the Bonneville Power Administration (BPA) the authority and responsibility to use its resources "to protect, mitigate, and enhance fish and wildlife to the extent affected by the development and operation of any hydroelectric project on the Columbia River system."

Development of the hydroelectric generation system in the Columbia River basin reduced water velocities and downstream migration rates of juvenile steelhead trout *Oncorhynchus mykiss* and Chinook salmon *O. tshawytscha*. In response to the fishery agencies and Indian tribe's recommendation for migration flows, in 1982 the NWPPC Columbia River Basin Fish and Wildlife Program established a "water budget" for augmenting spring flows. In 1992 Snake River spring/summer and fall Chinook salmon were listed as threatened under the federal Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 et seq.) The National Marine Fisheries Service (NMFS) developed a Biological Opinion (BiOp) for the Federal Columbia River Power System, which established flow measures for the Snake River, replacing the "water budget". In spring 2008, the Federal Columbia River Power System was operated according to the 2004 BiOp as modified by court order. The 2004 BiOp reasonable and prudent actions described in Sections 9.6.1 and 9.6.5.3.5.1 required monitoring and evaluation of the smolt out-migration. The NMFS established a Technical Management Team (TMT) to oversee implementation of BiOp measures. The TMT utilizes out-migration monitoring data provided by the Columbia Basin Smolt Monitoring Project (SMP) as a basis for recommending measures within the flexibility provided by the BiOp to increase smolt survival.

Smolt monitoring is a key component of BiOp implementation under all flow conditions and becomes critical when low flow conditions reduce migration rates. In years of low flow, knowledge of when most smolts have left tributaries and entered areas that can be affected by releases of stored water allows managers to make informed decisions regarding implementation of measures within the BiOp. Nine low-flow years (1987, 1988, 1990, 1991, 1992, 1994, 2001, 2004, and 2007) have occurred during this smolt-monitoring project. The indications are that judicious use of the available reservoir storage volume can greatly enhance the timing and migration rate of juvenile anadromous fish.

The Idaho Department of Fish and Game (IDFG) as part of SMP, monitors the daily passage of smolts at the head of Lower Granite Reservoir. The IDFG smolt monitoring project also collects other useful data on relative species composition, hatchery and wild ratios, travel time, and migration rate. By monitoring smolt passage at the head of Lower Granite Reservoir and Lower Granite Dam, migration rates (km/d) under various riverine and reservoir conditions can be estimated and compared. It is possible to determine the relative abundance of hatchery and wild stocks, which can be used to document wild stock status. The SMP'S information is complementary to and utilized by other Snake River and Columbia River research and management projects.

Information provided by this project is used for in-season management decisions relative to flow augmentation, facility power operations, fish collection and transportation programs, and spill operations in the Federal Columbia River Power System (FCRPS) to increase smolt survival. In addition, this project provides groups of PIT-tagged fish which are used to estimate

in-river smolt survival and smolt-to-adult return rates. Results of monitoring the 2008 smolt outmigration are reported here.

OBJECTIVES

1. Provide daily trap catch data at the head of Lower Granite Reservoir for TMT's use in implementing the NMFS Biological Opinion.
2. Provide an interrogation site for PIT-tagged smolts, marked by other projects, at the end of their migration in a riverine environment and the beginning of their migration in a reservoir environment.
3. Determine riverine travel time from the point of release to the smolt traps (index sites) at the upper end of Lower Granite Reservoir for PIT-tagged smolts.
4. Determine reservoir travel time from the head of lower Granite Reservoir to Lower Granite Dam using PIT-tagged smolts marked at the traps and PIT-tagged smolts passing the traps from upriver hatchery releases and rearing areas.
5. Determine cumulative interrogation rate at Lower Granite, Little Goose, Lower Monumental, and McNary dams during the spring out-migration period for PIT-tagged hatchery and wild spring/summer Chinook salmon, and hatchery and wild steelhead trout.
6. Correlate smolt migration rate with river flow for fish moving in riverine and reservoir environments.

METHODS

Releases of Hatchery-Produced Smolts

Anadromous hatchery release information was reported for hatchery smolts which contributed to the 2008 out-migration in the Snake River drainage upstream of Lower Granite Dam. This information included species, number released, date, release location, number PIT tagged, and hatchery of origin. Not all hatchery produced fish were fin clipped in 2008.

Smolt Monitoring Traps

During the 2008 out-migration, two smolt-monitoring traps were operated to monitor the passage of juvenile Chinook salmon and steelhead trout. A dipper trap (Mason 1966) was located on the Snake River near Lewiston, Idaho. A scoop trap (Raymond and Collins 1974) was located on the Salmon River, near Slate Creek, Idaho (Figure 1). Weekly PIT tag quotas for hatchery and wild Chinook salmon were 600 each. Weekly PIT tag quotas for hatchery and wild steelhead trout were 600 and 200, respectively. Smolts were captured, examined, and enumerated daily at the traps and released back into the river. Fork lengths for each species, run, and rearing-type were measured daily to the nearest millimeter for PIT-tagged fish. Up to

2,000 fish were examined daily for brands or marks at the Snake River trap. Fish were not examined for brands at the Salmon River trap. Smolts were anesthetized with tricaine methanesulfonate (MS-222) before handling and allowed to recover before being returned to the river.

In 2008, the Fish Passage Center requested this SMP to assist the Comparative Survival Study by PIT tagging all wild Chinook in excess of SMP needs. To comply with this request, sampling regimes and PIT tag quotas were adjusted at this project's collection sites. Sampling periods were expanded from the normal five day a week sample period to seven days a week. Funding and PIT tags were made available from the Comparative Survival Study for this task. Tag quotas for wild Chinook were increased at the Snake River trap by 2,000 and by 5,000 at the Salmon River trap. The Clearwater River Trap was operated to increase CSS wild numbers and tag quotas of 3,250 wild Chinook and 1,400 wild steelhead were established at that trap.

Water temperature (°C) and turbidity (m) were recorded daily at each trap using a centigrade thermometer and 20 cm Secchi disk. Snake River discharge was measured at the U.S. Geological Survey (USGS) Anatone gauge (#13334300), 44.4 km upstream from the Snake River trap. Salmon River discharge was measured at the USGS White Bird gauge (#13317000), 16.6 km downstream from the Salmon River trap.

Snake River Trap

The Snake River trap was positioned approximately 40 m downstream from the Interstate Bridge between Lewiston, Idaho and Clarkston, Washington. The trap was attached to bridge piers just east of the drawbridge span by steel cables. This location is at the head of Lower Granite Reservoir, 0.5 km upstream from the convergence of the Snake and Clearwater arms. River width and depth at this location are approximately 260 m and 12 m, respectively.

Chinook salmon and steelhead trout smolts were PIT-tagged at the Snake River trap to estimate travel time from the head of Lower Granite Reservoir to Lower Granite Dam. Median travel time of the daily PIT-tagged release groups was converted to migration rate. Migration rate was correlated with the mean Lower Granite Reservoir discharge to determine how changes in discharge affected smolt migration rate through Lower Granite Reservoir.

Snake River trap operations began on March 10 and continued through May 19, when operations were terminated due to high flow. The Snake River trap was in operation for this entire time period during the 2008 season. All fish captured in the Snake River trap were passively interrogated for PIT tags as they entered the live well. Interrogation and tagging information was sent daily to the PTAGIS Data Center (managed by Pacific States Marine Fisheries Commission).

The PIT tag interrogation system on the Snake River trap consists of an 8-inch PVC pipe with two interrogation coils (D-4 and D-6). Each coil is connected to a Destron Fearing FS2001 transceiver. Exact date and time of capture are recorded for each PIT-tagged fish. Coil efficiency tests were conducted on the dipper trap interrogation system. Test tags were sent through the system. Reader efficiency ranged between 90% and 100% for both coils combined.

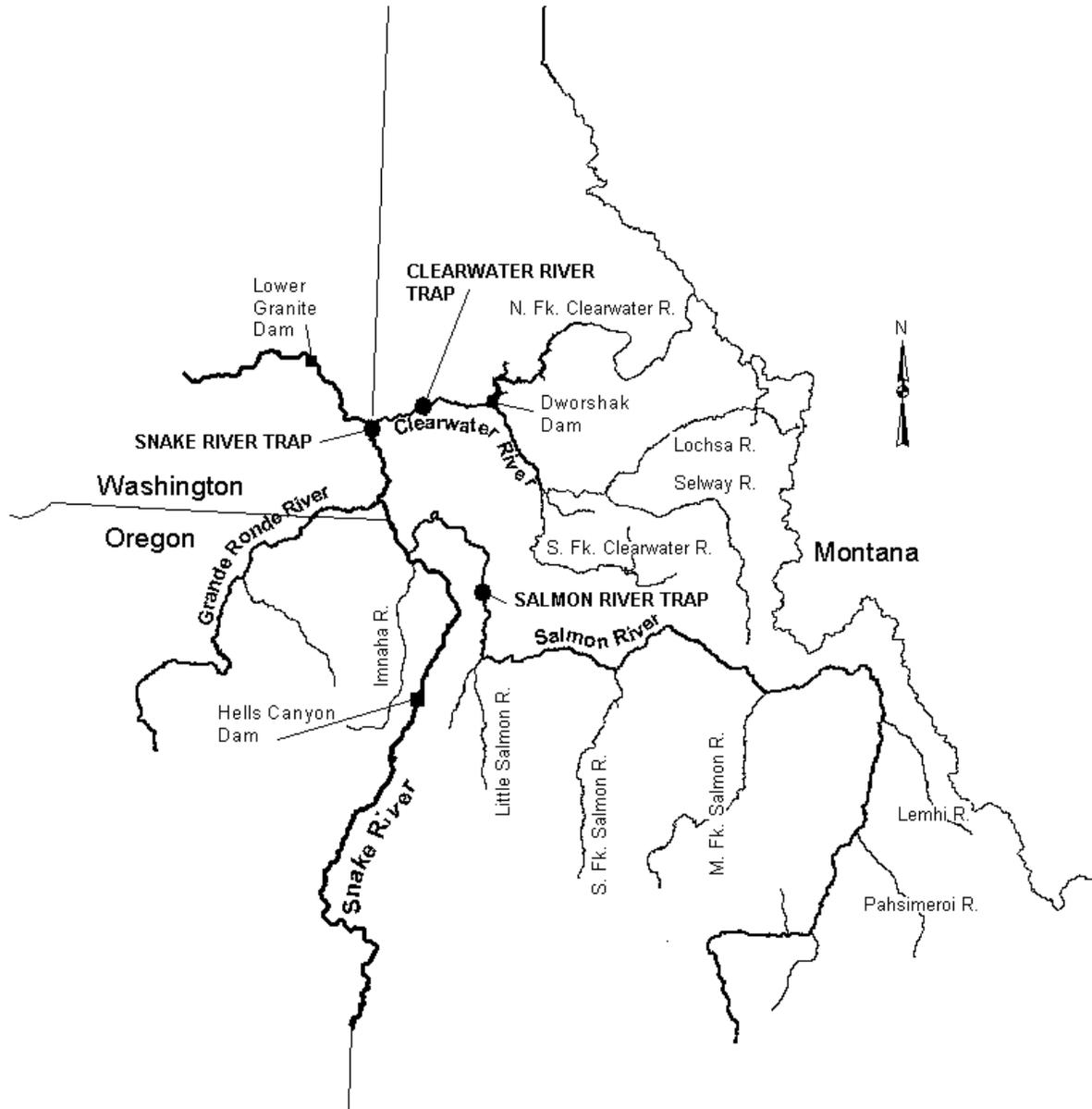


Figure 1. Map of study area.

Salmon River Trap

The Salmon River trap was located at rkm 103, approximately 17 km upstream from the previous trapping location and 1.6 km downstream from Slate Creek. The scoop trap was operated immediately downstream of the upper U.S. Highway 95 bridge at Twin Bridges. This location was chosen to allow the trap to be operated through a wider range of discharge. River width at this location is approximately 90 m and varies with discharge.

Chinook salmon and steelhead trout juveniles were tagged with PIT tags at the Salmon River trap to estimate smolt travel time from the lower portion of the Salmon River to Lower Granite Dam. Median travel time for the daily PIT-tagged release groups was converted to migration rate. Migration rate was correlated with mean Lower Granite Reservoir discharge to determine how changes in discharge affected smolt migration rate through the Lower Salmon River and Lower Granite Reservoir.

Trap operations began on March 10 and continued through May 15 when operations were terminated for the season due to high flow. The Salmon River trap was out of operation for four days during the 2008 season due to high flows and debris. All fish were interrogated for PIT tags as they were removed from the live well. The tagging and interrogation files were sent to the PTAGIS Data Center daily.

The Salmon River trap PIT tag interrogation system consists of a 4-inch PVC pipe with two loop antennas attached to two PIT tag readers (D-8). Coil efficiency tests were conducted on the Salmon River trap interrogation system in 2008. Reader efficiency was calculated at 100% efficiency for both readers combined.

Trap Efficiency

Trap efficiency is the proportion of the migration run that is sampled. Since trap efficiency may change as river discharge changes, efficiency has been estimated several times through the range of discharge at which the trap was operated. A linear regression equation (Ott 1977) describing the relationship of trap efficiency and discharge was derived to estimate efficiency at any given discharge. Trap efficiencies are no longer calculated for either of the smolt traps due to extremely large confidence intervals (C.I. = 50-100% of the mean). Previous trap efficiency estimates are reported in Buettner (1991).

Travel Time and Migration Rates

Migration statistics were calculated for hatchery release groups from release sites to traps. Travel time and migration rates to the traps were calculated using median arrival times at the Snake and Salmon River traps. Median arrival (or passage) date is the date the 50th percentile fish arrived at the trap or collection facility. Smolts were PIT-tagged at the Snake River trap to determine travel time from the head of Lower Granite Reservoir to Lower Granite Dam. Smolts were PIT-tagged at the Salmon River trap to determine travel time in a free-flowing section of river plus Lower Granite Reservoir. Distances from selected release points to recovery locations are listed in Appendix A, Table 1. Individual arrival times at the Lower Granite collection facility were determined for each release group. A minimum recapture number, sufficient for use in travel time and migration rate estimates, was derived from an empirical distribution function of the travel time for each individual release group (Steinhorst et al. 1988). If recapture numbers were less than six, or less than the number derived from the empirical distribution function, the data were not used.

Smolt migration rate/discharge relations through Lower Granite Reservoir were investigated using linear regression analysis on natural logarithmic transformed values (Zar 1984) after both variables were stratified into 5 kcfs discharge intervals (Mosteller and Tukey 1977). A P-value ≤ 0.05 was used to determine significance. This analysis was performed for the PIT-tagged hatchery Chinook salmon, wild Chinook salmon, hatchery steelhead trout, and wild steelhead trout groups marked at the Snake and Salmon River traps.

Interrogation Rates of PIT-Tagged Fish

Interrogation rates of PIT-tagged fish marked at the head of Lower Granite Reservoir to Lower Granite Dam, Little Goose Dam, Lower Monument Dam, and McNary Dam collection facilities included data from 1988 to 2008 for the Snake River trap, 1989 to 1995 for the Clearwater River trap, and 1994 to 2008 for the Salmon River trap. The data have been examined to ensure that multiple interrogations within a dam and between dams have been removed. Interrogation rates for daily release groups are calculated using release groups with greater than five interrogations at Lower Granite Dam.

RESULTS AND DISCUSSION

Hatchery Releases

Chinook Salmon

Spring Chinook salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at six locations in Idaho and one in Oregon (Table 1). An estimated 6,250,909 age-1 spring Chinook salmon smolts were released at eleven locations in Idaho and 1,463,416 were released at six locations in Oregon during 2008.

Summer Chinook salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at two locations in Idaho (Table 1). An estimated 2,186,397 summer Chinook salmon were released at three locations in Idaho during 2008.

Fall Chinook salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at two locations in Idaho, two locations in Oregon, and one location in Washington (Table 1). An estimated 451,870 age-1 fall Chinook salmon were released at two locations in Idaho and one in Washington. An estimated 4,117,657 age-0 fall Chinook were released from six locations in Idaho, two in Oregon, and two locations in Washington during 2008.

Steelhead Trout

Steelhead trout released into the Snake River drainage upstream of Lower Granite Dam were reared at five locations in Idaho, one in Oregon, and one in Washington (Table 2). An estimated 7,234,612 steelhead trout smolts were released at 21 locations in Idaho, and 1,616,083 were released at five locations in Oregon during 2008. An estimated 175,961 steelhead trout smolts were released at one location in Washington during 2008. Fall releases of steelhead trout were not included in this report.

Coho and Sockeye Salmon

Hatchery coho salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at one location in Idaho and two locations in Oregon (Table 3). An

estimated 938,483 coho smolts were released at two locations in Idaho during 2008. Summer and fall releases of coho salmon have not been included in this report.

Hatchery sockeye salmon that contributed to the 2008 out-migration were reared at one location in Idaho and two locations in Oregon (Table 3). An estimated 82,105 sockeye salmon were released at three locations during October 2007 and 150,395 sockeye salmon were released at two locations during 2008.

Table 1. Hatchery Chinook salmon released into the Snake River system upriver from Lower Granite Dam contributing to the 2008 out-migration.

Drainage/Release Site	Hatchery	Run	Agency	Release Start	Release End	Number Released	PIT-tagged	
<u>Clearwater River</u>								
Powell Acc. Pond	Clearwater Hatchery	SP1+	IDFG	03/19/08	03/28/08	223,714	33,901	
Red R.	Clearwater Hatchery	SP1+	IDFG	03/26/08	03/28/08	424,725	11,974	
Crooked R. Acc. Pond	Clearwater Hatchery	SP1+	IDFG	03/26/08	03/26/08	141,732	955	
Crooked R.	Clearwater Hatchery	SP1+	IDFG	03/26/08	03/27/08	566,764	11,976	
Meadow Cr.	Clearwater Hatchery	SP1+	NEZP	04/02/08	04/03/08	309,380	8,500	
Dworshak Hatchery	Dworshak NFH	SP1+	USFW	04/02/08	04/04/08	939,000	218,000	
Kooskia Hatchery	Kooskia NFH	SP1+	NEZP	04/07/08	04/07/08	649,601	9,900	
Nez Perce Tribal Hatchery	Nez Perce Tribal Hatchery	SP1+	NEZP	04/08/08	04/17/08	126,317	1,087	
						Drainage Total	3,381,233	296,293
Lapwai Cr.	Nez Perce Tribal Hatchery	FA0+	NEZP	05/15/08	05/15/08	168,623	3,059	
Big Canyon	Lyons Ferry Hatchery	FA0+	NEZP	05/26/08	05/26/08	520,035	39,257	
Nez Perce Tribal Hatchery	Nez Perce Tribal Hatchery	FA0+	NEZP	06/10/08	06/15/08	495,937	3,986	
Lukes Gulch Acc. Pond	Nez Perce Tribal Hatchery	FA0+	NEZP	06/12/08	06/12/08	100,368	8,332	
Cedar Flats Acc. Pond	Nez Perce Tribal Hatchery	FA0+	NEZP	06/12/08	06/12/08	100,294	8,375	
Big Canyon	Lyons Ferry Hatchery	FA0+	NMFS	06/23/08	07/11/08	117,362	110,254	
						Drainage Total	1,502,619	173,263
Big Canyon	Lyons Ferry Hatchery	FA1+	NEZP	04/15/08	04/15/08	147,832	18,819	
						Drainage Total	147,832	18,819
<u>Salmon River</u>								
Rapid R. Hatchery	Rapid R. Hatchery	SP1+	IDFG	03/18/08	04/25/08	2,493,719	117,620	
Pinehurst Bridge	Rapid R. Hatchery	SP1+	IDFG	03/21/08	03/21/08	201,825		
Salmon R.	Sawtooth Hatchery	SP1+	IDFG	04/24/08	04/25/08	174,132		
						Drainage Total	2,869,676	117,620
Johnson Cr.	McCall Hatchery	SU1+	NEZP	03/10/08	03/12/08	88,085	11,957	
South Fk. Salmon R.	McCall Hatchery	SU1+	IDFG	03/17/08	03/20/08	1,060,540	51,678	

Table 1. Continued.

Drainage/Release Site	Hatchery	Run	Agency	Release Start	Release End	Number Released	PIT-tagged
Pahsimeroi R.	Pahsimeroi Hatchery	SU1+	IDFG	03/31/08	04/18/08	1,037,772	14,761
					Drainage Total	2,186,397	78,396
<u>Snake River</u>							
Grande Ronde Acc. Pond	Lookingglass Hatchery	SP1+	UMTR	03/17/08	03/24/08	127,491	1,020
Hells Canyon Dam	Rapid R. Hatchery	SP1+	IDFG	03/17/08	03/20/08	488,910	
Lostine Acc. Pond	Lookingglass Hatchery	SP1+	NEZP	03/19/08	04/01/08	74,694	2,000
Catherine Cr. Acc. Pond	Lookingglass Hatchery	SP1+	UMTR	03/24/08	04/14/08	116,882	20,922
Imnaha Acc. Pond	Lookingglass Hatchery	SP1+	ODFW	03/25/08	04/06/08	348,910	20,237
Lookingglass Cr.	Lookingglass Hatchery	SP1+	ODFW	04/01/08	04/01/08	43,218	2,074
Grande Ronde Acc. Pond	Lookingglass Hatchery	SP1+	UMTR	04/07/08	04/14/08	132,441	927
Lostine Acc. Pond	Lookingglass Hatchery	SP1+	NEZP	04/10/08	04/17/08	130,870	2,000
					Drainage Total	1,463,416	49,180
Hells Canyon Dam	Oxbow-Idaho	FA0+	IDFG	05/06/08	05/06/08	192,471	15,472
Couse Cr.	Lyons Ferry Hatchery	FA0+	NMFS	05/19/08	06/05/08	202,369	201,847
Hells Canyon Dam	Umatilla Hatchery	FA0+	ODFW	05/20/08	05/21/08	770,350	62,405
Pittsburg Landing Acc. Pond	Lyons Ferry Hatchery	FA0+	NEZP	05/27/08	05/27/08	403,432	31,834
Captain John Acc. Pond	Lyons Ferry Hatchery	FA0+	NEZP	05/28/08	05/28/08	512,745	39,152
Couse Cr.	Lyons Ferry Hatchery	FA0+	WDFW	05/28/08	05/28/08	230,401	
Grande Ronde R.	Irrigon Hatchery Complex	FA0+	ODFW	05/29/08	05/29/08	108,960	9,968
Grande Ronde R.	Irrigon Hatchery Complex	FA0+	ODFW	05/29/08	05/29/08	194,310	15,949
					Drainage Total	2,615,038	376,627
Pittsburg Landing Acc. Pond	Lyons Ferry Hatchery	FA1+	NEZP	04/14/08	04/14/08	150,357	18,502
Captain John Acc. Pond	Lyons Ferry Hatchery	FA1+	NEZP	04/14/08	04/14/08	153,681	18,921
					Drainage Total	304,038	37,423

Table 2. Hatchery steelhead trout released into the Snake River system upriver from Lower Granite Dam contributing to the 2008 out-migration.

<u>Drainage/Release Site</u>	<u>Hatchery</u>	<u>Stock</u>	<u>Agency</u>	<u>Release Start</u>	<u>Release End</u>	<u>Number Released</u>	<u>PIT-tagged</u>
<u>Clearwater River</u>							
Crooked R.	Clearwater Hatchery	B	NEZP	04/09/08	04/11/08	72,112	2,596
Crooked R.	Clearwater Hatchery	B	IDFG	04/09/08	04/11/08	144,557	3,285
Red R.	Clearwater Hatchery	B	NEZP	04/10/08	04/11/08	163,580	2,890
Red R.	Clearwater Hatchery	B	IDFG	04/11/08	04/14/08	82,930	2,785
Clear Cr.	Dworshak NFH	B	USFW	04/14/08	04/24/08	319,489	4,424
Redhouse	Dworshak NFH	B	USFW	04/14/08	04/24/08	407,116	5,894
Newsome Cr.	Dworshak NFH	B	NEZP	04/14/08	04/24/08	111,694	
American R.	Dworshak NFH	B	NEZP	04/14/08	04/24/08	117,260	
Redhouse	Clearwater Hatchery	B	IDFG	04/15/08	04/16/08	247,619	5,679
Dworshak Hatchery	Dworshak NFH	B	USFW	04/17/08	04/21/08	1,298,848	19,182
Meadow Cr.	Clearwater Hatchery	B	NEZP	04/18/08	04/18/08	31,429	897
Mill Cr Bridge	Clearwater Hatchery	B	NEZP	04/18/08	04/18/08	31,429	899
Lolo Cr.	Clearwater Hatchery	B	NEZP	04/21/08	04/21/08	45,608	995
Drainage Total						3,073,671	49,526
<u>Salmon River</u>							
Little Salmon R.	Hagerman NFH	A	NEZP	03/31/08	04/25/08	161,236	4,279
Little Salmon R.	Niagara Springs	A	IDFG	04/02/08	04/09/08	272,907	298
Little Salmon R.	Niagara Springs	A	IDFG	04/02/08	04/24/08	48,700	301
Little Salmon R.	Hagerman NFH	B	USFW	04/07/08	04/25/08	92,103	6,150
Little Salmon R.	Magic Valley Hatchery	B	IDFG	04/07/08	04/10/08	217,185	4,698
Little Salmon R.	Hagerman NFH	A	NEZP	04/10/08	04/10/08	44,310	1,489
Salmon R.	Magic Valley Hatchery	A	IDFG	04/10/08	04/11/08	121,414	1,396
Pahsimeroi R.	Niagara Springs	A	IDFG	04/10/08	04/29/08	830,894	295
Pahsimeroi R.	Magic Valley Hatchery	A	IDFG	04/14/08	04/27/08	30,733	599
Shoup Bridge	Magic Valley Hatchery	A	IDFG	04/14/08	04/15/08	91,090	1,398
Squaw Cr. Acc. Pond	Magic Valley Hatchery	B	IDFG	04/15/08	04/15/08	62,910	1,493
Salmon R.	Magic Valley Hatchery	A	IDFG	04/15/08	04/16/08	129,156	1,196
Salmon R.	Hagerman NFH	A	USFW	04/16/08	05/07/08	767,523	9,917

Table 2. Continued.

Drainage/Release Site	Hatchery	Stock	Agency	Release Start	Release End	Number Released	PIT-tagged
McNabb	Magic Valley Hatchery	A	IDFG	04/17/08	04/18/08	115,523	1,398
East Fk. Salmon R.	Magic Valley Hatchery	B	IDFG	04/18/08	04/22/08	226,648	4,275
Salmon R.	Magic Valley Hatchery	A	IDFG	04/18/08	04/23/08	70,667	1,297
Slate Cr.	Magic Valley Hatchery	B	IDFG	04/22/08	04/22/08	31,975	593
Squaw Cr.	Magic Valley Hatchery	B	IDFG	04/23/08	04/25/08	183,586	4,777
Squaw Cr.	Magic Valley Hatchery	B	IDFG	04/24/08	04/24/08	62,315	6,161
East Fk. Salmon R.	Magic Valley Hatchery	B	IDFG	04/25/08	04/28/08	63,020	1,299
Valley Cr.	Magic Valley Hatchery	A	IDFG	04/29/08	04/29/08	62,485	996
Yankee Fk.	Magic Valley Hatchery	A	IDFG	04/30/08	04/30/08	30,695	695
Yankee Fk.	Magic Valley Hatchery	A	IDFG	04/30/08	04/30/08	61,431	896
Slate Cr.	Magic Valley Hatchery	B	IDFG	05/01/08	05/01/08	60,084	1,287
East Fk. Salmon R.	Hagerman NFH	B	USFW	05/08/08	05/09/08	86,931	5,190
Yankee Fk.	Hagerman NFH	A	USFW	05/12/08	05/16/08	100,879	983
Yankee Fk.	Hagerman NFH	A	USFW	05/12/08	05/16/08	134,541	1,490
Drainage Total						4,160,941	64,846
<u>Snake River</u>							
Hells Canyon Dam	Niagara Springs	A	IDFG	03/24/08	04/02/08	537,371	300
Little Sheep Acc. Pond	Irrigon Hatchery Complex	A	ODFW	04/01/08	04/01/08	171,545	
Wallowa Acc. Pond	Irrigon Hatchery Complex	A	ODFW	04/06/08	04/07/08	364,070	
Cottonwood Acc. Pond	Lyons Ferry Hatchery	A	WDFW	04/08/08	04/30/08	175,961	
Big Sheep Cr.	Irrigon Hatchery Complex	A	ODFW	04/09/08	04/14/08	103,320	
Big Canyon Acc. Pond	Irrigon Hatchery Complex	A	ODFW	04/09/08	04/10/08	160,571	
Wallowa Acc. Pond	Irrigon Hatchery Complex	A	ODFW	04/26/08	04/26/08	121,437	
Big Canyon Acc. Pond	Irrigon Hatchery Complex	A	ODFW	04/29/08	04/30/08	157,769	
Drainage Total						1,792,044	300

Table 3. Hatchery coho and sockeye salmon released into the Snake River system upstream from Lower Granite Dam contributing to the 2008 out-migration.

Species	Drainage/Release Site	Hatchery	Agency	Release Start	Release End	Number Released	PIT-tagged
<u>Clearwater River</u>							
Coho	Clear Cr.	Eagle Cr. NFH	NEZP	03/05/08	03/05/08	286,744	
	Lapwai Cr.	Eagle Cr. NFH	NEZP	03/07/08	03/07/08	285,249	
	Clear Cr.	Cascade Hatchery	NEZP	04/08/08	04/08/08	74,696	
	Clear Cr.	Dworshak NFH	NEZP	04/08/08	04/08/08	291,794	
Drainage Total						938,483	
<u>Salmon River</u>							
Sockeye	Pettit Lake	Eagle Hatchery	IDFG	10/02/07	10/02/07	10,113	993
	Alturas Lake	Eagle Hatchery	IDFG	10/03/07	10/03/07	9,977	1005
	Redfish Lake	Eagle Hatchery	IDFG	10/03/07	10/03/07	62,015	998
	Salmon R.	Oxbow-Oregon	IDFG	05/07/08	05/07/08	76,587	998
	Redfish Lake Cr.	Sawtooth Hatchery	IDFG	05/07/08	05/07/08	73,808	979
Drainage Total						232,500	4,973

Smolt Monitoring Traps

Snake River Trap Operation

The Snake River trap captured 11,749 hatchery and 1,883 wild age-1 Chinook salmon, 119 age-0 Chinook salmon of unknown rearing, 9,246 hatchery and 1,472 wild steelhead trout, 84 hatchery and 27 unknown rearing sockeye salmon, and 326 coho salmon of unknown rearing in 2008 (Table 4).

Hatchery Chinook salmon first arrived at the trap on March 22 (five fish). Significant numbers of fish were not trapped until April 15 (225 fish). The daily catch fluctuated between zero and 2,801 fish per day (Figure 2). Less than one percent (39) of the total season catch was collected in March, 11.5% (1,346) in April, and 88.2% (10,364) in May.

Wild Chinook salmon first arrived at the trap on April 1 (one fish). Significant numbers of fish were not trapped until May 8 (120 fish). The daily catch fluctuated between zero and 441 fish per day (Figure 2). Under eight percent (143) of the total season catch was collected in April, and 92.4% (1,740) in May.

Physical characteristics, fish length and/or size of the pupil. were used to differentiate between age-0 Chinook salmon and older salmon. This year, 119 age-0 Chinook salmon were captured. Ten percent (12) of the total season catch was collected in March, 21.8% (26) in April, and 68% (81) in May.

Hatchery steelhead trout first arrived at the trap on March 29 (nine fish). Significant numbers of fish were not trapped until April 15 (139 fish). The daily catch fluctuated between zero and 1,079 fish per day (Figure 3). Less than one percent (19) of the total season catch was collected in March, 28.3% (2620) in April, and 71.5% (6,607) in May.

Wild steelhead trout first arrived at the trap on March 10 (one fish). Significant numbers of fish were not trapped until May 9 (131 fish). The daily catch fluctuated between zero and 185 fish per day (Figure 3). Less than one percent (8) of the total season catch was collected in March, 23.6% (348) in April, and 75.8% (1,116) in May.

Hatchery sockeye salmon first arrived at the trap on May 12 (14 fish). The daily catch fluctuated between zero and 25 fish per day. One hundred percent (84 fish) of the total season catch was collected in May.

Sockeye salmon of unknown origin first arrived at the trap on April 13 (1 fish). The daily trap catch fluctuated between zero and 17 fish per day. Eleven percent (3) of the total season catch was collected in April, and 88.9% (24) in May.

Coho salmon of unknown rearing first arrived at the trap on March 20 (1 fish). The daily trap catch fluctuated between zero and 67 fish per day. Less than one percent (2) of the total season catch was collected in March, 8.3% (27) in April, and 91.1% (297) in May.

During trap operations, Snake River discharge measured at the Anatone gauge ranged between 19.6 kcfs and 131.2 kcfs (Table 5). Water temperature at the Snake River trap ranged between 6.0°C and 12.4°C (Figure 4). Secchi disk transparency at the Snake River trap ranged between 0.1 m and 1.6 m (Figure 4).

Salmon River Trap Operations

The Salmon River scoop trap captured 49,975 hatchery and 6,061 wild age-1 Chinook salmon, 4,172 hatchery and 392 wild steelhead trout, 37 hatchery sockeye salmon, and no sockeye salmon of unknown rearing in 2008 (Table 4).

Hatchery Chinook salmon first appeared on March 15 (1 fish). Significant numbers of fish were not trapped until March 20 (444). The daily catch fluctuated between zero and 3,132 fish per day (Figure 5). Twenty nine percent (14,272) of the season total was captured in March, 59.6% (29,789) in April, and 11.8% (5914) in May.

Wild Chinook salmon first appeared on March 10 (1 fish). Significant numbers of fish were not trapped until March 29 (103 fish). The daily catch fluctuated between zero and 1,051 fish per day (Figure 5). Twelve percent (729) of the season total was captured in March, 79% (4,793) in April, and 8.9% (539) in May.

Hatchery steelhead trout first appeared at the trap on April 3 (18 fish). Significant numbers of fish were not trapped until April 10 (156 fish). The daily catch fluctuated between zero and 712 fish per day (Figure 6). Fifty percent (2,104) of the season total was captured in April, and 49.6% (2,068) in May.

Wild steelhead trout first appeared on March 10 (one fish). The daily trap catch remained below 100 fish throughout the trapping season. Daily catch fluctuated between zero and 37 fish per day (Figure 6). Less than one percent (2) of the season total was captured in March, 53.6% (210) in April, and 45.9% (180) in May.

Hatchery sockeye salmon first appeared at the trap on May 13 (25 fish). The daily catch fluctuated between zero and 25 fish per day. All of the hatchery sockeye were captured in May.

Sockeye salmon of unknown rearing were not captured by the trap this year.

During trap operations, Salmon River discharge measured at the White Bird gauge ranged between 4.3 kcfs and 90.2 kcfs (Table 6). Water temperature at the Salmon River trap ranged between 5.1°C to 10.8°C (Figure 7). Secchi disk transparency at the Salmon River trap ranged between 0.3 m and 3.1 m (Figure 7).

The trap was operated at a position approximately 10 meters from the north shoreline from March 4 through April 30. The trap was moved to 30 meters from the north shoreline on May 1 due to debris and then returned to 10 meters until May 5. On May 6 the trap was moved to 30 meters and fished for two days. On May 8 the trap was moved to 35 meters. The trap was pulled after fishing on May 8 due to high flows and debris. The trap was launched on May 13 at 30 meters and was fished through May 15. Trapping was suspended for the season on May 15 due to high flows.

Table 4. Historical catch of hatchery Chinook salmon (HC), wild Chinook salmon (WC), hatchery steelhead trout (HS), and wild steelhead trout (WS) collected at the Snake, Clearwater, and Salmon River traps for the out-migration years of 1998 through 2008.

Year	Species / Run	Snake River Trap	Clearwater River Trap	Salmon River Trap
2008	HC	11,749	34,085	49,975
	WC	1,883	607	6,061
	HS	9,246	10,681	4,172
	WS	1,472	787	392
2007	HC	6,111	58,273	38,114
	WC	443	692	5,377
	HS	6,758	17,936	3,308
	WS	1,033	1,090	426
2006	HC	16,230	10,641	24,322
	WC	2,764	514	6,575
	HS	2,555	3	1,632
	WS	513	24	338
2005	HC	1,307	16,388	34,107
	WC	501	2,016	9,534
	HS	5,846	11,341	3,440
	WS	1,416	1,456	314
2004	HC	3,849	29,694	32,038
	WC	1,473	1,290	7,567
	HS	8,698	7,930	2,480
	WS	1,972	1,035	248
2003	HC	3,395	21,342	35,897
	WC	1,386	1,005	9,339
	HS	7,319	9,257	3,101
	WS	1,252	464	319
2002	HC	7,252	4,985	43,168
	WC	1,458	627	5,548
	HS	12,578	5,652	3,284
	WS	2,591	524	395
2001	HC	636	No Data	10,388
	WC	94		2,274
	HS	4,300		4,079
	WS	926		488
2000	HC	5,566	No Data	22,175
	WC	2,214		3,373
	HS	8,777		2,290
	WS	1,364		336
1999	HC	15,327	No Data	23,180
	WC	6,411		5,079
	HS	7,271		2,554
	WS	1,050		228
1998	HC	3,487	No Data	10,852
	WC	1,063		1,459
	HS	8,001		1,218
	WS	1,116		112

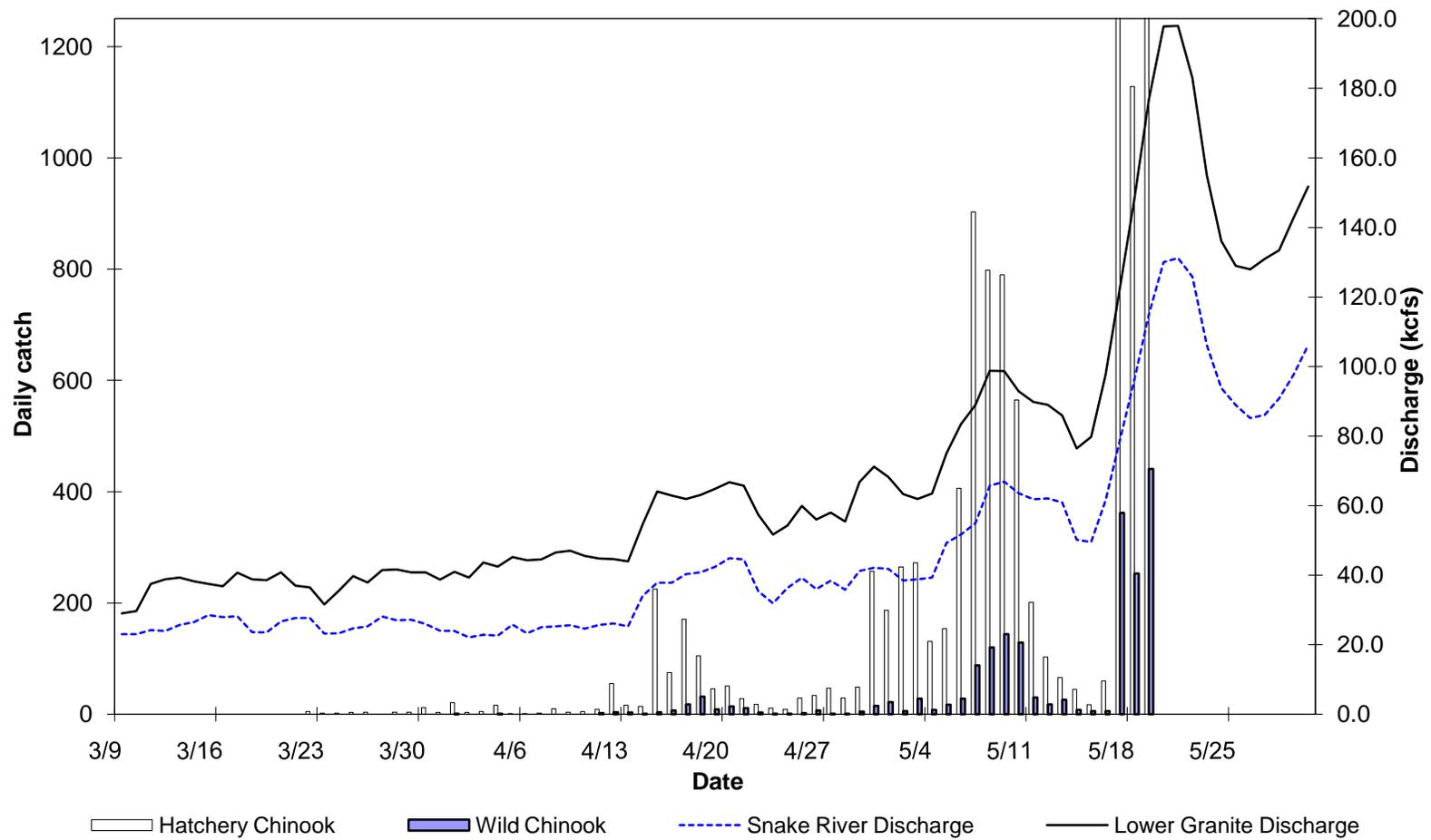


Figure 2. Snake River trap daily catch of hatchery Chinook salmon and wild Chinook salmon overlaid by Snake River and Lower Granite discharge, 2008.

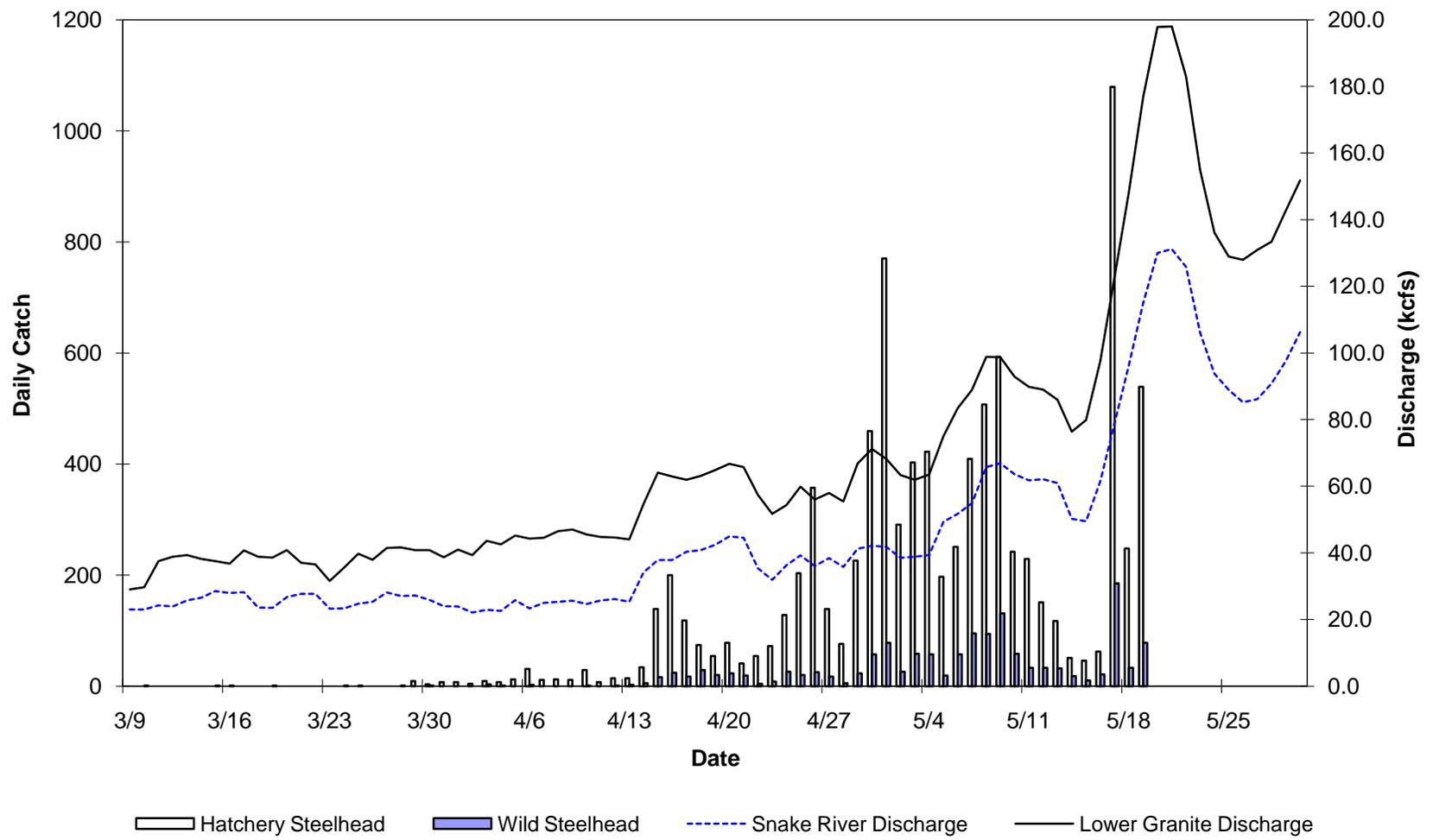


Figure 3. Snake River trap daily catch of hatchery steelhead trout and wild steelhead trout overlaid by Snake River and Lower Granite discharge, 2008.

Table 5. Monthly Snake River discharge at Anatone, Washington, and 2008 comparison with previous three years. Comparison data is reported as 2008 discharge minus annual interval discharge.

Snake River		2008	2005	2008 Comparison	2006	2008 Comparison	2007	2008 Comparison
		Discharge (cfs)	Discharge (cfs)	(kcfs)	Discharge (cfs)	(kcfs)	Discharge (cfs)	(kcfs)
March	Min	19,583	13,609	6.0	32,501	-12.9	18,973	0.6
	Max	28,454	32,910	-4.5	51,481	-23.0	37,657	-9.2
	Average	25,231	18,174	7.1	42,934	-17.7	28,759	-3.5
April	Min	22,115	21,688	0.4	52,297	-30.2	22,221	-0.1
	Max	44,897	36,842	8.1	112,137	-67.2	37,542	7.4
	Average	32,561	26,282	6.3	92,658	-60.1	27,045	5.5
May	Min	38,516	29,332	9.2	77,486	-39.0	34,060	4.5
	Max	131,177	98,915	32.3	143,402	-12.2	60,183	71.0
	Average	77,256	60,560	16.7	103,770	-26.5	48,136	29.1
June	Min	59,966	30,450	29.5	35,744	24.2	19,815	40.2
	Max	105,614	66,950	38.7	93,179	12.4	40,234	65.4
	Average	78,201	40,896	37.3	65,836	12.4	29,322	48.9

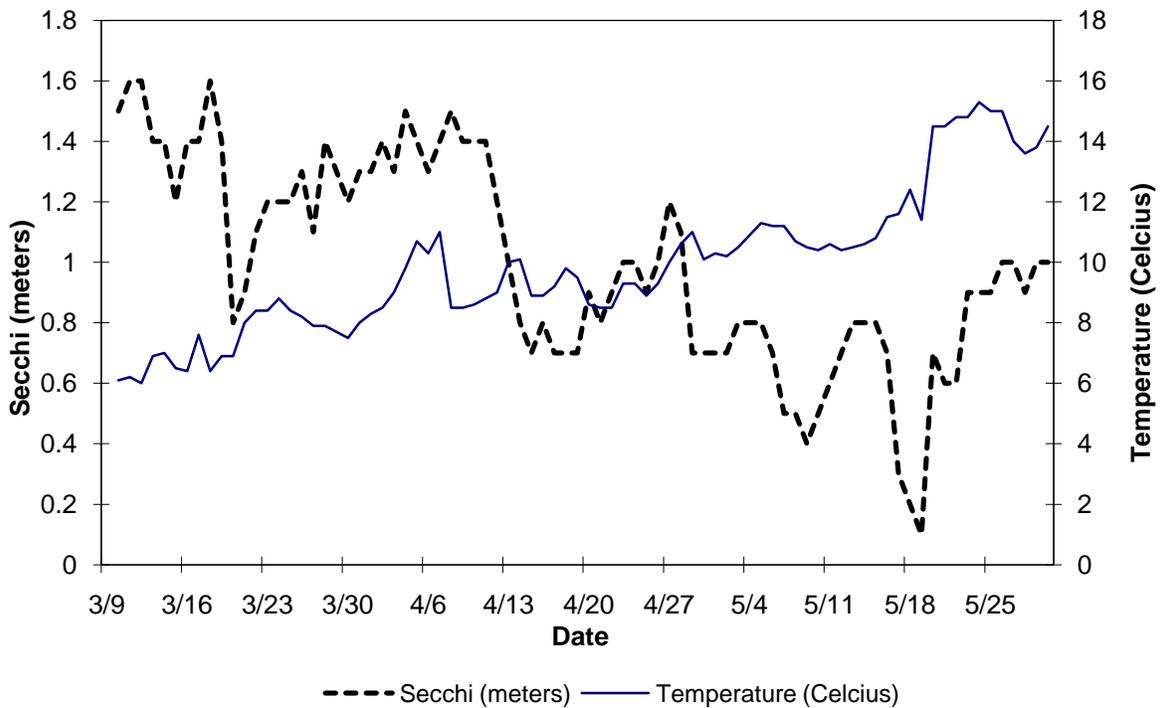


Figure 4. Daily river water temperature and Secchi disk transparency at the Snake River trap, 2008.

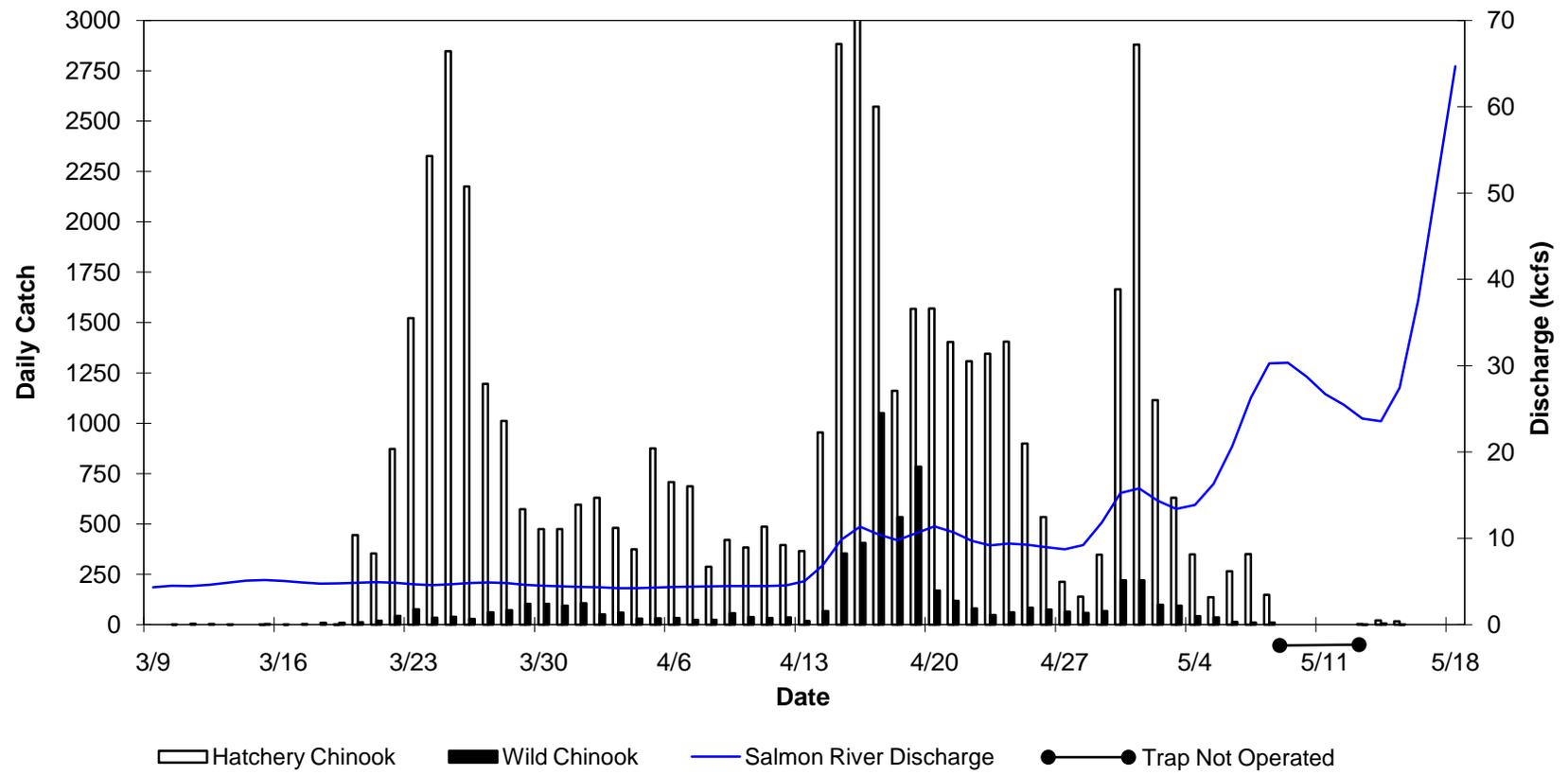


Figure 5. Salmon River trap daily catch of hatchery Chinook salmon and wild Chinook salmon overlaid by Salmon River discharge, 2008.

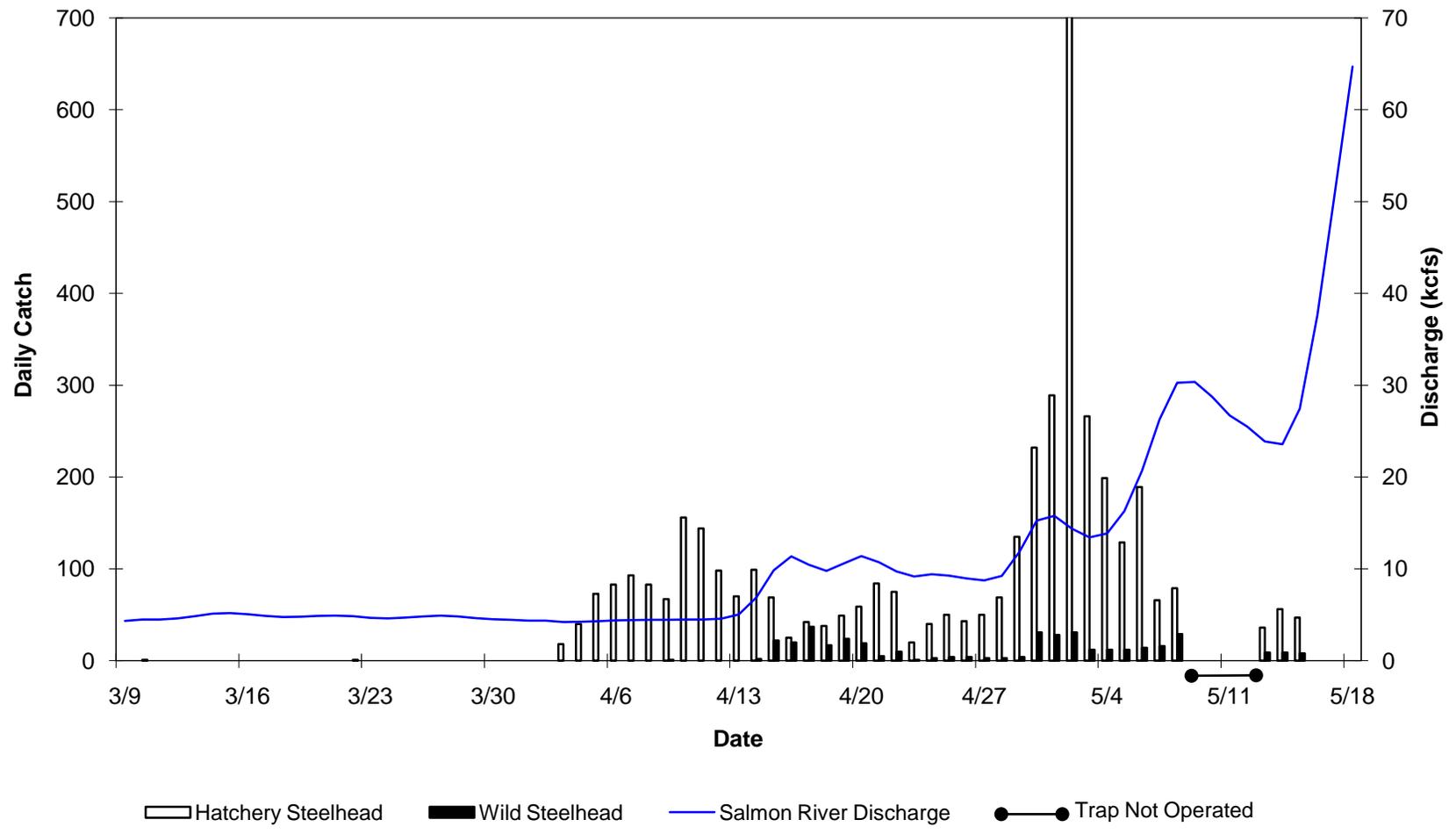


Figure 6. Salmon River trap daily catch of hatchery steelhead trout and wild steelhead trout overlaid by Salmon River discharge, 2008.

Table 6. Monthly Salmon River discharge at White Bird, Idaho, and 2008 comparison with previous three years. Comparison data is reported as 2008 discharge minus annual interval discharge.

Salmon River		2008	2005	2008 Comparison	2006	2008 Comparison	2007	2008 Comparison
		Discharge (cfs)	Discharge (cfs)	(kcfs)	Discharge (cfs)	(kcfs)	Discharge (cfs)	(kcfs)
MARCH	MIN	4,317	3,596	0.7	4,212	0.1	3,797	0.5
	MAX	5,184	7,100	-1.9	7,008	-1.8	10,981	-5.8
	AVERAGE	4,740	4,457	0.3	5,088	-0.3	7,578	-2.8
APRIL	MIN	4,220	4,985	-0.8	7,103	-2.9	8,379	-4.2
	MAX	15,274	15,953	-0.7	31,405	-16.1	23,679	-8.4
	AVERAGE	7,680	8,140	-0.5	15,687	-8.0	11,562	-3.9
MAY	MIN	13,425	13,043	0.4	27,445	-14.0	19,620	-6.2
	MAX	90,247	46,867	43.4	90,333	-0.1	37,669	52.6
	AVERAGE	42,425	27,653	14.8	48,947	-6.5	28,823	13.6

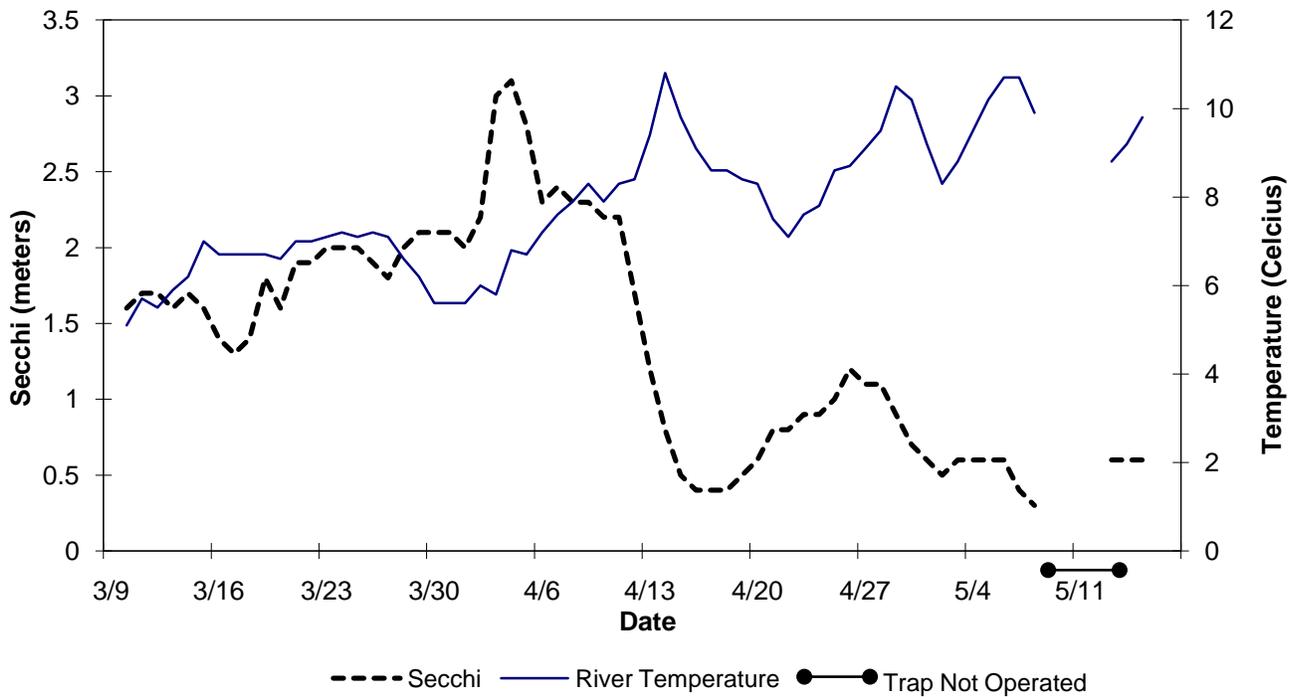


Figure 7. Daily river water temperature and Secchi disk transparency at the Salmon River trap, 2008.

Travel Time and Migration Rates

Release Sites to Snake River Trap

Hatchery Spring Chinook Salmon—In 2008, two hundred and ninety-seven PIT-tagged hatchery spring Chinook salmon were interrogated at the Snake River trap (Table 7). Thirty were from the Catherine Creek Pond (median travel time 53.0 d), one was from the Dworshak National Fish Hatchery (travel time 34.6 d), two were from the Grande Ronde River Trap (median travel time 22.11 d), twenty-three were from the Imnaha River Weir (median travel time 43.9 d), fifteen were from the Lostine River pond (median travel time 44.5 d), two hundred and five were from Rapid River Hatchery (median travel time 50.5 d), twenty were from the Sawtooth hatchery (median travel time 16.2 d), one from the Kooskia National fish Hatchery (travel time 9.9 d), six were from Grande Ronde River Pond (median travel time 45.0), and one from the Nez Perce Tribal Hatchery (travel time 1.31).

Wild Spring Chinook Salmon—In 2008, thirty-seven PIT-tagged wild spring Chinook salmon were interrogated at the Snake River trap (Table 7). Three were from Minam River (median travel time for two fall tagged fish was 234.6 d and a travel time of 35.7 d for one spring tagged fish), eight were from Marsh Creek Trap (median travel time 218.2 d), four were from the Grande Ronde River Trap (median travel time 3.6 d), one was from Lostine River (travel time 25.8 d), twelve were from Big Creek (median travel time for 10 fall tagged fish was 204.9 d and 20.3 d for two spring tagged fish), one was from Sawtooth Trap (travel time 216.3 d), one was from Sulphur Creek (travel time 290.5 d), one was from Imnaha River (travel time 229.3 d), one was from Capehorn Creek (travel time 282.3 d), one was from Valley Creek (travel time 286.2 d), one was from Camas Creek (travel time 275.4 d), two were from the Grande Ronde River (median travel time 43.5 d), and one was from the West Fork of the Yankee Fork (travel time 23.7 d).

Hatchery Summer Chinook Salmon— In 2008, one hundred and twenty-six PIT-tagged hatchery summer Chinook salmon were interrogated at the Snake River trap (Table 7). Seventeen were from Johnson Creek (median travel time 66.4 d), ninety-nine were from Knox Bridge (median travel time 60.3 d), and ten were from Pahsimeroi Pond (median travel time 46.5 d).

Wild Summer Chinook Salmon— In 2008, twenty-one PIT-tagged wild summer Chinook salmon were interrogated at the Snake River trap (Table 7). Five were from the Imnaha River trap (median travel time 15.9 d), two were from Johnson Creek (median travel time 228.8 d), three were from the Secesh River trap (median travel time for two fall tagged fish was 223.4 d and a travel time of 33.1 for one spring tagged fish), one was from Secesh River (travel time 211.4 d), and nine were from Knox Bridge (median travel time for five fall tagged fish was 225.3 d and 38.1 for four spring tagged fish).

Hatchery Fall Chinook Salmon— In 2008, thirty-five PIT-tagged hatchery fall Chinook salmon were interrogated at the Snake River trap (Table 7). One was from the Captain John Rapids Acclimation Pond (travel time 7.3 d), and thirty-four were from the Snake River-Salmon River to Hells Canyon reach (median travel time 3.7 d).

Hatchery Unknown Run Chinook Salmon— In 2008, eight PIT-tagged hatchery unknown run Chinook salmon were interrogated at the Snake River trap (Table 7). All eight were from the Salmon River trap (median travel time 16.1 d).

Wild Unknown Run Chinook Salmon— In 2008, sixteen PIT-tagged wild unknown run Chinook salmon were interrogated at the Snake River trap (Table 7). All sixteen were from the Salmon River trap (median travel time 16.1 d).

Hatchery Summer Steelhead Trout— In 2008, one hundred and fifty-four hatchery summer steelhead trout were interrogated at the Snake River trap (Table 7). Twenty were from the Wallowa Hatchery (median travel time 26.9 d), twelve were from the Grande Ronde River Trap (median travel time 0.7 d), eleven were from the Big Canyon Facility (median travel time 4.2 d), five were from the Salmon River trap (median travel time 5.4 d), one was from the Squaw Creek Acclimation Pond (travel time 22.0 d), two were from Big sheep Creek (median travel time 23.7 d), twenty were from the Little Salmon River (median travel time 24.0 d), eighteen were from the East Fork Salmon River (median travel time 16.1 d), ten were from Squaw Creek (median travel time 14.5 d), nine were from Little Sheep Acclimation Facility (median travel time 35.2 d), sixteen were from the Sawtooth Trap (median travel time 12.1 d), two were from the East Fork of the Salmon River Trap (median travel time 18.1 d), seven were from the Salmon River-Middle Fork to Pahsimeroi reach (median travel time 13.3 d), four were from Slate Creek (median travel time 17.2), one was from Dworshak National Fish Hatchery (travel time 7.0 d), and sixteen were from the Cottonwood Acclimation Facility (median travel time 22.2 d).

Wild Summer Steelhead Trout— In 2008, fifteen wild summer steelhead trout were interrogated at the Snake River trap (Table 7). One was from Lemhi River Weir (travel time 377.7 d), one was from the Lemhi River (travel time 217.1 d), one was from Marsh Creek Trap (travel time 671.2 d), three were from Big Creek (travel time for one fall tagged fish was 233.4 d and median travel time for two spring tagged fish was 9.5 d), one was from Imnaha Trap (travel time 6.5 d), two were from the Grande Ronde River-Wallowa R. to Headwaters reach (travel time 26.8 d), one was from Asotin Creek Trap (travel time 1.4 d), one was from Lookingglass Creek (travel time 12.3 d), and four were from the Grande Ronde River Trap (median travel time 1.1 d).

Release Sites to Salmon River Trap

Hatchery Spring Chinook Salmon— In 2008, one thousand one hundred sixteen hatchery spring Chinook salmon were interrogated at the Salmon River trap (Table 8). One thousand one hundred and two were from the Rapid River Hatchery (median travel time 29.9 d), and fourteen were from the Sawtooth hatchery (median travel time 10.7 d).

Wild Spring Chinook Salmon—In 2008, thirty-four wild spring Chinook salmon were interrogated at the Salmon River trap (Table 8). Eight were from the Marsh Creek Trap (median travel time 217.4 d), two were from the Lemhi River (median travel time 203.1 d), one was from the Sawtooth Trap (travel time 202.9 d), twelve were from Big Creek (median travel time for eleven fall tagged fish was 203.9 d and the travel time for one spring tagged fish was 20.3 d), four were from the Lemhi River Weir (median travel time 205.4 d), two were from Elk Creek (median travel time 278.0 d), one was from Bear Valley Creek (travel time 264.2 d), three were from Hayden Creek (median travel time 177.1 d), and one was from Valley Creek (travel time 257.2 d).

Hatchery Summer Chinook Salmon—In 2008, four hundred forty-two hatchery summer Chinook salmon were interrogated at the Salmon River Trap (Table 8). Fifty-two were from Johnson Creek (median travel time 36.0 d), three-hundred fifty were from Knox Bridge (median travel time 38.4 d), and forty were from the Pahsimeroi Pond (median travel time 19.1 d).

Wild Summer Chinook Salmon— In 2008, twenty-six wild summer Chinook salmon were interrogated at the Salmon River trap (Table 8). Nine were from the Johnson Creek trap (median travel time 190.8 d), three were from Lake Creek (median 247.1 d), four were from the Pahsimeroi River trap (median travel time for two fall tagged fish was 189.0 d and 16.5 d for two spring tagged fish), seven were from the Secesh River Trap (median 200.1 d), and three were from Knox Bridge (median travel time was 192.5 d for two fall tagged fish and 24.8 d for one spring tagged fish).

Hatchery Summer Steelhead Trout—In 2008, twenty-two hatchery summer steelhead trout were interrogated at the Salmon River trap (Table 8). Six fish came from the Little Salmon River (median travel time 19.0 d), three fish came from the Sawtooth Trap (median travel time 14.9 d), eight came from Squaw Creek (median travel time 8.9 d), one came from Squaw Creek Acclimation pond (travel time 18.9 d), one fish came from the Salmon River-Pahsimeroi River to Headwaters reach (travel time 17.9 d), and three came from the East Fork of the Salmon River (median travel time 13.9 d).

Table 7. Travel time, separated by species, run and rearing type, from the point of release to the Snake River trap, 2008.

SPECIES/RUN/REARING	RELEASE SITE	RIVER KILOMETERS	DISTANCE FROM RELEASE SITE TO TRAP (km)	NUMBER OF INTERROGATIONS	MINIMUM TRAVEL TIME (days)	MAXIMUM TRAVEL TIME (days)	MEDIAN TRAVEL TIME (days)
CHINOOK/ SPRING/HATCHERY (Spring Tagged Fish)	Catherine Cr. Pond	522.271.232.048	326	30	32.31	54.99	52.99
	Dworshak National Fish Hatchery	522.224.065	64	1	34.56	34.56	-
	Grande Ronde R. Trap	522.271.002	48	2	21.94	22.28	22.11
	Imnaha R. Weir	522.308.074	157	23	34.63	53.44	43.92
	Lostine R. Pond	522.271.131.042.021	240	15	12.66	58.78	44.48
	Rapid R. Hatchery	522.303.140.007.006	231	205	33.84	61.25	50.50
	Sawtooth Hatchery	522.303.617	695	20	10.24	24.81	16.20
	Kooskia National Fish Hatchery	522.224.120.004.001	124	1	9.85	9.85	-
	Grande Ronde R. Pond	522.271.320	366	6	28.47	61.13	45.04
	Nez Perce Tribal Hatchery	522.224.038	37	1	1.31	1.31	-
				297			
CHINOOK/SPRING/WILD (Fall Tagged Fish)	Minam R.	522.271.131.016.033	226	2	200.02	269.14	234.58
	Marsh Cr. Trap	522.303.319.170.011	578	8	205.32	297.31	218.20
	Big Cr., Middle Fk. Salmon R.	522.303.319.029.011	437	10	187.23	237.29	204.85
	Sawtooth Trap	522.303.617	695	1	216.29	216.29	-
	Sulphur Cr. Middle Fk. Salmon R.	522.303.319.150.006	553	1	290.47	290.47	-
	Imnaha R.	522.308.092	175	1	229.28	229.28	-
	Capehorn Cr.	522.303.319.170.010.002	579	1	282.26	282.26	-
	Valley Cr.	522.303.609.012	699	1	286.23	286.23	-
Camas Cr., Middle Fk. Salmon R.	522.303.319.057.023	477	1	275.40	275.40	-	
CHINOOK/SPRING/WILD (Spring Tagged Fish)	Minam R.	522.271.131.016.033	226	1	35.67	35.67	-
	Grande Ronde R. Trap	522.271.002	48	4	0.32	15.18	3.59
	Lostine R.	522.271.131.016.033	226	1	25.75	25.75	-
	Big Cr., Middle Fk. Salmon R.	522.303.319.029.011	437	2	12.99	27.61	20.30
	Grande Ronde R. - Wallowa R.	522.271.299	345	2	43.26	43.65	43.46
	West Fk. Yankee Fk.	522.303.591.011	680	1	23.67	23.67	-
				37			
CHINOOK/SUMMER/HATCHERY	Johnson Cr.	522.303.215.060.024.009	386	17	59.27	69.06	66.37
	Pahsimeroi Pond	522.303.489.011	578	10	29.63	47.93	46.50
	Knox Bridge	522.303.215.118	411	99	21.15	61.98	60.31
				126			

Table 7. Continued.

SPECIES/RUN/REARING	RELEASE SITE	RIVER KILOMETERS	DISTANCE FROM RELEASE SITE TO TRAP (km)	NUMBER OF INTERROGATIONS	MINIMUM TRAVEL TIME (days)	MAXIMUM TRAVEL TIME (days)	MEDIAN TRAVEL TIME (days)
CHINOOK/SUMMER/WILD (Fall Tagged Fish)	Johnson Cr.	522.303.215.060.024.009	386	2	221.57	236.10	228.83
	Secesh R. Screw Trap	522.303.215.059.007	359	2	213.01	233.69	223.35
	Knox Bridge	522.303.215.118	569	5	210.08	285.31	225.25
	Secesh R.	522.303.215.059.030	382	2	200.77	222.07	211.42
CHINOOK/SUMMER/WILD (Spring Tagged Fish)	Imnaha R. Trap	522.308.007	90	5	2.10	26.88	15.87
	Secesh R. Screw Trap	522.303.215.059.007	359	1	33.06	33.06	-
	Knox Bridge	522.303.215.118	569	4	30.26	54.13	38.11
				21			
CHINOOK/ FALL/HATCHERY	Captain John Rapids Acc. Pond	522.263	38	1	7.27	7.27	-
	Snake R.- Salmon R. to Hells Canyon reach	522.395	170	34	1.90	11.36	3.69
				35			
CHINOOK/UNKNOWN/HATCHERY	Salmon Trap	522.303.103	181	8	10.69	45.31	16.06
				8			
CHINOOK/UNKNOWN/WILD	Salmon Trap	522.303.103	181	16	4.28	29.32	16.12
				16			
STEELHEAD/SUMMER/HATCHERY	Wallawa Hatchery	522.271.131.063.001	241	20	3.35	40.37	26.91
	Squaw Cr. Acc. Pond to headwaters	522.303.564.001	643	1	22.00	22.00	-
	Grande Ronde R. Trap	522.271.002	48	12	0.28	17.16	0.70
	Salmon Trap	522.303.103	181	5	1.37	21.78	5.38
	Big Canyon Facility	522.271.131.018.001	196	11	1.45	29.07	4.20
	Big Sheep Cr.	522.308.032	115	2	21.05	26.27	23.66
	Little Salmon R.	522.303.104.020	202	20	10.00	39.71	24.03
	East Fk. Salmon R.	522.303.522.001	601	18	6.58	24.31	16.05
	Squaw Cr. Salmon R.	522.303.564.003	645	10	8.40	24.21	14.52
	Little Sheep Acc. Facility	522.308.032.005.008	128	9	23.93	45.18	35.15
	Sawtooth R. Trap	522.303.617	695	16	5.33	29.07	12.13
	East Fk. Salmon R. Trap	522.303.552.029	659	2	13.18	22.93	18.06
	Salmon R., Mid. Fk. Sal. to Pahsimeroi reach	522.303.385	463	7	10.93	22.86	13.30
	Slate Cr., upper Salmon R.	522.303.576.005	659	4	9.67	19.93	17.21
	Dworshak National Fish Hatchery	522.224.065	64	1	6.98	6.98	-

Table 7. Continued.

SPECIES/RUN/REARING	RELEASE SITE	RIVER KILOMETERS	DISTANCE FROM RELEASE SITE TO TRAP (km)	NUMBER OF INTERROGATIONS	MINIMUM TRAVEL TIME (days)	MAXIMUM TRAVEL TIME (days)	MEDIAN TRAVEL TIME (days)
STEELHEAD/SUMMER/HATCHERY	Cottonwood Acc. Pond	522.271.046	92	16	17.04	28.48	22.16
				154			
	Lemhi R. Weir	522.303.416.049	543	1	377.67	377.67	-
STEELHEAD/SUMMER/WILD	Lemhi R.	522.303.416.005	499	1	217.07	217.07	-
(Fall Tagged Fish)	Marsh Cr. Trap	522.303.319.170.011	578	1	671.20	671.20	-
	Big Cr., Middle Fk. Salmon R.	522.303.319.029.011	437	1	233.35	233.35	-
	Imnaha Trap	522.308.007	90	1	6.52	6.52	-
STEELHEAD/SUMMER/WILD	Grande Ronde R. Wallowa R. - headwaters reach	522.271.299	345	2	3.54	50.05	26.80
(Spring Tagged Fish)	Asotin Cr. Trap	522.234	9	1	1.44	1.44	-
	Big Cr., Middle Fk. Salmon R.	522.303.319.029.011	437	2	8.99	9.98	9.49
	Lookingglass Cr.	522.271.137.004	187	1	12.32	12.32	-
	Grande Ronde R. Trap	522.271.002	48	4	0.29	2.28	1.09
				15			
SOCKEYE/SUMMER/HATCHERY	No Recaptures this year						
(Fall Tagged Fish)							
SOCKEYE/SUMMER/WILD	No Recaptures this year						

Table 8. Travel time, separated by species, run and rearing type, from the point of release to the Salmon River trap, 2008.

SPECIES/RUN/REARING	RELEASE SITE	RIVER KILOMETERS	DISTANCE FROM RELEASE SITE TO TRAP (km)	NUMBER OF INTERROGATIONS	MINIMUM TRAVEL TIME (days)	MAXIMUM TRAVEL TIME (days)	MEDIAN TRAVEL TIME (days)
CHINOOK/SPRING/HATCHERY	Rapid R. Hatchery	522.303.140.007.006	50	1,102	3.13	50.95	29.92
	Sawtooth Hatchery	522.303.617	514	14	8.71	12.76	10.74
				1,116			
CHINOOK/SPRING/WILD (Fall Tagged Fish)	Marsh Cr. Trap	522.303.319.170.011	397	8	201.93	290.88	217.43
	Lemhi R.	522.303.416.005	318	2	193.30	212.99	203.14
	Sawtooth Trap	522.303.617	514	1	202.86	202.86	202.86
	Big Cr., Middle Fk. Salmon R.	522.303.319.029.011	256	11	168.87	268.98	203.88
	Lemhi R. Weir	522.303.416.049	362	4	164.06	217.03	205.43
	Elk Cr.	522.303.319.170.014.001	401	2	277.96	278.01	277.99
	Bear Valley Cr.	522.303.319.170.014	400	1	264.17	264.17	264.17
	Hayden Cr. Valley Cr.	522.303.416.049.001 522.303.609.005	363 511	3 1	166.76 257.24	202.97 257.24	177.10 257.24
CHINOOK/SPRING/WILD (Spring Tagged Fish)	Big Cr., Middle Fk. Salmon R.	522.303.319.029.011	256	1	20.25	20.25	20.25
				34			
CHINOOK/SUMMER/HATCHERY	Johnson Cr.	522.303.215.060.024.009	205	52	10.99	55.01	36.03
	Knox Bridge	522.303.215.118	230	350	9.91	51.87	38.41
	Pahsimeroi Pond	522.303.489.002	388	40	13.89	31.92	19.09
				442			
CHINOOK/SUMMER/WILD (Fall Tagged Fish)	Johnson Cr. Trap	522.303.215.060.024.009	205	9	146.69	226.65	190.78
	Lake Cr.	522.303.215.059.045.001	217	3	241.74	256.03	247.12
	Pahsimeroi R. Trap	522.303.489.002	388	2	161.96	216.08	189.02
	Secesh R. Trap	522.303.215.059.007	178	7	175.86	217.99	200.06
	Knox Bridge	522.303.215.118	230	2	188.94	195.95	192.45
CHINOOK/SUMMER/WILD (Spring Tagged Fish)	Pahsimeroi R. Trap	522.303.489.002	388	2	10.97	22.05	16.51
	Knox Bridge	522.303.215.118	230	1	24.75	24.75	24.75
				26			
STEELHEAD/SUMMER/HATCHERY	Little Salmon R.	522.303.140.020	57	6	4.84	27.92	18.96
	Sawtooth Trap	522.303.617	514	3	13.02	14.94	14.89
	Squaw Cr., Salmon R.	522.303.564.002	463	8	7.90	9.88	8.91

Table 8. Continued.

SPECIES/RUN/REARING	RELEASE SITE	RIVER KILOMETERS	DISTANCE FROM RELEASE SITE TO TRAP (km)	NUMBER OF INTERROGATIONS	MINIMUM TRAVEL TIME (days)	MAXIMUM TRAVEL TIME (days)	MEDIAN TRAVEL TIME (days)
	Squaw Cr. Acc. Pond	533.303.564.001	462	1	18.90	18.90	18.90
	Salmon R., Mid. Fk Sal. to Pahsimeroi R. reach	522.303.476	373	1	17.90	17.90	17.90
	East Fk. Salmon R.	522.303.552.001	450	3	13.88	15.91	13.90
				22			
STEELHEAD/SUMMER/WILD	No Recaptures this year						
SOCKEYE/SUMMER/HATCHERY	No Recaptures this year						

Snake River Trap to Lower Granite Dam

A removable spillway weir (RSW) was installed at Lower Granite Dam in 2001. The RSW increased spillway passage efficiency and therefore reduced the number of fish collected and detected in the juvenile PIT tag interrogation system at a given spill level. Therefore, when the RSW is in operation there are fewer PIT tag interrogations observed at Lower Granite Dam. The RSW was operated for fish passage during the spring to coincide with periods of spill. Court ordered spill was initiated during the spring period at 20 kcfs instantaneous spill from April 3-June 20. However, two turbine units were out of service at Lower Granite Dam for most of May and June which reduced the maximum amount of flow through the powerhouse. Consequently, during most of that period spill was in excess of the planned 20 kcfs.

Hatchery Chinook Salmon PIT Tag Groups— Sufficient numbers of hatchery spring/summer Chinook salmon (3,046 individual fish) were PIT-tagged at the Snake River trap to provide 30 daily release groups for median migration rate calculations through Lower Granite Reservoir from April 12 through May 19 (Appendix B, Table 1). Daily median travel times ranged from 19.0 to 2.0 d (2.7 km/d to 25.4 km/d migration rate).

Migration rate data stratified by 5 kcfs flow groups were used in the regression analysis (Table 9). Linear regression analysis detected a significant relationship between migration rate from the Snake River trap to Lower Granite Dam and average Lower Granite inflow for PIT-tagged hatchery Chinook salmon groups (Table 10). The equation shows that as discharge increases, migration rate increases.

Wild Chinook Salmon PIT-Tag Groups— Sufficient numbers of wild Chinook salmon (1,684 individual fish) were PIT-tagged at the Snake River trap to provide 15 daily release groups for median migration rate calculations through Lower Granite Reservoir from April 18 through May 19 (Appendix B, Table 2). Daily median travel times ranged from 10.5 to 2.4 d (4.9 km/d to 21.5 km/d migration rate).

Migration rate data stratified by 5 kcfs flow groups were used in the regression analysis (Table 9). Linear regression analysis detected a significant relationship between migration rate from the Snake River trap to Lower Granite Dam and average Lower Granite inflow for PIT-tagged wild Chinook salmon groups (Table 10). The equation shows that as discharge increases, migration rate increases.

Hatchery Steelhead Trout PIT Tag Groups— Sufficient numbers of hatchery steelhead trout (3,543 individual fish) were PIT-tagged at the Snake River trap to provide 33 daily release groups for median migration rate calculations through Lower Granite Reservoir from April 06 through May 19 (Appendix B, Table 3). Daily median travel times ranged from 5.6 to 1.1 d (9.3 km/d to 49.0 km/d migration rate).

Migration rate data stratified by 5 kcfs flow groups were used in the regression analysis (Table 9). Linear regression analysis detected a significant relationship between migration rate in Lower Granite Reservoir and average Lower Granite inflow for PIT-tagged hatchery steelhead trout groups (Table 10). The equation shows that as discharge increases, migration rate increases.

Wild Steelhead Trout PIT-Tag Groups— Sufficient numbers of wild steelhead trout (1,415 individual fish) were PIT-tagged at the Snake River trap to provide 24 daily release groups for median migration rate calculations through Lower Granite Reservoir from April 15 through May 19 (Appendix B, Table 4). Daily median travel times ranged from 4.0 to 1.4 d (12.8 km/d to 36.4 km/d migration rate).

Migration rate data stratified by 5 kcfs flow groups were used in the regression analysis (Table 9). Linear regression analysis detected a significant relationship between migration rate in Lower Granite Reservoir and average Lower Granite inflow for PIT-tagged wild steelhead trout groups (Table 10). The equation shows that as discharge increases, migration rate increases.

Salmon River Trap to Lower Granite Dam

Hatchery Chinook Salmon PIT Tag Groups— Sufficient numbers of hatchery Chinook salmon (3,999 individual fish) were PIT-tagged at the Salmon River trap to provide 35 daily release groups for median migration rate calculations through Lower Granite Reservoir from March 20 through May 07 (Appendix B, Table 5). Daily median travel times ranged from 43.9 to 10.2 d (5.3 km/d to 22.8 km/d migration rate).

Migration rate data stratified by 5 kcfs flow groups were used in the regression analysis (Table 11). Linear regression analysis detected a significant relationship between migration rate from the Salmon River trap to Lower Granite Dam and average Lower Granite inflow for PIT-tagged hatchery Chinook salmon groups (Table 10). The equation shows that as discharge increases, migration rate increases.

Wild Chinook Salmon PIT-Tag Groups— Sufficient numbers of wild Chinook salmon (5,804 individual fish) were PIT-tagged at the Salmon River trap to provide 46 daily release groups for median migration rate calculations through Lower Granite Reservoir from March 18 through May 06 (Appendix B, Table 6). Daily median travel times ranged from 41.4 to 7.3 d (5.6 km/d to 31.9 km/d migration rate).

Migration rate data stratified by 5 kcfs flow groups were used in the regression analysis (Table 11). Linear regression analysis detected a significant relationship between migration rate from the Salmon River trap to Lower Granite Dam and average Lower Granite inflow for PIT-tagged wild Chinook salmon groups (Table 10). The equation shows that as discharge increases, migration rate increases.

Hatchery Steelhead Trout PIT Tag Groups— Sufficient numbers of hatchery steelhead trout (2,684 individual fish) were PIT-tagged at the Salmon River trap to provide 37 daily release groups for median migration rate calculations through Lower Granite Reservoir from April 3 through May 15 (Appendix B, Table 7). Daily median travel times ranged from 30.7 to 7.6 d (3.4 km/d to 67.9 km/d migration rate).

Migration rate data stratified by 5 kcfs flow groups were used in the regression analysis (Table 11). The linear regression analysis detected a significant relationship between migration rate from the Salmon River trap to Lower Granite Dam and average Lower Granite discharge for PIT-tagged hatchery steelhead trout groups marked at the Salmon River trap (Table 10). The equation shows that as discharge increases, migration rate increases.

Wild Steelhead Trout PIT-Tag Groups— Sufficient numbers (377 individual fish) of wild steelhead trout were PIT-tagged at the Salmon River trap to provide 10 daily release groups for median migration rate calculations through Lower Granite Reservoir from April 16 through May 08 (Appendix B, Table 8). Daily median travel times ranged from 15.3 to 3.7 d (15.3 km/d to 63.9 km/d migration rate).

Migration rate data stratified by 5 kcfs flow groups were used in the regression analysis (Table 11). The linear regression analysis detected a significant relationship between migration rate from the Salmon River trap to Lower Granite Dam and average Lower Granite discharge for PIT-tagged wild steelhead trout groups marked at the Salmon River trap (Table 10). The equation shows that as discharge increases, migration rate increases.

Interrogation of PIT-Tagged Fish

Cumulative interrogation data generally are not directly comparable between years. Changes in the amount, duration, and timing of spill results in changes in fish collection efficiency at the dams and therefore PIT tag interrogation rate. A fourth collection facility in the system, Lower Monumental Dam, became operational in 1993 and total interrogations are likely to be greater beginning in 1993 than in previous years under similar spill conditions. Additionally, the installation of a Removable Spillway Weir at Lower Granite Dam in 2001, two Top Spillway Weirs at McNary Dam in 2007, and a Removable Spillway Weir at Lower Monumental Dam in 2008 has changed collection efficiencies at each of these dams. A surface spillway weir will increase spillway passage efficiency and therefore reduced the number of fish collected and detected at a given spill level. Any comparison in trends of cumulative detection at dams must be done cautiously, in a manner that incorporates changes in collection efficiency.

The seasonal summary data in Table 12 will not directly match the data listed in Appendix C because daily PIT tag release groups with less than five interrogations at Lower Granite Dam were not included in the calculation of mean daily interrogation rate while those data were included in the seasonal mean interrogation rate at Lower Granite.

Daily PIT Tag Release Group Interrogation Rates at Lower Granite Dam – For daily PIT tag release groups with greater than five interrogations at Lower Granite Dam, percent interrogation rates were calculated. For hatchery Chinook salmon tagged at the Snake River trap, the mean daily interrogation rate at Lower Granite Dam was 35.0% and ranged between 11.2% to 60.6% (Appendix C, Table 1). The mean for Snake River trap wild Chinook salmon was 40.1% and ranged from 15.3% to 63.6% (Appendix C, Table 2). The mean daily interrogation rate for Snake River trap hatchery steelhead trout was 27.0% and ranged between 10.8% to 40.7% (Appendix C, Table 3). The mean for Snake River trap wild steelhead trout was 35.4% and ranged between 19.7% to 52.4% (Appendix C, Table 4).

For hatchery Chinook salmon tagged at the Salmon River trap, the mean daily interrogation rate at Lower Granite Dam was 33.6% and ranged between 12.0% to 45.8% (Appendix C, Table 5). The mean for Salmon River wild Chinook salmon was 39.0% and ranged between 21.9% to 61.5% (Appendix C, Table 6). The mean daily interrogation rate for Salmon River trap hatchery steelhead trout was 29.1% and ranged between 16.2% to 50.0% (Appendix C, Table 7). The mean for Salmon River trap wild steelhead trout was 37.6% and ranged between 21.6% to 56.3% (Appendix C, Table 8).

Seasonal Cumulative PIT Tag Interrogation Rate for Lower Granite, Little Goose, Lower Monumental, and McNary dams, combined. Seasonal cumulative interrogation rate of Snake River trap PIT-tagged hatchery Chinook salmon to Lower Granite, Little Goose, Lower

Monumental, and McNary dams was 69.0% and for wild Chinook salmon it was 70.6% (Table 12). For Snake River trap PIT-tagged hatchery steelhead trout it was 61.6% and for wild steelhead trout it was 63.2% (Table 12).

Seasonal cumulative interrogation rates of Salmon River trap PIT-tagged hatchery Chinook salmon to Lower Granite, Little Goose, Lower Monumental, and McNary dams was 61.7% and for wild Chinook salmon it was 69.4% (Table 12). For Salmon River trap PIT-tagged hatchery steelhead trout it was 59.1% and for wild steelhead trout it was 59.2% (Table 12).

Table 9. Migration rates (km/day) stratified by 5 kcfs intervals from the Snake River trap to Lower Granite Dam, 2008

Discharge Interval	Hatchery Chinook		Wild Chinook		Hatchery Steelhead		Wild Steelhead	
	Migration Rate (km/day)	Number Recaptured						
45-50					12.54	7	13.20	7
50-55					9.27	6		
55-60	4.24	50	4.94	9	16.96	147	16.17	22
60-65	4.73	190	4.99	7	17.08	245	14.39	45
65-70	8.98	16	9.39	21	22.63	102	18.36	39
70-75	8.22	164			25.17	26	19.97	17
75-80	9.12	48	10.51	12			20.56	15
80-85	11.67	52			26.07	90	22.62	27
85-90	11.73	43	10.60	111	30.55	44	28.60	14
90-95	10.97	175	12.15	101	29.92	46	26.37	117
95-100			7.72	10	30.24	72	27.01	80
100-105	8.90	26			30.63	17		
105-110	11.67	8						
110-115								
115-120								
120-125	25.38	10			33.25	11		
125-130								
130-135								
135-140					35.63	31		
140-145								
145-150	23.93	35					36.37	38
150-155								
155-160								
160-165			20.22	79				
165-170								
170-175	23.90	33			29.47	11		
175-180								
180-185			20.35	13				
185-190	19.03	41			48.98	41		
190-195			21.54	53			35.90	16

Table 10. Linear regression statistics for migration rate/discharge relations by species, rearing type, and trap using data stratified by 5-kcfs intervals, 2008.

Species	Trap	N	Intercept	Slope	r ²	P
Hatchery Chinook	Snake	14	-3.493	1.305	0.791	<0.001
	Salmon	10	-7.050	2.266	0.931	<0.001
Wild Chinook	Snake	10	-2.575	1.086	0.847	<0.001
	Salmon	9	-7.806	2.504	0.964	<0.001

Hatchery Steelhead	Snake	15	-0.706	0.878	0.762	<0.001
	Salmon	11	-2.675	1.471	0.747	0.001
Wild Steelhead	Snake	12	-0.338	0.782	0.885	<0.001
	Salmon	5	-0.852	1.101	0.900	0.014

Table 11. Migration rates (km/day) stratified by 5 kcfs intervals from the Salmon River trap to Lower Granite Dam, 2008.

Discharge Interval	Hatchery Chinook		Wild Chinook		Hatchery Steelhead		Wild Steelhead	
	Migration Rate (km/day)	Number Recaptured						
45-50	5.60	66	6.10	6	15.60	9		
50-55	5.67	263	6.63	271	18.78	96		
55-60	6.35	230	8.95	129	28.24	177		
60-65	8.51	259	11.83	815	23.44	161	37.66	21
65-70	10.81	235	12.63	647	52.36	118	46.60	16
70-75	13.61	163	19.95	95	46.10	13	42.60	13
75-80	19.53	39	22.89	103				
80-85	19.87	27	20.93	116	43.90	29		
85-90	22.20	14	27.25	35	32.50	32	56.20	6
90-95					62.68	96	61.80	27
95-100	20.98	35						
100-105					51.36	22		
105-110								
110-115					67.90	10		

Table 12. Interrogations of PIT-tagged fish from the Snake R. trap, 1987-2008; Clearwater R. trap, 1989-1995; and Salmon R. trap 1993-2008, at downstream collection facilities.

Number Interrogated / Site														
Site	Year	Species ^a	No. Tagged	Ints at Lower Granite	% GRJ	Ints at Little Goose	% GOJ	Ints at Lower Monumental	% LMJ	Ints at McNary	% MCJ	Grand Total Ints	Total % Obs.	
Snake	2008	CH	3,044	922	30.3%	697	22.2%	315	10.4%	165	5.4%	2,099	69.0%	
	2007	CH	1,666	436	26.2%	214	12.8%	135	8.1%	213	12.8%	998	59.9%	
	2006	CH	5,003	1,349	27.0%	1,532	30.6%	557	11.1%	219	4.4%	3,657	73.1%	
	2005	CH	622	320	51.4%	178	28.6%	14	2.3%	12	1.9%	524	84.2%	
	2004	CH	2,127	1,077	50.6%	522	24.5%	94	4.4%	53	2.5%	1,746	82.1%	
	2003	CH	2,047	557	27.2%	470	23.0%	123	6.0%	173	8.5%	1,323	64.6%	
	2002	CH	1,901	391	20.6%	428	22.5%	346	18.2%	2	0.1%	1,167	61.4%	
	2001	CH	413	291	70.5%	51	12.3%	8	1.9%	4	1.0%	354	85.7%	
	2000	CH	3,963	1,179	29.8%	677	17.1%	188	4.7%	195	4.9%	2,239	56.5%	
	1999	CH	4,268	997	23.4%	1,515	35.5%	516	12.1%	206	4.8%	3,234	75.8%	
	1998	CH	2,303	1,077	46.8%	510	22.2%	192	8.3%	71	3.1%	1,850	80.3%	
	1997	CH	—	—	—	—	—	—	—	—	—	—	—	—
	1996	CH	1,450	497	34.3%	259	17.9%	189	13.0%	40	2.8%	985	67.9%	
	1995	CH	3,927	1,646	41.9%	643	16.4%	430	11.0%	153	3.9%	2,872	73.1%	
	1994	CH	2,844	885	31.1%	332	11.7%	223	7.8%	329	11.6%	1,769	62.2%	
	1993	CH	3,203	1,336	41.7%	494	15.4%	246	7.7%	134	4.2%	2,210	69.0%	
	1992	CH	410	166	40.5%	83	20.2%	—	—	48	11.7%	297	72.4%	
Snake	2008	CW	1,686	460	27.3%	415	24.6%	239	14.2%	76	4.5%	1,190	70.6%	
	2007	CW	379	122	32.2%	41	10.8%	35	9.2%	49	12.9%	247	65.2%	
	2006	CW	2,661	819	30.8%	983	36.9%	265	10.0%	75	2.8%	2,142	80.5%	
	2005	CW	339	166	49.0%	124	36.6%	7	2.1%	3	0.9%	300	88.5%	
	2004	CW	1,389	757	54.5%	277	19.9%	27	1.9%	8	0.6%	1,069	76.9%	
	2003	CW	1,311	399	30.4%	327	24.9%	125	9.5%	90	6.9%	941	71.8%	
	2002	CW	1,393	294	21.1%	448	32.2%	207	14.9%	1	0.1%	950	68.2%	
	2001	CW	43	26	60.5%	3	7.0%	—	—	1	2.3%	30	69.8%	
	2000	CW	1,989	550	27.7%	480	24.1%	144	7.2%	112	5.6%	1,286	64.7%	
	1999	CW	3,624	804	22.2%	1,515	41.8%	567	15.6%	121	3.3%	3,007	83.0%	
	1998	CW	961	442	46.0%	190	19.8%	89	9.3%	42	4.4%	763	79.4%	
	1997	CW	—	—	—	—	—	—	—	—	—	—	—	—
	1996	CW	842	269	31.9%	190	22.6%	119	14.1%	40	4.8%	618	73.4%	
	1995	CW	2,067	1,023	49.5%	366	17.7%	216	10.5%	68	3.3%	1,673	80.9%	
	1994	CW	934	354	37.9%	95	10.2%	82	8.8%	83	8.9%	614	65.7%	
1993	CW	1,125	576	51.2%	150	13.3%	57	5.1%	46	4.1%	829	73.7%		
Snake	1992	CU	615	249	40.5%	106	17.2%	—	—	72	11.7%	427	69.4%	
	1991	CU	2,131	929	43.6%	409	19.2%	—	—	115	5.4%	1,453	68.2%	
	1990	CU	2,245	956	42.6%	310	13.8%	—	—	180	8.0%	1,446	64.4%	
	1989	CU	6,222	2,384	38.3%	1,367	22.0%	—	—	482	7.7%	4,233	68.0%	
	1988	CU	3,767	1,237	32.8%	543	14.4%	—	—	299	7.9%	2,079	55.2%	
1987 ^b	CU	3,275	1,067	32.6%	338	10.3%	—	—	308	9.4%	1,713	52.3%		
Snake	2008	SH	3,543	917	25.9%	961	27.1%	203	5.7%	102	2.9%	2,183	61.6%	
	2007	SH	2,545	710	27.9%	623	24.5%	224	8.8%	46	1.8%	1,603	63.0%	
	2006	SH	2,148	748	34.8%	717	33.4%	225	10.5%	14	0.7%	1,704	79.3%	
	2005	SH	3,356	2,273	67.7%	803	23.9%	67	2.0%	7	0.2%	3,150	93.9%	
	2004	SH	4,843	3,497	72.2%	767	15.8%	101	2.1%	14	0.3%	4,379	90.4%	
	2003	SH	4,177	1,282	30.7%	881	21.1%	508	12.2%	86	2.1%	2,757	66.0%	
	2002	SH	5,031	1,200	23.9%	875	17.4%	818	16.3%	2	0.0%	2,895	57.5%	
	2001	SH	3,156	2,082	66.0%	115	3.6%	24	0.8%	6	0.2%	2,227	70.6%	
	2000	SH	3,717	2,122	57.1%	342	9.2%	203	5.5%	41	1.1%	2,708	72.9%	
	1999	SH	3,990	1,185	29.7%	1,175	29.4%	537	13.5%	89	2.2%	2,986	74.8%	
	1998	SH	4,274	2,230	52.2%	640	15.0%	303	7.1%	61	1.4%	3,234	75.7%	
	1996	SH	1,363	675	49.5%	247	18.1%	139	10.2%	24	1.8%	1,085	79.6%	
	1995	SH	2,244	1,477	65.8%	236	10.5%	165	7.4%	19	0.8%	1,897	84.5%	
	1994	SH	3,239	1,298	40.1%	216	6.7%	112	3.5%	40	1.2%	1,666	51.4%	
	1993	SH	2,521	1,925	76.4%	235	9.3%	63	2.5%	13	.5%	2,236	88.7%	
	1992	SH	3,904	1,496	38.3%	227	5.8%	—	—	30	0.8%	1,753	44.9%	
	1991	SH	2,577	2,032	78.9%	268	10.4%	—	—	11	0.4%	2,311	89.7%	
1990	SH	3,112	2,272	73.0%	282	9.1%	—	—	33	1.1%	2,587	83.1%		
1989	SH	2,525	1,773	70.2%	268	10.6%	—	—	35	1.4%	2,076	82.2%		

Table 12. Continued.

Site	Year	Species ^a	Number Interrogated / Site									Grand Total Ints	Total % Obs.
			No. Tagged	Ints at Lower Granite	% GRJ	Ints at Little Goose	% GOJ	Ints at Lower Monumental	% LMJ	Ints at McNary	% MCJ		
Snake	1988	SH	1,743	1,069	61.3%	190	10.9%	—	—	12	0.7%	1,271	72.9%
	1987	SH	827	324	39.2%	52	6.3%	—	—	6	0.7%	382	46.2%
Snake	2008	SW	1,414	461	32.6%	343	24.3%	56	4.0%	48	3.4%	893	63.2%
	2007	SW	964	314	32.6%	141	14.6%	79	8.2%	51	5.3%	585	60.7%
	2006	SW	502	152	30.3%	192	38.2%	56	11.2%	7	1.4%	407	81.1%
	2005	SW	1,357	911	67.1%	325	23.9%	22	1.6%	1	0.1%	1,259	92.8%
	2004	SW	1,923	1,457	75.8%	253	13.2%	19	1.0%	2	0.1%	1,731	90.0%
	2003	SW	1,208	397	32.9%	300	24.8%	77	6.4%	32	2.6%	806	66.7%
	2002	SW	2,518	639	25.4%	472	18.7%	439	17.4%	1	0.0%	1,551	61.6%
	2001	SW	884	716	81.0%	56	6.3%	14	1.6%	1	0.1%	787	89.0%
	2000	SW	1,312	5879	44.9%	214	16.3%	105	8.0%	28	2.1%	936	71.3%
	1999	SW	923	254	27.5%	304	32.9%	111	12.0%	19	2.1%	688	74.5%
	1998	SW	1,088	624	57.4%	154	14.2%	81	7.4%	8	0.7%	867	79.7%
	1997	SW	148	82	55.4%	38	25.7%	6	4.1%	1	0.7%	127	85.8%
	1996	SW	655	293	44.7%	137	20.9%	67	10.2	12	1.8%	509	77.7%
	1995	SW	1,537	967	62.9%	195	12.7%	122	7.9%	13	0.8%	1,297	84.4%
	1994	SW	2,840	1,546	54.4%	319	11.2%	158	5.6%	51	1.8%	2,074	73.0%
	1993	SW	2,867	1,982	69.1%	267	9.3%	133	4.6%	32	1.1%	2,414	84.2%
	1992	SW	2,538	1,511	59.5%	307	12.1%	—	—	31	1.2%	1,849	72.9%
	1991	SW	3,549	2,266	63.8%	625	17.6%	—	—	66	1.9%	2,957	83.3%
	1990	SW	3,078	2,016	65.5%	356	11.6%	—	—	60	1.9%	2,432	79.0%
1989	SW	1,798	1,170	65.1%	240	13.3%	—	—	52	2.9%	1,462	81.3%	
1988	SW	1,186	698	58.9%	166	14.0%	—	—	20	1.7%	884	74.5%	
1987	SW	464	229	49.4%	48	10.3%	—	—	8	1.7%	285	61.4%	
Clearwater	1995	CH	2,467	950	38.5%	414	16.8%	269	10.9%	109	4.4%	1,742	70.6%
	1994	CH	1,998	500	25.0%	192	9.6%	188	9.4%	247	12.4%	1,127	56.4%
	1993	CH	1,624	553	34.1%	193	11.9%	106	6.5%	77	4.7%	929	57.2%
	1992	CH	5,200	1,654	31.8%	745	14.3%	—	—	429	8.3%	2,828	54.4%
Clearwater	1995	CW	1,051	464	44.1%	173	16.5%	88	8.4%	37	3.5%	762	72.5%
	1994	CW	761	308	40.5%	94	12.4%	81	10.6%	41	5.4%	524	68.9%
	1993	CW	298	134	45.0%	43	14.4%	25	8.4%	18	6.0%	220	73.8%
	1992	CU	1,461	502	34.4%	202	13.8%	—	—	136	9.3%	840	57.5%
	1991	CU	3,943	1,483	37.6%	668	16.9%	—	—	235	6.0%	2,386	60.5%
	1990	CU	4,242	1,359	32.0%	674	15.9%	—	—	281	6.6%	2,314	54.6%
	1989	CU	2,441	756	31.0%	452	18.5%	—	—	140	5.7%	1,348	55.2%
	1994	SH	1,250	729	58.3%	119	9.5%	30	2.4%	10	0.8%	888	71.0%
	1993	SH	1,102	813	73.8%	79	7.2%	24	2.2%	6	0.5%	922	83.7%
	1992	SH	1,567	823	52.5%	118	7.5%	—	—	6	0.4%	947	60.4%
	1991	SH	1,215	926	76.2%	89	7.3%	—	—	3	0.2%	1,018	83.8%
	1990	SH	1,228	880	71.7%	63	5.1%	—	—	10	0.8%	953	77.6%
	1989	SH	290	173	59.7%	16	5.5%	—	—	2	0.7%	191	65.9%
Clearwater	1995	SW	268	157	58.6%	40	14.9%	16	6.0%	1	0.4%	214	79.9%
	1994	SW	1,297	421	32.5%	150	11.6%	106	8.2%	24	1.9%	701	54.0%
	1993	SW	849	560	66.0%	106	12.5%	58	6.8%	9	1.1%	733	86.3%
	1992	SW	2,996	1,599	53.4%	477	15.9%	—	—	113	3.8%	2,189	73.1%
	1991	SW	1,300	767	59.0%	126	9.7%	—	—	22	1.7%	915	70.4%
	1990	SW	727	409	56.3%	102	14.0%	—	—	28	3.9%	539	74.1%
	1989	SW	104	53	51.0%	16	15.4%	—	—	3	2.9%	72	69.2%
	2005	CW	9,478	6,195	65.4%	1,108	11.7%	87	0.9%	36	0.4%	7,426	78.3%
	2004	CW	7,291	3,334	45.7%	1,225	16.8%	331	4.5%	182	2.5%	5,072	69.6%
	2003	CW	9,242	3,130	33.9%	1,459	15.8%	276	3.0%	799	8.6%	5,664	61.3%
2002	CW	5,467	1,082	19.8%	1,358	24.8%	773	14.1%	1	0.0%	3,214	58.8%	
Salmon	2008	CH	3,999	1,332	33.3%	663	16.6%	290	7.3%	183	4.6%	2,468	61.7%
	2007	CH	3,937	714	18.1%	294	7.5%	172	4.4%	527	13.4%	1,707	43.4%
	2006	CH	3,395	903	26.6%	834	24.6%	344	10.1%	141	4.2%	2,222	65.4%
	2005	CH	4,837	2,490	51.5%	821	17.0%	89	1.8%	56	1.2%	3,456	71.4%
	2004	CH	4,187	2,033	48.8%	641	15.3%	87	2.1%	67	1.6%	2,828	67.5%
	2003	CH	4,492	1,120	24.9%	576	12.8%	97	2.2%	365	8.1%	2,158	48.0%

Table 12. Continued.

Number Interrogated / Site													
Site	Year	Species ^a	No. Tagged	Ints at Lower Granite	% GRJ	Ints at Little Goose	% GOJ	Ints at Lower Monumental	% LMJ	Ints at McNary	% MCJ	Grand Total Ints	Total % Obs.
Salmon	2002	CH	5,049	853	16.9%	818	16.2%	892	17.7%	5	0.1%	2,568	50.9%
	2001	CH	4,564	2,740	60.0%	519	11.4%	99	2.2%	37	0.8%	3,395	74.4%
	2000	CH	4,804	1,486	30.9%	708	14.7%	214	4.5%	230	4.8%	2,638	54.9%
	1999	CH	5,611	1,128	20.1%	1,551	27.6%	604	10.8%	240	4.3%	3,523	62.8%
	1998	CH	3,025	1,098	36.3%	565	18.7%	201	6.6%	87	2.9%	1,951	64.5%
	1997	CH	—	—	—	—	—	—	—	—	—	—	—
	1996	CH	2,554	618	24.2%	343	13.4%	258	10.1%	67	2.6%	1,286	50.4%
	1995	CH	5,074	1,777	35.0%	757	14.9%	531	10.5%	186	3.7%	3,251	64.1%
	1994	CH	3,633	870	23.9%	322	8.9%	258	7.1%	358	9.9%	1,808	49.8%
	1993	CH	3,138	1,144	36.5%	385	12.3%	233	7.4%	157	5.0%	1,919	61.2%
Salmon	2008	CW	5,803	2,248	38.7%	1,076	18.5%	478	8.2%	224	3.9%	4,025	69.4%
	2007	CW	5,203	1,165	22.4%	580	11.1%	239	4.6%	687	13.2%	2,671	61.3%
	2006	CW	5,611	1,707	30.4%	1,907	34.0%	611	10.9%	154	2.7%	4,379	78.0%
	2005	CW	9,478	6,195	65.4%	1,108	11.7%	87	0.9%	36	0.4%	7,426	78.3%
	2004	CW	7,291	3,334	45.7%	1,225	16.8%	331	4.5%	182	2.5%	5,072	69.6%
	2003	CW	9,242	3,130	33.9%	1,459	15.8%	276	3.0%	799	8.6%	5,664	61.3%
	2002	CW	5,467	1,082	19.8%	1,358	24.8%	773	14.1%	1	—	3,214	58.8%
	2001	CW	1,899	1,385	72.9%	174	9.2%	18	0.9%	4	0.2%	1,581	83.3%
	2000	CW	2,069	654	31.6%	494	23.9%	163	7.9%	103	5.0%	1,414	68.3%
	1999	CW	3,628	833	23.0%	1,500	41.3%	421	11.6%	125	3.4%	2,879	79.4%
	1998	CW	1,416	657	46.4%	305	21.5%	105	7.4%	70	4.9%	1,137	80.3%
	1997	CW	—	—	—	—	—	—	—	—	—	—	—
	1996	CW	1,425	381	26.7%	289	20.3%	181	12.7%	31	2.2%	882	61.9%
	1995	CW	3,937	1,790	45.5%	689	17.5%	366	9.3%	122	3.1%	2,967	75.4%
	1994	CW	2,913	1,113	38.2%	287	9.9%	188	6.5%	202	6.9%	1,790	61.4%
	1993	CW	2,169	1,112	51.3%	286	13.2%	125	5.8%	91	4.2%	1,614	74.4%
Salmon	2008	SH	2,682	763	28.5%	658	24.5%	99	3.7%	65	2.4%	1,585	59.1%
	2007	SH	2,298	414	18.0%	620	27.0%	200	8.7%	53	2.3%	1,287	56.0%
	2006	SH	1,225	437	35.7%	367	30.0%	96	7.8%	12	1.0%	912	74.4%
	2005	SH	2,625	1,511	57.6%	541	20.6%	31	1.2%	6	0.2%	2,089	79.6%
	2004	SH	2,241	1,493	66.6%	261	11.6%	30	1.3%	9	0.4%	1,793	80.0%
	2003	SH	2,444	592	24.2%	442	18.1%	299	12.2%	58	2.4%	1,391	56.9%
	2002	SH	2,060	331	16.1%	272	13.2%	325	15.8%	1	0.0%	929	45.1%
	2001	SH	3,152	2,244	71.2%	81	2.6%	24	0.8%	2	0.1%	2,351	74.6%
	2000	SH	2,130	1,209	56.8%	153	7.2%	70	3.3%	21	1.0%	1,453	68.2%
	1999	SH	2,266	718	31.7%	614	27.1%	214	9.4%	32	1.4%	1,578	69.6%
	1998	SH	1,117	608	54.4%	158	14.2%	76	6.8%	7	0.6%	849	76.0%
	1997	SH	1,252	627	50.1%	213	17.0%	118	9.4%	1	0.1%	960	76.6%
	1996	SH	1,410	598	42.4%	205	14.5%	140	9.9%	24	1.7%	967	68.6%
	1995	SH	1,556	937	60.2%	190	12.2%	118	7.6%	14	0.9%	1,259	80.9%
	1994	SH	2,596	1,001	38.6%	164	6.3%	70	2.7%	36	1.4%	1,271	49.0%
	1993	SH	1,641	1,203	73.3%	112	6.8%	44	2.7%	13	0.8%	1,372	83.6%
Salmon	2008	SW	377	118	31.3%	82	21.8%	11	2.9%	12	3.2%	223	59.2%
	2007	SW	407	79	19.4%	82	20.1%	19	4.7%	26	6.4%	206	50.6%
	2006	SW	305	94	30.8%	113	37.0%	35	11.5%	2	0.7%	244	80.0%
	2005	SW	314	177	56.4%	72	22.9%	5	1.6%	1	0.3%	255	81.2%
	2004	SW	239	147	61.5%	39	16.3%	3	1.3%	0	—	189	79.1%
	2003	SW	312	101	32.4%	45	14.4%	16	5.1%	12	3.8%	174	55.8%
	2002	SW	390	97	24.9%	71	18.2%	43	11.0%	0	—	211	54.1%
	2001	SW	485	366	75.5%	19	3.9%	4	0.8%	5	1.0%	394	81.2%
	2000	SW	336	141	42.0%	56	16.7%	18	5.4%	5	1.5%	220	65.5%
	1999	SW	227	56	24.7%	75	33.0%	27	11.9%	5	2.2%	163	71.8%
	1998	SW	112	56	50.0%	13	11.6%	10	8.9%	1	0.9%	80	71.4%
	1997	SW	59	38	64.4%	6	10.2%	5	8.5%	0	—	49	83.1%
	1996	SW	251	112	44.6%	49	19.5%	21	8.4%	1	0.4%	183	72.9%
	1995	SW	435	251	57.7%	59	13.6%	32	7.4%	1	0.2%	343	78.9%
	1994	SW	532	260	48.9%	44	8.3%	32	6.0%	10	1.9%	346	65.0%
	1993	SW	902	575	63.7%	73	8.1%	36	4.0%	5	0.6%	689	76.4%

^aCH = Hatchery Chinook, CW = wild Chinook, CU = unknown Chinook, SH = hatchery steelhead, SW = wild steelhead.

^bBias may exist as only "quality" fish were tagged.

SUMMARY

Hatchery spring/summer Chinook salmon releases above Lower Granite Dam for 2008 were 98% of the previous year's release. Hatchery fall Chinook salmon releases were 169% of the previous year. Hatchery steelhead trout releases were 98% of 2007 numbers. Hatchery sockeye releases were 111% of 2007 numbers. Hatchery coho releases were 109% of last year's. Hatchery production of spring/summer Chinook salmon in the Clearwater River drainage was 106%, the Snake River and non-Idaho tributaries 120%, and the Salmon River drainage 89% of 2007 production. Hatchery production of steelhead trout in the Clearwater River drainage was 102%, the Snake River and non-Idaho tributaries was 103%, and the Salmon River was 94% of last year's total. Hatchery production of Chinook salmon and steelhead trout released above Lower Granite Dam was 14,470,249 and 9,026,656, respectively, in 2008. Significant numbers of hatchery sockeye salmon (232,500) and hatchery coho salmon (938,483) were released for migration year 2008.

The Snake River trap was operated on the east side of the river from March 10 through May 19, 2008 and was not out of operation due to high flow or debris during the 2008 field season. The Snake River trap captured 11,749 age-1 hatchery and 1,883 wild Chinook salmon, 119 age-0 Chinook salmon of unknown rearing, 9,246 hatchery and 1,472 wild steelhead trout, 83 hatchery sockeye, 27 sockeye of unknown rearing, and 326 coho of unknown rearing.

The Salmon River trap was operated on the east side of the river from March 10 through May 15, 2008 and was out of operation for four days during this period due to mechanical problems or high flow and debris. The Salmon River trap captured 49,975 age-1 hatchery and 6,061 wild Chinook salmon, 4,172 hatchery and 392 wild steelhead trout, 37 hatchery sockeye salmon, and no sockeye salmon of unknown rearing.

Significant migration rate/flow relations were detected for hatchery Chinook, wild Chinook, hatchery steelhead, and wild steelhead released from the Snake River trap to Lower Granite Dam.

Statistical analysis of the 2008 Salmon River trap data detected a significant relationship between migration rate and Lower Granite Reservoir inflow discharge for hatchery Chinook, wild Chinook, hatchery steelhead, and wild steelhead.

In all instances where the migration rate/discharge analysis could be conducted, the same significant trend was observed: as discharge increased, migration rate increased.

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APPENDICES

Appendix A. Table 1. River mile and kilometer location for the Snake River drainage.

Drainage / Release Site	Mouth of Columbia River		Mouth of Snake River		Lower Granite Dam		Snake River trap site		Clearwater River trap site		Salmon River trap site	
	mi	km	mi	km	mi	km	mi	km	mi	km	mi	km
Clearwater River Drainage												
American R.	601	967	277	445	169	272	—	—	131	211	—	—
Big Canyon Cr. Acc. Facility	499	803	175	281	67	108	—	—	29	47	—	—
Clear Cr.	541	870	216	348	109	175	—	—	71	114	—	—
Clearwater R.	464	746	139	224	32	51	—	—	-6	-10	—	—
Clearwater R. Smolt Trap	470	756	145	234	38	61	—	—	—	—	—	—
Crooked R.	597	960	272	438	165	265	—	—	127	204	—	—
Dworshak National Fish Hatchery	504	811	180	289	72	116	—	—	34	55	—	—
Kooskia National Fish Hatchery	541	871	217	349	109	176	—	—	71	115	—	—
Lapwai Cr.	475	765	151	243	43	70	—	—	6	9	—	—
Lochsa R.	561	903	237	381	129	208	—	—	91	147	—	—
Lolo Cr.	518	833	193	311	86	138	—	—	48	77	—	—
Meadow Cr., Selway R.	580	934	256	412	149	239	—	—	111	178	—	—
Meadow Cr., SF Clearwater	571	919	247	397	139	224	—	—	101	163	—	—
Mill Cr., SF Clearwater	570	918	246	396	139	223	—	—	101	162	—	—
Newsome Cr.	590	950	266	428	158	255	—	—	121	194	—	—
Nez Perce Tribal Hatchery	487	784	163	262	55	89	—	—	17	28	—	—
N Lapwai Valley Acc. Pond	476	766	152	244	44	71	—	—	6	10	—	—
Papoose Cr.	626	1008	302	486	194	313	—	—	157	252	—	—
Potlatch R.	478	770	154	248	47	75	—	—	9	14	—	—
Powell Rearing Pond/Walton Cr.	631	1016	307	494	199	321	—	—	162	260	—	—
Red R.	601	967	277	445	169	272	—	—	131	211	—	—
Red R. Rearing Pond	618	994	293	472	186	299	—	—	148	238	—	—
Selway R.	561	903	237	381	129	208	—	—	91	147	—	—
Salmon River Drainage												
Alturas Lake	913	1469	588	947	481	774	449	722	—	—	336	541
Alturas Lake Cr.	906	1458	582	936	474	763	442	711	—	—	329	530
Bear Valley Cr.	816	1314	492	792	385	619	352	567	—	—	240	386
Big Cr., Mid. Fk. Salmon R.	729	1173	405	651	297	478	265	426	—	—	152	245
Camas Cr., Mid. Fk. Salmon R.	746	1201	422	679	314	506	282	454	—	—	170	273
Capehorn Cr.	823	1324	498	802	391	629	359	577	—	—	246	396
Chamberlain Cr.	688	1107	364	585	256	412	224	360	—	—	111	179
East Fk. Salmon R.	856	1377	531	855	424	682	391	630	—	—	279	449
East Fk. Salmon R. Trap	874	1406	549	884	442	711	409	659	—	—	297	478
East Fk. Salmon R. Weir	874	1407	550	885	442	712	410	660	—	—	298	479
East Fk. South Fk. Salmon R.	684	1100	359	578	252	405	219	353	—	—	107	172
Elk Cr.	825	1328	501	806	393	633	361	581	—	—	249	400
Hayden Cr.	803	1290	477	768	370	585	337	543	—	—	225	362
Hazard Cr.	619	996	295	474	187	301	155	249	—	—	42	68
Johnson Cr.	698	1124	374	602	267	429	234	377	—	—	122	196

Appendix A. Table 1. Continued.

Drainage / Release Site	Mouth of Columbia River		Mouth of Snake River		Lower Granite Dam		Snake River trap site		Clearwater River trap site		Salmon River trap site	
	mi	km	mi	km	mi	km	mi	km	mi	km	mi	km
Salmon River Drainage Continued												
Johnson Cr. Trap	703	1131	378	609	271	436	239	384	—	—	126	203
Knox Bridge	716	1152	391	630	284	457	252	405	—	—	139	224
Lake Cr.	711	1144	386	622	279	449	247	397	—	—	134	216
Lemhi R.	771	1241	447	719	339	546	307	494	—	—	194	313
Lemhi R. Weir	802	1290	477	768	370	595	337	543	—	—	225	362
Little Salmon R.	600	965	275	443	168	270	135	218	—	—	23	37
Lower S Fk. Salmon R. Trap	646	1040	322	518	214	345	182	293	—	—	70	112
Marsh Cr. Trap	823	1325	499	803	391	630	359	578	—	—	247	397
Middle Fk. Salmon R.	711	1144	386	622	279	449	247	397	—	—	134	216
North Fk. Salmon R.	749	1206	425	684	318	511	285	459	—	—	173	278
Pahsimeroi Pond	823	1325	499	803	391	630	359	578	—	—	247	397
Pahsimeroi R.	816	1314	492	792	385	619	352	567	—	—	240	386
Pahsimeroi R. Trap	818	1316	493	794	386	621	354	569	—	—	241	388
Pettit Lake	908	1462	584	940	477	767	444	715	—	—	332	534
Pettit Lake Cr.	907	1460	583	938	475	765	443	713	—	—	331	532
Rapid R. Hatchery	608	978	283	456	176	283	144	231	—	—	31	50
Rapid R. Trap	608	979	284	457	176	284	144	232	—	—	32	51
Rapid R., Little Salmon R.	604	972	280	450	172	277	140	225	—	—	27	44
Redfish Lake	898	1445	574	923	466	750	434	698	—	—	321	517
Redfish Lake Cr.	895	1440	570	918	463	745	431	693	—	—	318	512
Redfish Lake Cr. Trap	897	1443	572	921	465	748	432	696	—	—	320	515
Salmon R.	513	825	188	303	81	130	48	78	—	—	-64	-103
Salmon R., Pahs. R.-headwaters	827	1331	503	809	395	636	363	584	—	—	250	403
Salmon R. Smolt Trap	577	928	252	406	145	233	112	181	—	—	—	—
Sawtooth Hatchery	896	1442	572	920	464	747	432	695	—	—	319	514
Sawtooth Trap	896	1442	572	920	464	747	432	695	—	—	319	514
Secesh R.	683	1099	359	577	251	404	219	352	—	—	106	171
Secesh R. Trap	687	1106	363	584	255	411	223	359	—	—	111	178
Slate Cr.	578	931	254	409	147	236	114	184	—	—	2	3
South Fk. Salmon R.	646	1040	322	518	214	345	182	293	—	—	70	112
South Fk. Salmon R. Trap	718	1155	393	633	286	460	254	408	—	—	141	227
South Fk. Salmon R. Weir	715	1151	391	629	283	456	251	404	—	—	139	223
Squaw Cr. Acc. Pond	864	1390	539	868	432	695	400	643	—	—	287	462
Squaw Cr., Salmon R.	863	1389	539	867	431	694	399	642	—	—	286	461
Stolle Pond	724	1165	400	643	292	470	260	418	—	—	147	237
Sulphur Cr.	809	1302	485	780	377	607	345	555	—	—	232	374
Valley Cr.	891	1434	567	912	459	739	427	687	—	—	314	506
West Fk. Yankee Fk. R.	884	1422	559	900	452	727	419	675	—	—	307	494
White Bird Cr.	566	911	242	389	134	216	102	164	—	—	—	—
Yankee Fk. Salmon R.	880	1416	556	894	448	721	416	669	—	—	303	488
Yellowjacket Cr.	751	1208	426	686	319	513	286	461	—	—	174	280

Appendix A. Table 1. Continued.

Drainage / Release Site	Mouth of <u>Columbia River</u>		Mouth of <u>Snake River</u>		Lower <u>Granite Dam</u>		Snake River <u>trap site</u>		Clearwater River <u>trap site</u>		Salmon River <u>trap site</u>	
	mi	km	mi	km	mi	km	mi	km	mi	km	mi	km
Snake River Drainage												
Asotin Cr.	470	756	145	234	38	61	6	9	—	—	—	—
Big Sheep Cr.	552	889	228	367	121	194	88	142	—	—	—	—
Captain John Rapid Acc. Pond	506	815	163	263	56	90	24	38	—	—	—	—
Catherine Cr. Acc. Pond	667	1073	342	551	235	378	203	326	—	—	—	—
Cottonwood Acc. Pond	521	839	197	317	89	144	57	92	—	—	—	—
Deer Cr. / Big Canyon Facility	586	943	262	421	154	248	122	196	—	—	—	—
Grande Ronde R.	493	793	168	271	61	98	29	46	—	—	—	—
Grande Ronde R. Acc. Pond	692	1113	367	591	260	418	227	366	—	—	—	—
Grande Ronde R. Trap	494	795	170	273	62	100	30	48	—	—	—	—
Grande Ronde R. Wallawa-headw.	679	1092	354	570	247	397	214	345	—	—	—	—
Hells Canyon Dam	571	919	247	397	139	224	107	172	—	—	—	—
Imnaha R.	516	830	191	308	84	135	52	83	—	—	—	—
Imnaha Trap	520	837	196	315	88	142	56	90	—	—	—	—
Imnaha R. Acc. Pond	562	904	237	382	130	209	98	157	—	—	—	—
Little Sheep Cr. Facility	544	875	219	353	112	180	80	128	—	—	—	—
Lookingglass Cr.	580	933	255	411	148	238	116	186	—	—	—	—
Lostine R.	600	966	276	444	168	271	136	219	—	—	—	—
Lostine R. Acc. Pond	613	987	289	465	181	292	149	240	—	—	—	—
Lower Granite Dam	432	695	107	173	—	—	-32	-52	—	—	—	—
Minam R.	584	940	260	418	152	245	120	193	—	—	—	—
Pittsburg landing Acc. Facility	539	868	215	346	107	173	75	121	—	—	—	—
Snake R.	324	522	—	—	-107	-173	-140	-225	—	—	—	—
Snake R., Salmon R.-Hells Canyon	570	917	245	395	138	222	106	170	—	—	—	—
Snake R., Clearwater-Salmon R.	482	775	157	253	50	80	17	28	—	—	—	—
Snake R. Smolt Trap	464	747	140	225	32	52	—	—	—	—	—	—
Wallowa Hatchery	614	988	290	466	182	293	150	241	—	—	—	—
Wallowa R.	574	924	250	402	142	229	110	177	—	—	—	—

Appendix B. Table 1. PIT-tagged hatchery Chinook salmon travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2008.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
04/01/08 ^b	23.51	0.00	0.00	13.41	31.42	4	21	19.05%	52.0	2.2
04/03/08 ^b	16.23	0.00	0.00	9.42	23.03	2	5	40.00%	50.8	3.2
04/04/08 ^b	11.97	0.00	0.00	9.25	26.00	4	16	25.00%	48.5	4.3
04/08/08 ^b	10.05	0.00	0.00	10.05	10.05	1	10	10.00%	52.6	5.1
04/09/08 ^b	6.39	0.00	0.00	5.09	7.69	2	2	100.00%	49.2	8.1
04/10/08 ^b	24.87	0.00	0.00	23.45	26.30	2	5	40.00%	59.4	2.1
04/11/08 ^b	20.09	0.00	0.00	13.57	26.62	2	8	25.00%	58.9	2.6
04/12/08	19.04	14.44	29.54	6.33	35.07	14	51	27.45%	59.6	2.7
04/13/08 ^b	19.70	0.00	0.00	18.69	21.50	4	14	28.57%	60.6	2.6
04/14/08	7.81	5.59	10.11	5.59	10.11	6	13	46.15%	62.4	6.6
04/15/08	15.70	12.64	17.30	4.12	40.48	56	155	36.13%	61.7	3.3
04/16/08	14.67	6.27	20.52	5.46	21.48	16	41	39.02%	61.5	3.5
04/17/08	10.66	8.49	12.33	4.04	25.14	36	99	36.36%	59.6	4.8
04/18/08	11.35	8.71	13.59	5.63	27.10	28	84	33.33%	60.0	4.5
04/19/08	15.36	8.79	18.39	4.83	30.34	13	34	38.24%	61.6	3.4
04/20/08	10.35	9.36	12.20	5.07	17.00	17	40	42.50%	60.3	5.0
04/21/08 ^b	13.72	0.00	0.00	6.54	22.05	4	25	16.00%	61.9	3.8
04/22/08	11.85	8.00	17.42	8.00	17.42	6	11	54.55%	60.6	4.4
04/23/08	11.92	2.82	18.44	2.82	18.44	6	10	60.00%	61.9	4.3
04/24/08 ^b	6.63	0.00	0.00	3.94	10.47	3	8	37.50%	61.2	7.8
04/25/08	7.18	5.39	19.43	5.39	19.43	7	26	26.92%	62.4	7.2
04/26/08	8.07	5.85	10.75	5.50	22.30	15	30	50.00%	62.7	6.4
04/27/08	6.22	4.84	8.43	3.00	9.48	12	45	26.67%	63.5	8.3
04/28/08	6.47	4.92	10.13	4.92	10.13	8	23	34.78%	64.3	8.0
04/29/08	5.74	4.12	8.36	3.40	11.12	16	40	40.00%	67.1	9.0
04/30/08	6.53	6.11	6.87	2.85	17.64	111	241	46.06%	71.9	7.9
05/01/08	5.81	5.53	6.37	3.96	17.45	53	114	46.49%	72.0	8.9
05/02/08	5.66	5.28	6.12	3.12	11.39	48	111	43.24%	76.4	9.1
05/04/08	4.42	4.15	5.31	2.44	9.97	52	118	44.07%	81.9	11.7
05/05/08	4.40	3.57	5.10	1.96	13.48	43	116	37.07%	89.0	11.7
05/06/08	4.80	4.23	5.43	2.62	11.96	50	113	44.25%	92.1	10.8
05/07/08	4.40	4.11	5.32	2.70	11.14	39	114	34.21%	93.8	11.7
05/08/08	4.33	3.85	5.46	1.88	10.26	52	118	44.07%	93.8	11.9
05/11/08	5.74	4.92	6.88	3.15	8.09	34	116	29.31%	91.6	9.0
05/12/08	5.80	4.75	6.02	3.52	8.80	26	84	30.95%	100.0	8.9
05/14/08	4.42	3.46	5.11	3.46	5.11	8	37	21.62%	105.0	11.7
05/15/08 ^b	2.60	0.00	0.00	2.48	2.71	2	15	13.33%	112.1	19.9
05/16/08	2.03	1.75	2.57	1.74	4.66	10	54	18.52%	122.9	25.4
05/17/08	2.16	1.86	2.86	1.31	4.28	35	274	12.77%	149.3	23.9
05/18/08	2.16	1.91	2.62	1.38	9.57	33	294	11.22%	174.3	23.9
05/19/08	2.71	2.12	3.45	1.26	9.84	41	307	13.36%	188.9	19.0

^a Confidence intervals calculated with non parametric statistics

^b Not used in statistical analysis because analysis showed too few recaptures

Appendix B. Table 2. PIT-tagged wild Chinook salmon travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2008.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
04/01/08 ^b	18.36	0.00	0.00	18.36	18.36	1	1	100.00%	49.7	2.8
04/12/08 ^b	9.99	0.00	0.00	7.33	12.64	2	4	50.00%	59.1	5.2
04/14/08 ^b	27.31	0.00	0.00	27.31	27.31	1	1	100.00%	68.5	1.9
04/15/08 ^b	6.21	0.00	0.00	6.21	6.21	1	4	25.00%	64.2	8.3
04/16/08 ^b	5.30	0.00	0.00	4.57	6.03	2	5	40.00%	64.2	9.7
04/17/08 ^b	6.21	0.00	0.00	4.38	10.93	3	14	21.43%	61.6	8.3
04/18/08	10.45	5.47	12.92	5.03	17.99	9	32	28.13%	59.4	4.9
04/19/08 ^b	10.29	0.00	0.00	5.79	17.30	5	9	55.56%	59.7	5.0
04/20/08	10.33	7.14	12.55	7.14	12.55	7	13	53.85%	60.3	5.0
04/21/08 ^b	12.32	0.00	0.00	10.01	14.60	3	9	33.33%	60.8	4.2
04/22/08 ^b	9.47	0.00	0.00	9.47	9.47	1	2	50.00%	59.9	5.4
04/23/08 ^b	8.25	0.00	0.00	8.25	8.25	1	1	100.00%	60.2	6.3
04/24/08 ^b	4.59	0.00	0.00	4.59	4.59	1	1	100.00%	58.4	11.2
04/25/08 ^b	5.76	0.00	0.00	5.76	5.76	1	2	50.00%	62.2	9.0
04/26/08 ^b	6.94	0.00	0.00	6.42	7.46	2	7	28.57%	62.6	7.4
04/29/08 ^b	5.98	0.00	0.00	5.97	5.97	1	5	20.00%	67.1	8.6
04/30/08	6.23	5.68	8.02	5.68	8.02	7	15	46.67%	69.5	8.3
05/01/08	5.19	4.45	6.36	3.71	7.39	14	22	63.64%	69.2	10.0
05/02/08 ^b	4.75	0.00	0.00	4.25	5.25	2	5	40.00%	72.7	10.9
05/03/08	4.91	4.06	6.22	3.51	7.43	12	27	44.44%	78.6	10.5
05/04/08 ^b	6.72	0.00	0.00	5.93	14.44	3	6	50.00%	86.4	7.7
05/05/08	3.78	2.82	8.70	2.82	8.70	8	15	53.33%	89.0	13.7
05/06/08	4.29	2.88	5.21	2.24	8.37	15	27	55.56%	92.5	12.0
05/07/08	4.22	3.56	4.82	1.94	12.57	38	83	45.78%	93.8	12.2
05/08/08	4.25	3.59	5.37	2.40	10.23	48	109	44.04%	93.8	12.1
05/09/08	4.96	4.56	5.68	2.52	9.09	56	136	41.18%	88.8	10.4
05/10/08	5.00	4.43	5.61	2.85	10.21	47	119	39.50%	85.6	10.3
05/11/08	6.69	5.87	7.39	4.19	9.21	10	26	38.46%	98.7	7.7
05/12/08 ^b	5.39	0.00	0.00	2.90	6.45	5	16	31.25%	91.9	9.6
05/13/08 ^b	4.88	0.00	0.00	3.78	5.01	5	23	21.74%	101.8	10.6
05/14/08 ^b	3.41	0.00	0.00	2.67	4.14	2	8	25.00%	94.2	15.1
05/15/08 ^b	3.40	0.00	0.00	2.72	4.09	2	6	33.33%	112.1	15.2
05/17/08	2.55	2.45	2.80	1.17	12.13	79	341	23.17%	161.4	20.2
05/18/08	2.54	1.80	3.65	1.30	6.63	13	243	5.35%	180.2	20.4
05/19/08	2.40	2.15	2.83	1.25	9.66	53	336	15.77%	190.9	21.5

^a Confidence intervals calculated with non parametric statistics

^b Not used in statistical analysis because analysis showed too few recaptures.

Appendix B. Table 3. PIT-tagged hatchery steelhead trout travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2008.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
04/01/08 ^b	25.90	0.00	0.00	24.68	27.11	2	7	28.57%	52.4	2.0
04/03/08 ^b	7.12	0.00	0.00	7.12	7.12	1	7	14.29%	44.9	7.3
04/04/08 ^b	27.59	0.00	0.00	27.59	27.59	1	6	16.67%	55.7	1.9
04/05/08 ^b	3.52	0.00	0.00	3.52	3.52	1	11	9.09%	45.5	14.6
04/06/08	4.11	3.51	10.46	3.51	10.46	7	31	22.58%	45.6	12.5
04/07/08 ^b	5.60	0.00	0.00	4.68	6.51	2	11	18.18%	45.3	9.2
04/08/08 ^b	7.07	0.00	0.00	5.55	8.59	2	12	16.67%	48.9	7.3
04/09/08 ^b	5.83	0.00	0.00	5.83	5.83	1	10	10.00%	49.2	8.9
04/10/08	5.57	4.38	15.75	4.38	15.75	6	29	20.69%	51.5	9.3
04/11/08 ^b	4.46	0.00	0.00	3.89	4.78	4	6	66.67%	50.4	11.6
04/12/08 ^b	6.66	0.00	0.00	2.74	12.86	4	14	28.57%	57.5	7.7
04/13/08 ^b	4.90	0.00	0.00	2.81	18.07	3	14	21.43%	58.5	10.5
04/14/08	3.26	1.68	3.90	1.68	3.90	7	34	20.59%	60.9	15.8
04/15/08	2.92	2.62	3.78	1.50	34.24	51	136	37.50%	63.0	17.7
04/16/08	3.29	3.09	4.25	2.47	25.65	57	197	28.93%	63.2	15.7
04/17/08	3.27	2.72	10.46	1.91	37.57	19	111	17.12%	64.1	15.8
04/18/08	2.81	2.37	4.93	1.66	14.53	18	67	26.87%	65.1	18.3
04/19/08	2.57	1.81	3.18	1.47	23.70	15	53	28.30%	63.7	20.1
04/20/08	3.17	2.85	3.61	1.62	10.30	17	77	22.08%	60.4	16.3
04/21/08	3.46	2.42	13.36	2.36	25.84	12	35	34.29%	57.3	14.9
04/22/08	3.62	2.72	11.69	2.59	17.80	14	53	26.42%	55.9	14.3
04/23/08	2.93	2.56	6.78	2.53	11.33	16	70	22.86%	55.5	17.6
04/24/08	2.85	2.62	3.63	1.56	31.81	36	126	28.57%	57.1	18.1
04/25/08	2.90	2.62	3.57	2.41	10.57	45	158	28.48%	57.3	17.8
04/26/08	3.26	2.78	4.35	2.43	23.87	24	74	32.43%	59.1	15.8
04/27/08	2.94	2.72	3.38	1.74	25.38	48	118	40.68%	62.9	17.5
04/28/08	2.56	2.22	3.74	1.72	5.89	17	74	22.97%	65.4	20.2
04/29/08	1.94	1.74	2.68	1.51	19.91	21	159	13.21%	68.7	26.5
04/30/08	2.20	1.86	2.60	1.41	17.70	46	119	38.66%	67.6	23.4
05/01/08	2.86	2.58	3.58	2.29	10.85	31	116	26.72%	64.2	18.0
05/04/08	2.05	1.66	2.65	1.52	26.62	26	122	21.31%	74.0	25.2
05/05/08	1.79	1.65	1.92	1.42	6.99	44	117	37.61%	82.4	28.8
05/06/08	1.72	1.59	1.90	1.40	6.34	46	118	38.98%	90.4	29.9
05/07/08	1.80	1.62	2.07	1.42	18.80	37	118	31.36%	95.5	28.7
05/08/08	1.62	1.53	1.72	1.34	17.83	35	116	30.17%	96.8	31.9
05/11/08	1.69	1.63	2.28	1.46	9.21	44	118	37.29%	88.2	30.6
05/12/08	2.19	1.77	2.63	1.55	6.65	32	122	26.23%	83.8	23.6
05/14/08	2.20	1.59	3.01	1.49	5.36	14	47	29.79%	84.6	23.4
05/15/08	1.68	1.58	1.90	1.47	4.84	17	42	40.48%	100.1	30.6
05/16/08	1.55	1.45	2.47	1.37	3.53	11	53	20.75%	122.9	33.2
05/17/08	1.45	1.36	1.75	1.11	18.07	31	208	14.90%	135.6	35.6
05/18/08	1.75	1.17	6.09	1.04	23.46	11	102	10.78%	174.3	29.5
05/19/08	1.05	1.00	1.12	0.80	13.51	41	321	12.77%	187.3	49.0

^a Confidence intervals calculated with non parametric statistics

^b Not used in statistical analysis because analysis showed too few recaptures

Appendix B. Table 4. PIT-tagged wild steelhead trout travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2008.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
04/10/08 ^b	19.00	0.00	0.00	18.99	18.99	1	1	100.00%	57.1	2.7
04/15/08	3.76	2.33	20.36	2.33	20.36	6	16	37.50%	63.4	13.7
04/16/08	3.37	2.98	5.92	2.98	5.92	8	24	33.33%	63.2	15.3
04/17/08	3.96	2.30	8.76	2.30	8.76	7	17	41.18%	64.1	13.0
04/18/08	2.95	2.55	7.39	2.27	20.78	13	27	48.15%	65.1	17.5
04/19/08	4.02	2.68	11.31	2.68	11.31	6	20	30.00%	61.3	12.8
04/20/08 ^b	3.40	0.00	0.00	3.38	6.43	3	23	13.04%	60.4	15.2
04/21/08 ^b	4.90	0.00	0.00	3.26	6.53	2	19	10.53%	57.5	10.5
04/22/08 ^b	2.94	0.00	0.00	2.57	3.32	2	4	50.00%	55.8	17.5
04/23/08 ^b	2.58	0.00	0.00	2.57	2.59	2	8	25.00%	55.5	20.0
04/24/08	2.83	1.70	4.93	1.70	4.93	8	25	32.00%	57.1	18.2
04/25/08	3.49	2.51	8.00	2.51	8.00	7	20	35.00%	57.3	14.8
04/26/08	3.39	2.66	10.22	2.66	10.22	7	23	30.43%	59.1	15.2
04/27/08 ^b	3.39	0.00	0.00	2.65	6.05	4	17	23.53%	62.9	15.2
04/28/08 ^b	2.51	0.00	0.00	2.51	2.51	1	5	20.00%	65.4	20.6
04/29/08 ^b	2.62	0.00	0.00	2.61	2.69	3	23	13.04%	67.4	19.7
04/30/08	2.75	2.68	3.47	1.78	4.36	17	55	30.91%	66.2	18.8
05/01/08	3.32	2.82	3.66	2.44	7.11	18	77	23.38%	64.2	15.5
05/02/08	2.73	2.55	3.54	2.54	8.59	9	26	34.62%	65.9	18.9
05/03/08	2.58	2.53	3.52	2.42	4.94	17	57	29.82%	71.0	20.0
05/04/08	2.51	2.41	2.63	2.09	3.59	15	56	26.79%	77.7	20.6
05/05/08	1.95	1.50	2.55	1.50	2.55	8	19	42.11%	82.4	26.4
05/06/08	1.62	1.55	1.82	1.46	3.14	24	57	42.11%	90.4	31.8
05/07/08	1.85	1.57	2.10	1.31	14.44	42	91	46.15%	95.5	27.9
05/08/08	1.99	1.71	2.34	1.39	5.76	38	94	40.43%	96.8	26.0
05/09/08	2.11	1.86	2.36	1.57	9.53	66	127	51.97%	93.8	24.4
05/10/08	1.96	1.65	2.31	1.48	2.59	27	57	47.37%	90.6	26.3
05/11/08	1.80	1.67	2.50	1.57	4.18	14	33	42.42%	88.2	28.6
05/12/08	2.36	1.94	2.64	1.69	3.42	10	31	32.26%	83.8	21.9
05/13/08	2.57	1.69	3.50	1.65	3.50	9	32	28.13%	84.9	20.1
05/14/08 ^b	2.81	0.00	0.00	2.59	3.46	5	18	27.78%	94.2	18.4
05/15/08 ^b	1.78	0.00	0.00	1.68	1.88	2	9	22.22%	100.1	29.0
05/16/08 ^b	1.98	0.00	0.00	1.44	2.51	2	20	10.00%	122.9	26.1
05/17/08	1.42	1.33	1.91	1.11	9.13	38	179	21.23%	149.3	36.4
05/18/08 ^b	1.45	0.00	0.00	1.06	1.49	3	31	9.68%	174.3	35.6
05/19/08	1.44	1.07	1.77	0.93	6.49	16	60	26.67%	190.9	35.9

^a Confidence intervals calculated with non parametric statistics

^b Not used in statistical analysis because analysis showed too few recaptures

Appendix B. Table 5. PIT-tagged hatchery Chinook salmon travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2008.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
03/19/08 ^b	54.20	0.00	0.00	54.20	54.20	1	1	100.00%	56.6	4.3
03/20/08	41.79	39.02	43.48	20.21	52.71	66	255	25.88%	49.7	5.6
03/21/08	43.87	39.49	46.62	22.84	59.05	47	175	26.86%	50.8	5.3
03/22/08	41.69	39.66	44.90	27.06	54.66	51	175	29.14%	50.8	5.6
03/24/08	39.68	35.78	43.69	16.62	48.97	38	120	31.67%	51.6	5.9
03/25/08	40.83	37.46	43.34	24.66	49.60	39	120	32.50%	52.9	5.7
03/26/08	41.71	37.36	43.39	22.81	52.41	43	121	35.54%	54.7	5.6
03/27/08	39.19	35.73	40.73	25.09	53.78	45	120	37.50%	53.6	6.0
03/28/08	39.54	38.83	41.13	27.45	47.44	39	119	32.77%	55.5	5.9
03/31/08	38.19	37.29	39.34	17.76	48.71	42	148	28.38%	57.7	6.1
04/01/08	37.47	34.78	39.64	19.95	47.64	31	120	25.83%	58.2	6.2
04/02/08	36.61	35.41	39.10	14.37	47.61	47	120	39.17%	59.7	6.4
04/03/08	34.61	32.77	35.23	21.72	44.70	41	120	34.17%	59.2	6.7
04/04/08	34.06	31.55	35.75	22.60	44.84	30	92	32.61%	59.6	6.9
04/07/08	30.84	30.12	31.59	24.31	40.37	37	120	30.83%	61.1	7.6
04/08/08	29.75	28.22	30.96	18.54	40.96	39	121	32.23%	61.6	7.9
04/09/08	29.16	27.68	29.74	16.22	38.45	39	119	32.77%	62.1	8.0
04/10/08	27.54	26.48	29.08	9.51	41.12	55	120	45.83%	62.6	8.5
04/11/08	26.73	24.51	28.08	12.21	36.44	43	120	35.83%	63.3	8.7
04/14/08	23.44	22.16	24.72	6.79	31.54	46	120	38.33%	64.1	10.0
04/15/08	22.94	21.86	25.25	14.27	34.91	41	120	34.17%	66.0	10.2
04/16/08	22.89	21.74	23.57	11.10	34.37	49	120	40.83%	67.4	10.2
04/17/08	23.98	22.50	25.26	14.47	31.46	50	121	41.32%	69.5	9.7
04/18/08	20.62	19.45	21.97	10.82	30.45	41	119	34.45%	67.9	11.3
04/21/08	18.75	17.73	20.33	10.99	26.66	54	119	45.38%	69.6	12.5
04/22/08	18.50	16.71	19.48	11.01	30.58	45	120	37.50%	70.8	12.6
04/23/08	16.83	15.63	19.29	8.67	26.97	38	120	31.67%	70.4	13.9
04/24/08	16.81	15.33	18.74	7.75	24.59	40	121	33.06%	72.6	13.9
04/25/08	16.48	15.00	21.02	10.44	30.13	40	121	33.06%	73.6	14.2
04/28/08	13.71	11.52	18.74	9.16	23.62	22	50	44.00%	77.8	17.0
04/29/08	10.24	8.69	13.72	6.88	17.07	17	50	34.00%	76.3	22.8
04/30/08	11.69	10.96	16.72	6.32	24.23	21	51	41.18%	80.4	20.0
05/01/08	12.02	9.97	19.79	9.97	19.79	6	50	12.00%	81.5	19.4
05/05/08	10.55	7.28	13.31	5.09	13.84	14	50	28.00%	88.0	22.2
05/06/08	11.51	10.68	12.09	5.97	18.47	21	50	42.00%	96.3	20.3
05/07/08	10.63	7.04	13.30	5.38	18.39	14	89	15.73%	97.4	22.0

^a Confidence intervals calculated with non parametric statistics

^b Not used in statistical analysis because analysis showed too few recaptures

Appendix B. Table 6. PIT-tagged wild Chinook salmon travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2008.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
03/11/08 ^b	43.12	0.00	0.00	38.71	47.53	2	5	40.00%	45.3	5.4
03/13/08 ^b	46.64	0.00	0.00	46.64	46.64	1	2	50.00%	47.3	5.0
03/15/08 ^b	48.67	0.00	0.00	44.72	52.62	2	3	66.67%	49.1	4.8
03/16/08 ^b	45.48	0.00	0.00	45.48	45.48	1	2	50.00%	48.4	5.1
03/17/08 ^b	47.87	0.00	0.00	47.87	47.87	1	3	33.33%	49.9	4.9
03/18/08	38.55	31.01	55.27	31.01	55.27	6	10	60.00%	47.4	6.1
03/19/08 ^b	45.52	0.00	0.00	43.52	47.53	2	9	22.22%	50.3	5.1
03/20/08 ^b	35.84	0.00	0.00	25.69	47.82	3	11	27.27%	47.6	6.5
03/21/08 ^b	32.03	0.00	0.00	29.72	36.49	3	18	16.67%	47.1	7.3
03/22/08	41.40	28.39	45.80	24.76	50.34	14	42	33.33%	50.6	5.6
03/23/08	39.53	33.62	42.42	23.28	56.42	27	77	35.06%	50.9	5.9
03/24/08	39.41	29.66	44.94	26.30	45.91	11	35	31.43%	51.4	5.9
03/25/08	37.16	35.36	47.03	28.78	57.66	17	39	43.59%	51.5	6.3
03/26/08	40.93	28.79	46.63	28.71	48.33	10	28	35.71%	53.9	5.7
03/27/08	35.66	28.91	40.86	26.66	44.72	21	56	37.50%	52.5	6.6
03/28/08	36.20	30.51	39.68	22.57	51.04	20	69	28.99%	53.0	6.5
03/29/08	37.22	32.43	40.16	17.55	51.98	34	90	37.78%	54.2	6.3
03/30/08	31.26	29.80	37.58	13.86	48.50	36	101	35.64%	52.7	7.5
03/31/08	35.03	30.41	37.66	19.60	49.29	42	92	45.65%	54.9	6.7
04/01/08	30.58	28.47	35.63	19.28	46.88	39	101	38.61%	54.3	7.6
04/02/08	34.87	27.76	38.61	20.45	46.41	19	49	38.78%	57.5	6.7
04/03/08	31.77	26.84	33.52	17.71	42.16	26	58	44.83%	56.3	7.4
04/04/08	32.04	24.86	44.32	24.86	44.32	8	29	27.59%	57.5	7.3
04/05/08	29.06	24.62	33.43	18.83	39.44	16	30	53.33%	56.6	8.0
04/06/08	26.31	20.69	32.08	13.29	35.50	14	31	45.16%	56.6	8.9
04/07/08 ^b	23.79	0.00	0.00	21.89	32.98	5	23	21.74%	56.8	9.8
04/08/08	23.19	16.32	29.65	10.90	35.29	10	22	45.45%	57.3	10.1
04/09/08	27.64	22.54	32.12	16.53	40.45	16	55	29.09%	60.9	8.5
04/10/08	23.99	19.03	29.17	10.72	31.52	13	35	37.14%	58.8	9.7
04/11/08	17.54	11.06	19.42	11.06	19.42	7	32	21.88%	57.7	13.3
04/12/08	18.43	15.11	28.70	9.76	36.35	16	37	43.24%	59.1	12.7
04/13/08	18.94	10.44	23.33	7.96	23.44	9	19	47.37%	60.5	12.3
04/14/08	17.32	14.91	22.25	8.78	29.55	27	63	42.86%	61.3	13.5
04/15/08	19.58	17.32	21.27	6.04	37.00	122	331	36.86%	62.5	11.9
04/16/08	20.52	19.91	21.27	6.67	39.95	166	390	42.56%	64.5	11.4
04/17/08	20.01	19.48	20.33	6.01	39.48	443	1009	43.90%	64.6	11.7
04/18/08	19.72	19.31	20.24	6.31	39.68	216	514	42.02%	66.4	11.8
04/19/08	18.66	18.34	19.29	8.45	32.84	277	758	36.54%	66.5	12.5
04/20/08	19.77	17.19	21.43	11.76	34.70	66	160	41.25%	69.4	11.8
04/21/08	16.82	15.69	21.24	10.03	30.45	41	114	35.96%	66.6	13.9
04/22/08	14.86	14.32	16.68	9.35	37.10	32	78	41.03%	64.7	15.7
04/23/08	13.60	12.76	15.44	8.47	22.66	22	48	45.83%	65.2	17.2
04/24/08	13.53	11.80	14.07	7.71	29.59	25	60	41.67%	68.3	17.3
04/25/08	14.83	12.46	22.43	10.29	27.55	24	80	30.00%	72.6	15.7
04/26/08	11.97	10.69	15.04	9.43	23.74	28	69	40.58%	70.0	19.5
04/27/08	11.57	9.37	13.97	7.30	24.02	17	61	27.87%	73.3	20.2
04/28/08	9.66	8.32	11.83	6.82	25.73	26	58	44.83%	72.4	24.2
04/29/08	9.66	8.40	11.94	6.45	29.52	32	66	48.48%	76.3	24.2
04/30/08	10.46	9.71	11.53	6.12	23.96	71	215	33.02%	78.7	22.3

Appendix B. Table 6. Continued.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
05/01/08	11.50	9.85	13.26	6.15	19.75	63	207	30.43%	81.5	20.3
05/02/08	10.87	8.73	14.46	6.86	23.42	29	95	30.53%	82.6	21.5
05/03/08	10.65	8.32	14.39	6.00	21.11	24	92	26.09%	83.7	21.9
05/04/08	9.60	7.81	11.48	6.29	17.10	15	41	36.59%	85.7	24.3
05/05/08	7.31	6.39	11.44	5.42	22.78	12	34	35.29%	89.6	31.9
05/06/08	9.05	4.50	11.69	4.50	11.69	8	13	61.54%	88.4	25.8
05/07/08 ^b	8.88	0.00	0.00	5.63	10.49	4	11	36.36%	89.8	26.3
05/08/08 ^b	7.05	0.00	0.00	6.25	10.15	5	10	50.00%	88.9	33.1
05/14/08 ^b	9.26	0.00	0.00	9.26	9.26	1	6	16.67%	143.5	25.2

^a Confidence intervals calculated with non parametric statistics

^b Not used in statistical analysis because analysis showed too few recaptures

Appendix B. Table 7. PIT-tagged hatchery steelhead trout travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2008.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
04/03/08	15.01	14.07	20.62	12.49	32.46	9	18	50.00%	50.0	15.6
04/04/08	13.69	7.58	15.26	7.58	15.26	6	37	16.22%	50.4	17.1
04/05/08	13.08	11.86	25.78	5.45	45.86	20	67	29.85%	50.9	17.9
04/06/08	14.16	12.10	23.58	8.79	44.10	18	79	22.78%	53.3	16.5
04/07/08	12.19	10.66	20.77	7.54	32.18	26	90	28.89%	53.0	19.2
04/08/08	11.15	10.19	17.64	8.11	40.57	26	80	32.50%	53.7	21.0
04/09/08	30.65	10.35	32.69	7.77	35.95	15	66	22.73%	64.2	7.6
04/10/08	12.15	8.92	21.75	6.72	34.14	41	151	27.15%	56.9	19.2
04/11/08	8.59	7.92	10.18	4.44	39.24	52	136	38.24%	57.2	27.2
04/13/08	5.87	5.07	6.76	3.79	27.10	28	67	41.79%	59.4	39.8
04/14/08	12.98	5.35	20.24	3.85	34.15	33	93	35.48%	60.1	18.0
04/15/08	18.09	4.77	27.05	4.20	36.01	14	65	21.54%	61.8	12.9
04/16/08	18.18	3.29	25.37	3.29	25.37	7	24	29.17%	61.7	12.8
04/17/08	10.77	4.40	17.65	3.98	27.09	14	41	34.15%	59.6	21.7
04/18/08	8.43	5.30	25.36	3.64	37.96	10	35	28.57%	60.0	27.7
04/19/08	8.41	6.06	10.89	3.55	26.52	17	43	39.53%	59.4	27.8
04/20/08	15.19	6.73	31.96	6.59	37.25	9	53	16.98%	62.2	15.4
04/21/08	11.35	7.50	19.20	4.55	27.08	19	82	23.17%	60.7	20.6
04/22/08	5.57	4.68	19.48	3.59	28.28	15	71	21.13%	56.1	41.9
04/23/08	11.39	4.99	22.63	4.99	22.63	6	18	33.33%	60.9	20.5
04/24/08	5.78	5.14	16.61	4.69	23.30	12	36	33.33%	60.2	40.4
04/25/08	6.48	4.50	16.54	3.78	17.56	14	41	34.15%	62.2	36.1
04/26/08	7.87	4.81	16.51	4.50	31.90	11	40	27.50%	62.7	29.7
04/27/08	8.46	5.54	10.75	4.50	18.76	9	40	22.50%	64.8	27.6
04/28/08	4.86	4.42	6.84	3.71	9.19	12	55	21.82%	64.5	48.1
04/29/08	4.16	3.63	6.19	3.36	19.96	29	98	29.59%	66.3	56.2
04/30/08	4.71	4.45	5.75	3.56	20.24	48	218	22.02%	67.2	49.5
05/01/08	4.41	4.57	7.51	3.41	24.84	41	150	27.33%	66.4	53.0
05/02/08	5.07	9.56	17.95	3.42	18.19	13	46	28.26%	72.7	46.1
05/04/08	5.32	4.87	11.91	3.57	21.89	29	101	28.71%	84.7	43.9
05/05/08	7.19	4.76	11.52	2.77	24.11	32	112	28.57%	86.4	32.5
05/06/08	3.84	4.41	5.50	2.27	16.31	51	177	28.81%	92.5	60.9
05/07/08	3.50	8.65	17.66	2.54	11.07	15	60	25.00%	93.8	66.7
05/08/08	3.67	4.87	11.52	2.52	30.20	30	71	42.25%	93.8	63.7
05/13/08	5.42	9.56	17.95	2.62	22.70	13	32	40.63%	101.8	43.1
05/14/08	3.69	12.42	19.19	2.93	4.36	9	47	19.15%	105.0	63.3
05/15/08	3.44	11.91	19.19	2.52	18.85	10	44	22.73%	112.1	67.9

^a Confidence intervals calculated with non parametric statistics

^b Not used in statistical analysis because analysis showed too few recaptures

Appendix B. Table 8. PIT-tagged wild steelhead trout travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2008.

Release Date	Daily Median Travel Time	Lower Confidence Interval ^a	Upper Confidence Level ^a	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Mean Migration Rate (km/day)
04/14/08 ^b	26.50	0.00	0.00	26.50	26.50	1	2	50.00%	104.1	8.8
04/15/08 ^b	8.55	0.00	0.00	5.00	33.44	4	20	20.00%	61.3	27.3
04/16/08	4.05	3.62	7.54	3.62	7.54	6	19	31.58%	63.9	57.7
04/17/08	5.97	3.46	25.35	3.46	25.35	8	37	21.62%	61.6	39.2
04/18/08 ^b	5.77	0.00	0.00	4.10	17.52	5	17	29.41%	60.5	40.5
04/19/08	15.28	4.27	33.36	4.27	33.36	6	23	26.09%	61.3	15.3
04/20/08 ^b	7.79	0.00	0.00	6.43	18.37	4	18	22.22%	58.3	30.0
04/21/08 ^b	6.43	0.00	0.00	4.48	8.38	2	5	40.00%	57.6	36.3
04/22/08 ^b	8.64	0.00	0.00	6.41	15.47	3	10	30.00%	59.9	27.0
04/24/08 ^b	9.53	0.00	0.00	9.53	9.53	1	3	33.33%	61.7	24.5
04/26/08 ^b	4.98	0.00	0.00	4.98	4.98	1	4	25.00%	62.6	46.9
04/27/08 ^b	6.44	0.00	0.00	5.73	7.15	2	3	66.67%	63.5	36.3
04/28/08 ^b	6.20	0.00	0.00	6.20	6.20	1	3	33.33%	64.3	37.7
04/29/08 ^b	5.17	0.00	0.00	4.86	5.49	2	4	50.00%	65.8	45.2
04/30/08	5.47	4.66	6.08	4.48	6.68	10	31	32.26%	67.2	42.7
05/01/08	4.40	3.51	6.60	3.51	6.60	6	27	22.22%	66.4	53.1
05/02/08	5.49	4.37	9.59	3.36	13.16	13	29	44.83%	72.7	42.6
05/03/08 ^b	4.07	0.00	0.00	3.64	4.50	2	10	20.00%	74.5	57.4
05/04/08 ^b	5.70	0.00	0.00	3.57	5.80	3	10	30.00%	85.9	41.0
05/05/08	4.16	3.55	9.19	3.55	9.19	6	12	50.00%	89.0	56.2
05/06/08	3.66	2.60	5.50	2.60	5.50	6	12	50.00%	92.5	63.9
05/07/08	3.70	3.07	4.42	2.80	4.43	9	16	56.25%	93.8	63.2
05/08/08	3.91	3.08	8.65	2.71	10.15	12	29	41.38%	93.8	59.7
05/13/08 ^b	5.48	0.00	0.00	5.48	5.48	1	8	12.50%	101.8	42.6
05/14/08 ^b	3.50	0.00	0.00	3.45	5.00	3	9	33.33%	105.0	66.7
05/15/08 ^b	5.47	0.00	0.00	5.47	5.47	1	8	12.50%	137.2	42.7

^a Confidence intervals calculated with non parametric statistics

^b Not used in statistical analysis because analysis showed too few recaptures

Appendix C. Table 1. PIT-tagged hatchery Chinook salmon interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Snake River Trap, 2008.

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
04/01/08	21	4	19.05%	5	23.81%	2	9.52%	1	4.76%	12	57.14%
04/02/08	1	0	0.00%	1	100.00%	0	0.00%	0	0.00%	1	100.00%
04/03/08	5	2	40.00%	1	20.00%	0	0.00%	0	0.00%	3	60.00%
04/04/08	16	4	25.00%	3	18.75%	1	6.25%	2	12.50%	10	62.50%
04/06/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/07/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/08/08	10	1	10.00%	3	30.00%	0	0.00%	1	10.00%	5	50.00%
04/09/08	2	2	100.00%	0	0.00%	0	0.00%	0	0.00%	2	100.00%
04/10/08	5	2	40.00%	1	20.00%	0	0.00%	1	20.00%	4	80.00%
04/11/08	8	2	25.00%	2	25.00%	1	12.50%	1	12.50%	6	75.00%
04/12/08	51	14	27.45%	12	23.53%	3	5.88%	3	5.88%	32	62.75%
04/13/08	14	4	28.57%	1	7.14%	3	21.43%	2	14.29%	10	71.43%
04/14/08	13	6	46.15%	2	15.38%	1	7.69%	0	0.00%	9	69.23%
04/15/08	155	56	36.13%	21	13.55%	12	7.74%	10	6.45%	99	63.87%
04/16/08	41	16	39.02%	10	24.39%	4	9.76%	1	2.44%	31	75.61%
04/17/08	99	36	36.36%	16	16.16%	8	8.08%	10	10.10%	70	70.71%
04/18/08	84	29	34.52%	13	15.48%	9	10.71%	6	7.14%	57	67.86%
04/19/08	34	13	38.24%	8	23.53%	0	0.00%	4	11.76%	25	73.53%
04/20/08	40	17	42.50%	7	17.50%	4	10.00%	1	2.50%	29	72.50%
04/21/08	25	4	16.00%	6	24.00%	2	8.00%	2	8.00%	14	56.00%
04/22/08	11	6	54.55%	1	9.09%	2	18.18%	0	0.00%	9	81.82%
04/23/08	10	6	60.00%	1	10.00%	1	10.00%	0	0.00%	8	80.00%
04/24/08	8	3	37.50%	1	12.50%	1	12.50%	0	0.00%	5	62.50%
04/25/08	26	7	26.92%	6	23.08%	1	3.85%	3	11.54%	17	65.38%
04/26/08	30	15	50.00%	3	10.00%	3	10.00%	1	3.33%	22	73.33%
04/27/08	45	12	26.67%	8	17.78%	6	13.33%	5	11.11%	31	68.89%
04/28/08	23	8	34.78%	2	8.70%	2	8.70%	2	8.70%	14	60.87%
04/29/08	40	16	40.00%	7	17.50%	3	7.50%	4	10.00%	30	75.00%
04/30/08	241	111	46.06%	56	23.24%	11	4.56%	10	4.15%	188	78.01%
05/01/08	114	53	46.49%	27	23.68%	9	7.89%	6	5.26%	95	83.33%
05/02/08	111	48	43.24%	27	24.32%	4	3.60%	5	4.50%	84	75.68%
05/04/08	118	52	44.07%	21	17.80%	4	3.39%	6	5.08%	83	70.34%
05/05/08	116	43	37.07%	38	32.76%	8	6.90%	5	4.31%	94	81.03%
05/06/08	113	50	44.25%	23	20.35%	9	7.96%	1	0.88%	83	73.45%
05/07/08	114	39	34.21%	31	27.19%	11	9.65%	1	0.88%	82	71.93%
05/08/08	118	52	44.07%	21	17.80%	11	9.32%	3	2.54%	87	73.73%
05/11/08	116	34	29.31%	21	18.10%	11	9.48%	6	5.17%	72	62.07%
05/12/08	84	26	30.95%	12	14.29%	11	13.10%	6	7.14%	55	65.48%
05/14/08	37	8	21.62%	12	32.43%	2	5.41%	2	5.41%	24	64.86%
05/15/08	15	2	13.33%	2	13.33%	3	20.00%	1	6.67%	8	53.33%
05/16/08	54	10	18.52%	12	22.22%	11	20.37%	5	9.26%	38	70.37%
05/17/08	274	35	12.77%	66	24.09%	51	18.61%	18	6.57%	170	62.04%
05/18/08	294	33	11.22%	81	27.55%	43	14.63%	20	6.80%	177	60.20%
05/19/08	306	41	13.40%	106	34.64%	47	15.36%	10	3.27%	204	66.67%

Appendix C. Table 2. PIT-tagged wild Chinook salmon interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Snake River Trap, 2008.

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
04/01/08	1	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
04/11/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/12/08	4	2	50.00%	0	0.00%	0	0.00%	0	0.00%	2	50.00%
04/13/08	3	0	0.00%	0	0.00%	0	0.00%	1	33.33%	1	33.33%
04/14/08	1	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
04/15/08	4	1	25.00%	2	50.00%	0	0.00%	0	0.00%	3	75.00%
04/16/08	5	2	40.00%	1	20.00%	0	0.00%	0	0.00%	3	60.00%
04/17/08	14	3	21.43%	1	7.14%	1	7.14%	2	14.29%	7	50.00%
04/18/08	32	9	28.13%	4	12.50%	3	9.38%	4	12.50%	20	62.50%
04/19/08	9	5	55.56%	1	11.11%	0	0.00%	0	0.00%	6	66.67%
04/20/08	13	7	53.85%	2	15.38%	0	0.00%	0	0.00%	9	69.23%
04/21/08	9	3	33.33%	1	11.11%	0	0.00%	1	11.11%	5	55.56%
04/22/08	2	1	50.00%	0	0.00%	1	50.00%	0	0.00%	2	100.00%
04/23/08	1	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
04/24/08	1	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
04/25/08	2	1	50.00%	0	0.00%	0	0.00%	0	0.00%	1	50.00%
04/26/08	7	2	28.57%	1	14.29%	0	0.00%	0	0.00%	3	42.86%
04/27/08	1	0	0.00%	1	100.00%	0	0.00%	0	0.00%	1	100.00%
04/28/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/29/08	5	1	20.00%	1	20.00%	0	0.00%	0	0.00%	2	40.00%
04/30/08	15	7	46.67%	3	20.00%	2	13.33%	0	0.00%	12	80.00%
05/01/08	22	14	63.64%	3	13.64%	1	4.55%	2	9.09%	20	90.91%
05/02/08	5	2	40.00%	1	20.00%	1	20.00%	0	0.00%	4	80.00%
05/03/08	27	12	44.44%	6	22.22%	2	7.41%	3	11.11%	23	85.19%
05/04/08	6	3	50.00%	1	16.67%	0	0.00%	1	16.67%	5	83.33%
05/05/08	15	8	53.33%	3	20.00%	1	6.67%	0	0.00%	12	80.00%
05/06/08	27	15	55.56%	5	18.52%	2	7.41%	0	0.00%	22	81.48%
05/07/08	83	38	45.78%	17	20.48%	7	8.43%	2	2.41%	64	77.11%
05/08/08	109	48	44.04%	25	22.94%	8	7.34%	2	1.83%	83	76.15%
05/09/08	137	56	40.88%	29	21.17%	17	12.41%	1	0.73%	103	75.18%
05/10/08	119	47	39.50%	17	14.29%	9	7.56%	3	2.52%	76	63.87%
05/11/08	26	10	38.46%	4	15.38%	3	11.54%	1	3.85%	18	69.23%
05/12/08	16	5	31.25%	3	18.75%	4	25.00%	0	0.00%	12	75.00%
05/13/08	23	5	21.74%	9	39.13%	6	26.09%	0	0.00%	20	86.96%
05/14/08	8	2	25.00%	1	12.50%	1	12.50%	1	12.50%	5	62.50%
05/15/08	6	2	33.33%	0	0.00%	2	33.33%	0	0.00%	4	66.67%
05/16/08	5	0	0.00%	2	40.00%	1	20.00%	1	20.00%	4	80.00%
05/17/08	499	79	15.83%	127	25.45%	97	19.44%	36	7.21%	339	67.94%
05/18/08	85	13	15.29%	22	25.88%	18	21.18%	4	4.71%	57	67.06%
05/19/08	337	53	15.73%	122	36.20%	52	15.43%	11	3.26%	238	70.62%

Appendix C. Table 3. PIT-tagged hatchery steelhead trout interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Snake River Trap, 2008.

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
04/01/08	7	2	28.57%	0	0.00%	0	0.00%	1	14.29%	3	42.86%
04/02/08	4	0	0.00%	2	50.00%	0	0.00%	0	0.00%	2	50.00%
04/03/08	7	1	14.29%	4	57.14%	0	0.00%	1	14.29%	6	85.71%
04/04/08	6	1	16.67%	4	66.67%	0	0.00%	0	0.00%	5	83.33%
04/05/08	11	1	9.09%	8	72.73%	0	0.00%	1	9.09%	10	90.91%
04/06/08	31	7	22.58%	14	45.16%	0	0.00%	0	0.00%	21	67.74%
04/07/08	11	2	18.18%	4	36.36%	1	9.09%	0	0.00%	7	63.64%
04/08/08	12	2	16.67%	6	50.00%	0	0.00%	0	0.00%	8	66.67%
04/09/08	10	1	10.00%	3	30.00%	0	0.00%	0	0.00%	4	40.00%
04/10/08	29	6	20.69%	11	37.93%	1	3.45%	2	6.90%	20	68.97%
04/11/08	6	4	66.67%	1	16.67%	0	0.00%	0	0.00%	5	83.33%
04/12/08	14	4	28.57%	1	7.14%	1	7.14%	0	0.00%	6	42.86%
04/13/08	14	3	21.43%	4	28.57%	1	7.14%	1	7.14%	9	64.29%
04/14/08	34	7	20.59%	8	23.53%	2	5.88%	0	0.00%	17	50.00%
04/15/08	136	51	37.50%	29	21.32%	4	2.94%	4	2.94%	88	64.71%
04/16/08	197	57	28.93%	45	22.84%	3	1.52%	11	5.58%	116	58.88%
04/17/08	111	19	17.12%	28	25.23%	3	2.70%	4	3.60%	54	48.65%
04/18/08	67	18	26.87%	7	10.45%	1	1.49%	2	2.99%	28	41.79%
04/19/08	53	15	28.30%	7	13.21%	1	1.89%	1	1.89%	24	45.28%
04/20/08	77	17	22.08%	22	28.57%	3	3.90%	3	3.90%	45	58.44%
04/21/08	35	12	34.29%	4	11.43%	1	2.86%	1	2.86%	18	51.43%
04/22/08	53	14	26.42%	8	15.09%	0	0.00%	2	3.77%	24	45.28%
04/23/08	70	16	22.86%	18	25.71%	1	1.43%	1	1.43%	36	51.43%
04/24/08	126	36	28.57%	27	21.43%	2	1.59%	2	1.59%	67	53.17%
04/25/08	158	45	28.48%	30	18.99%	2	1.27%	5	3.16%	82	51.90%
04/26/08	74	24	32.43%	7	9.46%	0	0.00%	2	2.70%	33	44.59%
04/27/08	118	48	40.68%	12	10.17%	0	0.00%	3	2.54%	63	53.39%
04/28/08	74	17	22.97%	18	24.32%	4	5.41%	3	4.05%	42	56.76%
04/29/08	159	21	13.21%	36	22.64%	6	3.77%	13	8.18%	76	47.80%
04/30/08	119	46	38.66%	30	25.21%	6	5.04%	3	2.52%	85	71.43%
05/01/08	116	31	26.72%	42	36.21%	4	3.45%	4	3.45%	81	69.83%
05/04/08	122	26	21.31%	34	27.87%	14	11.48%	2	1.64%	76	62.30%
05/05/08	117	44	37.61%	36	30.77%	7	5.98%	3	2.56%	90	76.92%
05/06/08	118	46	38.98%	40	33.90%	7	5.93%	3	2.54%	96	81.36%
05/07/08	118	37	31.36%	43	36.44%	6	5.08%	1	0.85%	87	73.73%
05/08/08	116	35	30.17%	45	38.79%	3	2.59%	2	1.72%	85	73.28%
05/11/08	118	44	37.29%	39	33.05%	7	5.93%	0	0.00%	90	76.27%
05/12/08	122	32	26.23%	49	40.16%	10	8.20%	2	1.64%	93	76.23%
05/14/08	47	14	29.79%	14	29.79%	3	6.38%	2	4.26%	33	70.21%
05/15/08	42	17	40.48%	9	21.43%	0	0.00%	0	0.00%	26	61.90%
05/16/08	53	11	20.75%	6	11.32%	7	13.21%	0	0.00%	24	45.28%
05/17/08	208	31	14.90%	39	18.75%	23	11.06%	9	4.33%	102	49.04%
05/18/08	102	11	10.78%	36	35.29%	21	20.59%	0	0.00%	68	66.67%
05/19/08	321	41	12.77%	131	40.81%	48	14.95%	8	2.49%	228	71.03%

Appendix C. Table 4. PIT-tagged wild steelhead trout interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Snake River Trap, 2008.

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
04/03/08	3	0	0.00%	1	33.33%	1	33.33%	0	0.00%	2	66.67%
04/04/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/06/08	2	0	0.00%	2	100.00%	0	0.00%	0	0.00%	2	100.00%
04/10/08	1	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
04/12/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/13/08	2	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/14/08	5	0	0.00%	3	60.00%	0	0.00%	0	0.00%	3	60.00%
04/15/08	16	6	37.50%	2	12.50%	1	6.25%	0	0.00%	9	56.25%
04/16/08	24	8	33.33%	5	20.83%	0	0.00%	1	4.17%	14	58.33%
04/17/08	17	7	41.18%	3	17.65%	0	0.00%	1	5.88%	11	64.71%
04/18/08	27	13	48.15%	1	3.70%	2	7.41%	0	0.00%	16	59.26%
04/19/08	20	6	30.00%	3	15.00%	0	0.00%	0	0.00%	9	45.00%
04/20/08	23	3	13.04%	4	17.39%	1	4.35%	1	4.35%	9	39.13%
04/21/08	19	2	10.53%	3	15.79%	0	0.00%	0	0.00%	5	26.32%
04/22/08	4	2	50.00%	0	0.00%	0	0.00%	0	0.00%	2	50.00%
04/23/08	8	2	25.00%	1	12.50%	0	0.00%	0	0.00%	3	37.50%
04/24/08	25	8	32.00%	6	24.00%	0	0.00%	1	4.00%	15	60.00%
04/25/08	20	7	35.00%	4	20.00%	0	0.00%	3	15.00%	14	70.00%
04/26/08	23	7	30.43%	0	0.00%	0	0.00%	2	8.70%	9	39.13%
04/27/08	17	4	23.53%	2	11.76%	0	0.00%	3	17.65%	9	52.94%
04/28/08	5	1	20.00%	1	20.00%	1	20.00%	0	0.00%	3	60.00%
04/29/08	23	5	21.74%	3	13.04%	0	0.00%	2	8.70%	10	43.48%
04/30/08	55	17	30.91%	8	14.55%	2	3.64%	4	7.27%	31	56.36%
05/01/08	77	18	23.38%	22	28.57%	6	7.79%	3	3.90%	49	63.64%
05/02/08	26	9	34.62%	7	26.92%	0	0.00%	0	0.00%	16	61.54%
05/03/08	57	17	29.82%	12	21.05%	2	3.51%	8	14.04%	39	68.42%
05/04/08	56	15	26.79%	16	28.57%	3	5.36%	3	5.36%	37	66.07%
05/05/08	19	8	42.11%	5	26.32%	0	0.00%	2	10.53%	15	78.95%
05/06/08	57	24	42.11%	21	36.84%	2	3.51%	1	1.75%	48	84.21%
05/07/08	91	42	46.15%	32	35.16%	3	3.30%	2	2.20%	79	86.81%
05/08/08	94	38	40.43%	28	29.79%	1	1.06%	0	0.00%	67	71.28%
05/09/08	126	66	52.38%	24	19.05%	1	0.79%	3	2.38%	94	74.60%
05/10/08	57	27	47.37%	14	24.56%	2	3.51%	0	0.00%	43	75.44%
05/11/08	33	14	42.42%	4	12.12%	2	6.06%	1	3.03%	21	63.64%
05/12/08	31	10	32.26%	10	32.26%	2	6.45%	0	0.00%	22	71.00%
05/13/08	32	8	25.00%	9	28.13%	0	0.00%	0	0.00%	17	53.13%
05/14/08	18	5	27.78%	6	33.33%	1	5.56%	0	0.00%	12	66.67%
05/15/08	9	2	22.22%	1	11.11%	0	0.00%	0	0.00%	3	33.33%
05/16/08	20	2	10.00%	3	15.00%	2	10.00%	0	0.00%	7	35.00%
05/17/08	193	38	19.69%	51	26.42%	12	6.22%	5	2.59%	106	54.92%
05/18/08	17	3	17.65%	4	23.53%	0	0.00%	1	5.88%	8	47.06%
05/19/08	60	16	26.67%	22	36.67%	9	15.00%	1	1.67%	48	80.00%

Appendix C. Table 5. PIT-tagged hatchery Chinook salmon interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Salmon River Trap, 2008.

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
03/15/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
03/19/08	1	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
03/20/08	255	66	25.88%	34	13.33%	25	9.80%	16	6.27%	141	55.29%
03/21/08	175	47	26.86%	23	13.14%	5	2.86%	12	6.86%	87	49.71%
03/22/08	175	51	29.14%	25	14.29%	11	6.29%	11	6.29%	98	56.00%
03/24/08	120	38	31.67%	13	10.83%	12	10.00%	10	8.33%	73	60.83%
03/25/08	120	39	32.50%	16	13.33%	10	8.33%	8	6.67%	73	60.83%
03/26/08	121	43	35.54%	18	14.88%	10	8.26%	3	2.48%	74	61.16%
03/27/08	120	45	37.50%	23	19.17%	2	1.67%	2	1.67%	72	60.00%
03/28/08	119	39	32.77%	12	10.08%	7	5.88%	10	8.40%	68	57.14%
03/31/08	148	42	28.38%	29	19.59%	9	6.08%	8	5.41%	88	59.46%
04/01/08	120	31	25.83%	18	15.00%	17	14.17%	5	4.17%	71	59.17%
04/02/08	120	47	39.17%	17	14.17%	8	6.67%	3	2.50%	75	62.50%
04/03/08	120	41	34.17%	18	15.00%	5	4.17%	5	4.17%	69	57.50%
04/04/08	92	30	32.61%	17	18.48%	8	8.70%	2	2.17%	57	61.96%
04/07/08	120	37	30.83%	20	16.67%	10	8.33%	13	10.83%	80	66.67%
04/08/08	121	39	32.23%	25	20.66%	4	3.31%	5	4.13%	73	60.33%
04/09/08	119	39	32.77%	20	16.81%	10	8.40%	6	5.04%	75	63.03%
04/10/08	120	55	45.83%	24	20.00%	7	5.83%	2	1.67%	88	73.33%
04/11/08	120	43	35.83%	15	12.50%	10	8.33%	8	6.67%	76	63.33%
04/14/08	120	46	38.33%	24	20.00%	6	5.00%	2	1.67%	78	65.00%
04/15/08	120	41	34.17%	19	15.83%	8	6.67%	5	4.17%	73	60.83%
04/16/08	120	49	40.83%	29	24.17%	8	6.67%	4	3.33%	90	75.00%
04/17/08	121	50	41.32%	20	16.53%	7	5.79%	5	4.13%	82	67.77%
04/18/08	119	41	34.45%	18	15.13%	8	6.72%	6	5.04%	73	61.34%
04/20/08	1	0	0.00%	0	0.00%	0	0.00%	1	100.00%	1	100.00%
04/21/08	119	54	45.38%	21	17.65%	13	10.92%	4	3.36%	92	77.31%
04/22/08	120	45	37.50%	21	17.50%	8	6.67%	4	3.33%	78	65.00%
04/23/08	120	38	31.67%	21	17.50%	8	6.67%	7	5.83%	74	61.67%
04/24/08	121	40	33.06%	25	20.66%	9	7.44%	2	1.65%	76	62.81%
04/25/08	121	40	33.06%	21	17.36%	9	7.44%	5	4.13%	75	61.98%
04/28/08	50	22	44.00%	5	10.00%	3	6.00%	0	0.00%	30	60.00%
04/29/08	50	17	34.00%	9	18.00%	6	12.00%	0	0.00%	32	64.00%
04/30/08	51	21	41.18%	8	15.69%	5	9.80%	2	3.92%	36	70.59%
05/01/08	50	6	12.00%	15	30.00%	4	8.00%	1	2.00%	26	52.00%
05/05/08	50	14	28.00%	14	28.00%	2	4.00%	1	2.00%	31	62.00%
05/06/08	50	21	42.00%	8	16.00%	2	4.00%	2	4.00%	33	66.00%
05/07/08	89	14	15.73%	18	20.22%	14	15.73%	3	3.37%	49	55.06%

Appendix C. Table 6. PIT-tagged wild Chinook salmon interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Salmon River trap, 2008.

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
03/10/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
03/11/08	5	2	40.00%	1	20.00%	0	0.00%	0	0.00%	3	60.00%
03/12/08	3	0	0.00%	2	66.67%	0	0.00%	0	0.00%	2	66.67%
03/13/08	2	1	50.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
03/15/08	3	2	66.67%	0	0.00%	0	0.00%	0	0.00%	2	66.67%
03/16/08	2	1	50.00%	0	0.00%	1	50.00%	0	0.00%	2	100.00%
03/17/08	3	1	33.33%	1	33.33%	0	0.00%	0	0.00%	2	66.67%
03/18/08	10	6	60.00%	0	0.00%	0	0.00%	1	10.00%	7	70.00%
03/19/08	9	2	22.22%	1	11.11%	2	22.22%	0	0.00%	5	55.56%
03/20/08	11	3	27.27%	1	9.09%	1	9.09%	1	9.09%	6	54.55%
03/21/08	18	3	16.67%	4	22.22%	1	5.56%	3	16.67%	11	61.11%
03/22/08	42	14	33.33%	2	4.76%	6	14.29%	3	7.14%	25	59.52%
03/23/08	77	27	35.06%	12	15.58%	3	3.90%	2	2.60%	44	57.14%
03/24/08	35	11	31.43%	6	17.14%	5	14.29%	1	2.86%	23	65.71%
03/25/08	39	17	43.59%	8	20.51%	2	5.13%	2	5.13%	29	74.36%
03/26/08	28	10	35.71%	3	10.71%	1	3.57%	1	3.57%	15	53.57%
03/27/08	56	21	37.50%	6	10.71%	6	10.71%	3	5.36%	36	64.29%
03/28/08	69	20	28.99%	16	23.19%	3	4.35%	5	7.25%	44	63.77%
03/29/08	90	34	37.78%	10	11.11%	5	5.56%	6	6.67%	55	61.11%
03/30/08	101	36	35.64%	13	12.87%	8	7.92%	11	10.89%	68	67.33%
03/31/08	92	42	45.65%	9	9.78%	8	8.70%	3	3.26%	62	67.39%
04/01/08	101	39	38.61%	15	14.85%	5	4.95%	7	6.93%	66	65.35%
04/02/08	49	19	38.78%	12	24.49%	4	8.16%	2	4.08%	37	75.51%
04/03/08	58	26	44.83%	6	10.34%	0	0.00%	4	6.90%	36	62.07%
04/04/08	29	8	27.59%	5	17.24%	2	6.90%	3	10.34%	18	62.07%
04/05/08	30	16	53.33%	5	16.67%	2	6.67%	0	0.00%	23	76.67%
04/06/08	31	14	45.16%	2	6.45%	1	3.23%	5	16.13%	22	70.97%
04/07/08	23	5	21.74%	6	26.09%	3	13.04%	1	4.35%	15	65.22%
04/08/08	22	10	45.45%	1	4.55%	4	18.18%	0	0.00%	15	68.18%
04/09/08	55	16	29.09%	6	10.91%	6	10.91%	3	5.45%	31	56.36%
04/10/08	35	13	37.14%	3	8.57%	6	17.14%	2	5.71%	24	68.57%
04/11/08	32	7	21.88%	9	28.13%	3	9.38%	0	0.00%	19	59.38%
04/12/08	37	16	43.24%	2	5.41%	7	18.92%	1	2.70%	26	70.27%
04/13/08	19	9	47.37%	4	21.05%	0	0.00%	1	5.26%	14	73.68%
04/14/08	62	27	43.55%	7	11.29%	5	8.06%	3	4.84%	42	67.74%
04/15/08	331	122	36.86%	63	19.03%	19	5.74%	16	4.83%	220	66.47%
04/16/08	390	166	42.56%	72	18.46%	27	6.92%	17	4.36%	282	72.31%
04/17/08	1009	443	43.90%	167	16.55%	84	8.33%	37	3.67%	731	72.45%
04/18/08	514	216	42.02%	103	20.04%	42	8.17%	13	2.53%	374	72.76%
04/19/08	758	277	36.54%	143	18.87%	66	8.71%	21	2.77%	507	66.89%
04/20/08	160	66	41.25%	24	15.00%	8	5.00%	4	2.50%	102	63.75%
04/21/08	114	41	35.96%	23	20.18%	10	8.77%	11	9.65%	85	74.56%
04/22/08	78	32	41.03%	18	23.08%	4	5.13%	3	3.85%	57	73.08%
04/23/08	48	22	45.83%	12	25.00%	5	10.42%	0	0.00%	39	81.25%
04/24/08	60	25	41.67%	12	20.00%	8	13.33%	0	0.00%	45	75.00%
04/25/08	80	24	30.00%	26	32.50%	4	5.00%	1	1.25%	55	68.75%
04/26/08	69	28	40.58%	14	20.29%	6	8.70%	1	1.45%	49	71.01%
04/27/08	61	17	27.87%	14	22.95%	8	13.11%	5	8.20%	44	72.13%
04/28/08	58	26	44.83%	11	18.97%	3	5.17%	3	5.17%	43	74.14%

Appendix C. Table 6. Continued.

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
04/29/08	66	32	48.48%	17	25.76%	1	1.52%	0	0.00%	50	75.76%
04/30/08	215	71	33.02%	52	24.19%	22	10.23%	6	2.79%	151	70.23%
05/01/08	207	63	30.43%	49	23.67%	27	13.04%	2	0.97%	141	68.12%
05/02/08	95	29	30.53%	23	24.21%	12	12.63%	4	4.21%	68	71.58%
05/03/08	92	24	26.09%	31	33.70%	11	11.96%	3	3.26%	69	75.00%
05/04/08	41	15	36.59%	9	21.95%	1	2.44%	1	2.44%	26	63.41%
05/05/08	34	12	35.29%	4	11.76%	6	17.65%	0	0.00%	22	64.71%
05/06/08	13	8	61.54%	3	23.08%	1	7.69%	1	7.69%	13	100.00%
05/07/08	11	4	36.36%	2	18.18%	2	18.18%	0	0.00%	8	72.73%
05/08/08	10	5	50.00%	3	30.00%	1	10.00%	0	0.00%	9	90.00%
05/13/08	2	1	50.00%	0	0.00%	0	0.00%	0	0.00%	1	50.00%
05/14/08	6	1	16.67%	2	33.33%	0	0.00%	1	16.67%	4	66.67%
05/15/08	2	0	0.00%	1	50.00%	0	0.00%	0	0.00%	1	50.00%

Appendix C. Table 7. PIT-tagged hatchery steelhead trout interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Salmon River trap, 2008.

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
04/03/08	18	9	50.00%	3	16.67%		0.00%	0	0.00%	12	66.67%
04/04/08	37	6	16.22%	14	37.84%	0	0.00%	1	2.70%	21	56.76%
04/05/08	67	20	29.85%	15	22.39%	0	0.00%	6	8.96%	41	61.19%
04/06/08	76	18	23.68%	22	28.95%	1	1.32%	1	1.32%	42	55.26%
04/07/08	90	26	28.89%	13	14.44%	3	3.33%	3	3.33%	45	50.00%
04/08/08	80	26	32.50%	18	22.50%	5	6.25%	2	2.50%	51	63.75%
04/09/08	66	15	22.73%	19	28.79%	2	3.03%	2	3.03%	38	57.58%
04/10/08	151	41	27.15%	39	25.83%	6	3.97%	7	4.64%	93	61.59%
04/11/08	136	52	38.24%	36	26.47%	6	4.41%	2	1.47%	96	70.59%
04/13/08	67	28	41.79%	16	23.88%	4	5.97%	1	1.49%	49	73.13%
04/14/08	94	33	35.11%	16	17.02%	1	1.06%	2	2.13%	52	55.32%
04/15/08	65	14	21.54%	12	18.46%	3	4.62%	1	1.54%	30	46.15%
04/16/08	24	7	29.17%	2	8.33%	1	4.17%	0	0.00%	10	41.67%
04/17/08	41	14	34.15%	5	12.20%	0	0.00%	2	4.88%	21	51.22%
04/18/08	35	10	28.57%	6	17.14%	1	2.86%	2	5.71%	19	54.29%
04/19/08	43	17	39.53%	8	18.60%	0	0.00%	1	2.33%	26	60.47%
04/20/08	53	9	16.98%	18	33.96%	0	0.00%	1	1.89%	28	52.83%
04/21/08	82	19	23.17%	18	21.95%	3	3.66%	0	0.00%	40	48.78%
04/22/08	71	15	21.13%	17	23.94%	2	2.82%	3	4.23%	37	52.11%
04/23/08	18	6	33.33%	5	27.78%	1	5.56%	0	0.00%	12	66.67%
04/24/08	36	12	33.33%	1	2.78%	1	2.78%	2	5.56%	16	44.44%
04/25/08	41	14	34.15%	6	14.63%	1	2.44%	2	4.88%	23	56.10%
04/26/08	40	11	27.50%	7	17.50%	0	0.00%	0	0.00%	18	45.00%
04/27/08	40	9	22.50%	9	22.50%	2	5.00%	0	0.00%	20	50.00%
04/28/08	55	12	21.82%	14	25.45%	4	7.27%	2	3.64%	32	58.18%
04/29/08	98	29	29.59%	21	21.43%	4	4.08%	4	4.08%	58	59.18%
04/30/08	218	48	22.02%	68	31.19%	8	3.67%	5	2.29%	129	59.17%
05/01/08	150	41	27.33%	48	32.00%	3	2.00%	4	2.67%	96	64.00%
05/02/08	46	13	28.26%	13	28.26%	1	2.17%	1	2.17%	28	60.87%
05/04/08	101	29	28.71%	31	30.69%	4	3.96%	2	1.98%	66	65.35%
05/05/08	112	32	28.57%	33	29.46%	6	5.36%	1	0.89%	72	64.29%
05/06/08	177	51	28.81%	54	30.51%	9	5.08%	0	0.00%	114	64.41%
05/07/08	60	15	25.00%	18	30.00%	3	5.00%	0	0.00%	36	60.00%
05/08/08	71	30	42.25%	11	15.49%	6	8.45%	2	2.82%	49	69.01%
05/13/08	32	13	40.63%	5	15.63%	1	3.13%	0	0.00%	19	59.38%
05/14/08	47	9	19.15%	10	21.28%	4	8.51%	1	2.13%	24	51.06%
05/15/08	44	10	22.73%	7	15.91%	3	6.82%	2	4.55%	22	50.00%

Appendix C. Table 8. PIT-tagged wild steelhead trout interrogations at Lower Granite (GRJ), Little Goose (GOJ), Lower Monumental (LMJ), and McNary (MCJ) dams from the Salmon River trap, 2008

Date	Number Released	Int's GRJ	% GRJ	Int's GOJ	% GOJ	Int's LMJ	% LMJ	Int's MCJ	% MCJ	Grand Total Int's	Total % Int's.
03/10/08	1	0	0.00%	1	100.00%	0	0.00%	0	0.00%	1	100.00%
03/22/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/09/08	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
04/14/08	2	1	50.00%	0	0.00%	0	0.00%	0	0.00%	1	50.00%
04/15/08	20	4	20.00%	6	30.00%	2	10.00%	0	0.00%	12	60.00%
04/16/08	19	6	31.58%	2	10.53%	0	0.00%	0	0.00%	8	42.11%
04/17/08	37	8	21.62%	7	18.92%	1	2.70%	1	2.70%	17	45.95%
04/18/08	17	5	29.41%	3	17.65%	0	0.00%	1	5.88%	9	52.94%
04/19/08	23	6	26.09%	3	13.04%	0	0.00%	1	4.35%	10	43.48%
04/20/08	18	4	22.22%	8	44.44%	0	0.00%	2	11.11%	14	77.78%
04/21/08	5	2	40.00%	1	20.00%	0	0.00%	0	0.00%	3	60.00%
04/22/08	10	3	30.00%	2	20.00%	0	0.00%	0	0.00%	5	50.00%
04/23/08	1	0	0.00%	1	100.00%	0	0.00%	0	0.00%	1	100.00%
04/24/08	3	1	33.33%	0	0.00%	0	0.00%	0	0.00%	1	33.33%
04/25/08	4	0	0.00%	0	0.00%	1	25.00%	0	0.00%	1	25.00%
04/26/08	4	1	25.00%	0	0.00%	1	25.00%	0	0.00%	2	50.00%
04/27/08	3	2	66.67%	0	0.00%	0	0.00%	0	0.00%	2	66.67%
04/28/08	3	1	33.33%	2	66.67%	0	0.00%	0	0.00%	3	100.00%
04/29/08	4	2	50.00%	2	50.00%	0	0.00%	0	0.00%	4	100.00%
04/30/08	31	10	32.26%	8	25.81%	0	0.00%	1	3.23%	19	61.29%
05/01/08	27	6	22.22%	4	14.81%	0	0.00%	2	7.41%	12	44.44%
05/02/08	29	13	44.83%	4	13.79%	1	3.45%	1	3.45%	19	65.52%
05/03/08	10	2	20.00%	4	40.00%	2	20.00%	0	0.00%	8	80.00%
05/04/08	10	3	30.00%	3	30.00%	1	10.00%	0	0.00%	7	70.00%
05/05/08	12	6	50.00%	4	33.33%	0	0.00%	0	0.00%	10	83.33%
05/06/08	12	6	50.00%	4	33.33%	0	0.00%	0	0.00%	10	83.33%
05/07/08	16	9	56.25%	2	12.50%	0	0.00%	1	6.25%	12	75.00%
05/08/08	29	12	41.38%	8	27.59%	0	0.00%	1	3.45%	21	72.41%
05/13/08	8	1	12.50%	1	12.50%	1	12.50%	1	12.50%	4	50.00%
05/14/08	9	3	33.33%	0	0.00%	0	0.00%	0	0.00%	3	33.33%
05/15/08	8	1	12.50%	2	25.00%	1	12.50%	0	0.00%	4	50.00%

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