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

Annual Report
2004 Operations

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TABLE OF CONTENTS

Page

Table of Contents, continued.

LIST OF FIGURES

LIST OF TABLES

List of Tables, continued.

Page

LIST OF APPENDICES

List of Appendices, continued.

Page

ABSTRACT

This project monitored the daily passage of Chinook salmon *Oncorhynchus tshawytscha*, steelhead trout *O. mykiss,* and sockeye salmon *O. nerka* smolts during the 2004 spring out-migration at migrant traps on the Snake River and Salmon River.

In 2004 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, these fish were distinguishable from wild fish by the occurrence of fin erosion.

Total annual hatchery Chinook salmon catch at the Snake River trap was 1.1 times greater in 2004 than in 2003. The wild Chinook catch was 1.1 times greater than the previous year. Hatchery steelhead trout catch was 1.2 times greater than in 2003. Wild steelhead trout catch was 1.6 times greater than the previous year. The Snake River trap collected 978 age-0 Chinook salmon of unknown rearing. During 2004, the Snake River trap captured 23 hatchery and 18 wild/natural sockeye salmon and 60 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 7 and were terminated on June 4. The trap was out of operation for a total of zero days due to mechanical failure or debris.

Hatchery Chinook salmon catch at the Salmon River trap was 10.8% less and wild Chinook salmon catch was 19.0% less than in 2003. The hatchery steelhead trout collection in 2004 was 20.0% less and wild steelhead trout collection was 22.3% less than the previous year. Trap operations began on March 7 and were terminated on May 28 due to high flows. There were two days when the trap was taken out of service because wild Chinook catch was very low, hatchery Chinook catch was very high, and the weekly quota of PIT tagged hatchery Chinook had been met.

Travel time (d) and migration rate (km/d) through Lower Granite Reservoir for PIT-tagged Chinook salmon and steelhead trout marked at the Snake River trap were affected by discharge. Statistical analysis of 2004 data detected a relation between migration rate and discharge for wild Chinook salmon but was unable to detect a relation for hatchery Chinook. The inability to detect a migration rate discharge relation for hatchery Chinook salmon was caused by age-0 fall Chinook being mixed in with the age 1 Chinook. Age-0 fall Chinook migrate much slower than age-1 Chinook, which would confuse the ability to detect the migration rate discharge relation. When several groups, which consisted of significant numbers of age-0 Chinook salmon, were removed from the analysis a relation was detected. For hatchery and wild Chinook salmon there was a 2.8-fold and a 2.4-fold increase in migration rate, respectively, between 50 and 100 kcfs. For steelhead trout tagged at the Snake River trap, statistical analysis detected a significant relation between migration rate and Lower Granite Reservoir inflow discharge. For hatchery and wild steelhead trout, there was a 2.3-fold and a 2.0-fold increase in migration rate, respectively, between 50 and 100 kcfs.

Travel time and migration rate to Lower Granite Dam for fish marked at the Salmon River trap were calculated. Statistical analysis of the 2004 data detected a significant relation between migration rate and Lower Granite Reservoir inflow discharge for hatchery Chinook salmon, wild Chinook salmon and hatchery steelhead trout. Not enough data were available to perform the analysis for wild steelhead trout. Migration rate increased 7.0-fold for hatchery

Chinook salmon, 4.7-fold for wild Chinook salmon and 3.8-fold for hatchery steelhead as discharge increased between 50 kcfs and 100 kcfs.

Fish tagged with passive integrated transponder (PIT) tags at the Snake River and Salmon River traps were interrogated at four dams with PIT tag detection systems (Lower Granite, Little Goose, Lower Monumental, and McNary dams). Because of the addition of the fourth interrogation site (Lower Monumental) in 1993 and the installation of the Removable Spillway Weir at Lower Granite Dam in 2001, caution must be used in comparing cumulative interrogation data. Cumulative interrogations at the four dams for fish marked at the Snake River trap were 82% for hatchery Chinook, 77% for wild Chinook, 90% for hatchery steelhead, and 90% for wild steelhead. Cumulative interrogations at the four dams for fish marked at the Salmon River trap were 68% for hatchery Chinook, 70% for wild Chinook salmon, 80% for hatchery steelhead trout, and 79% 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."

Water storage and regulation for hydroelectric generation severely reduces flows necessary for downstream migration of juvenile steelhead trout *Oncorhynchus mykiss* and Chinook salmon *O. tshawytscha*. In response to the fishery agencies and Indian tribes recommendations for migration flows, in 1982 the NWPPC Columbia River Basin Fish and Wildlife Program proposed a "water budget" for augmenting spring flows. The federal Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 et seq.) listing of Snake River spring/summer and fall Chinook salmon in 1992 and the development of a National Marine Fisheries Service (NMFS) Biological Opinion (BIOP) for the Federal Columbia River Power System established flow measures for the Snake River. The measures within the BIOP establish flow targets and dates for providing those flows, which replaced the “water budget.” This BIOP was replaced with the NMFS 2000 Federal Columbia River Power System BIOP. The reasonable and prudent actions described in Sections 9.6.1 and 9.6.5.3.5.1 of the 2000 BIOP requires monitoring and evaluation of the smolt out-migration. The Idaho Department of Fish and Game (IDFG) monitors the daily passage of smolts at the head of Lower Granite Reservoir. The NMFS established a Technical Management Team (TMT) to oversee implementation of the BIOP measures. The TMT utilizes out-migration monitoring data provided by IDFG and other agencies through 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 (drought years), 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. Seven low-flow years (1987, 1988, 1990, 1991, 1992, 1994, and 2001) have occurred during this smolt-monitoring project. The indications are that judicious use of the available reservoir storage volumes can greatly enhance the timing and migration rate of juvenile Chinook salmon and steelhead trout.

The IDFG smolt monitoring project also collects other useful data on relative species composition, hatchery and wild ratios, travel time, and migration rate. All wild steelhead trout smolts are PIT tagged to determine timing of wild adult steelhead trout one and two years later as they return to spawn (Prentice et al. 1987). By monitoring smolt passage at the head of Lower Granite Reservoir and at 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 rebuilding progress. This SMP's information is complementary to other Snake and Columbia River NWPPC-supported projects.

The management information provided by this project includes: 1) information on salmon and steelhead smolt movement at the upper end of the lower Snake River’s series of dams; 2)

groups of passive integrated transponder-tagged fish, which are used for postseason survival estimates; and 3) information to assist water managers with in-season management decisions relative to flow augmentation, facility power operations, fish collection and transportation programs, and operation of the Federal Columbia River Power System (FCRPS) to maximize benefits to smolt survival.

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.

7. Determine trap efficiency for each species at each trap over a range of discharges.

8. Evaluate timing of returning adult wild and natural steelhead crossing Lower Granite Dam.

METHODS

Releases of Hatchery-Produced Smolts

Anadromous hatchery release information was reported for hatchery smolts, which contributed to the 2004 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 2004.

SMOLT MONITORING TRAPS

During the 2004 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 of up to 100 smolts for each species, run, and rearing-type were measured daily to the nearest millimeter. Up to 2,000 fish were examined daily for brands or marks at the Snake River trap. Because no brand groups were released upstream, 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 2004, 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.

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.

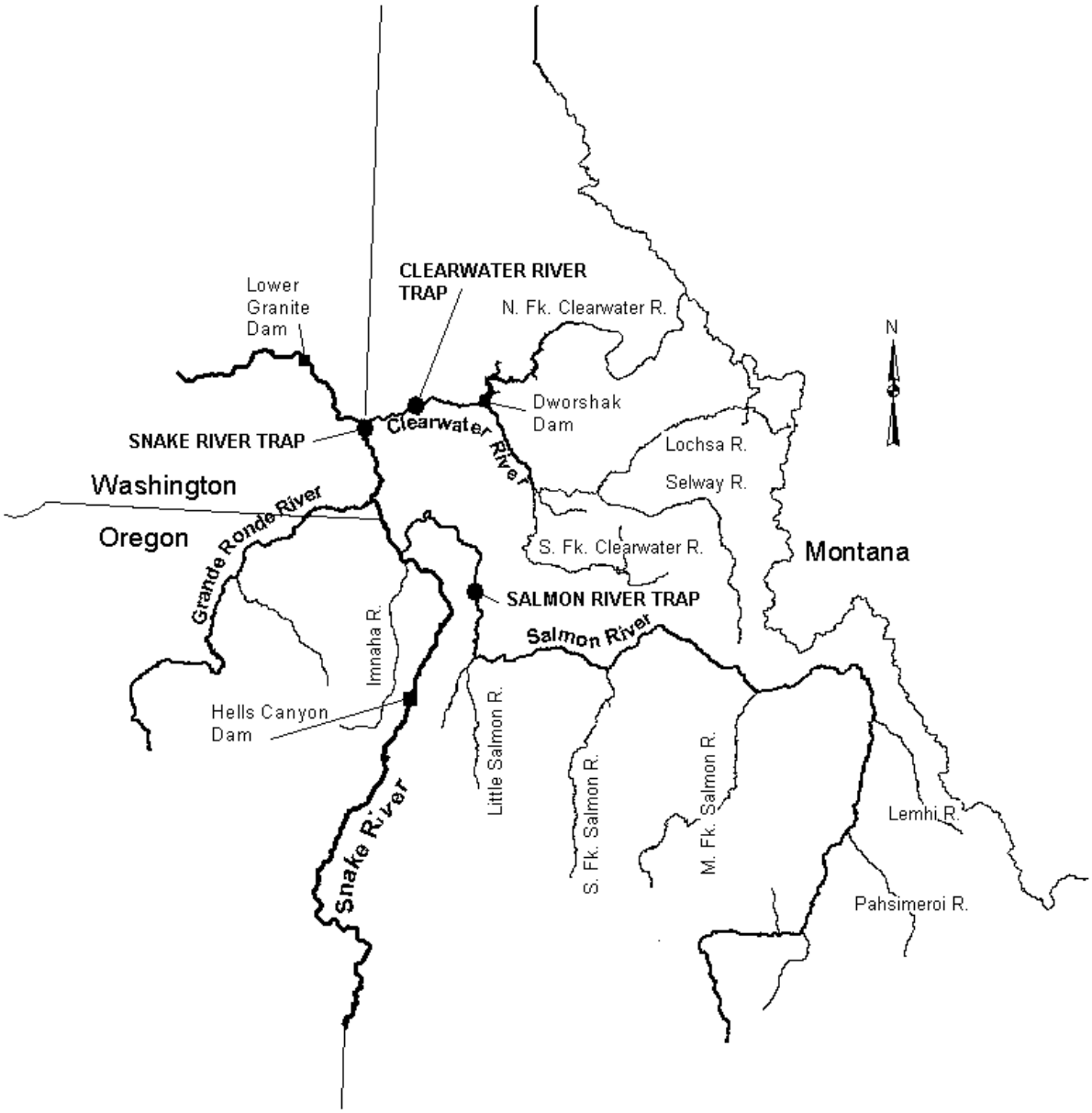

Figure 1. Map of study area.

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 inflow for the number of days equal to the median travel time to determine how changes in discharge affected smolt migration rate through Lower Granite Reservoir.

Snake River trap operations began on March 7 and continued through June 4. The Snake River trap was out of operation for a total of zero days during the 2004 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 was converted to the 134 kHz frequency in 2000. The interrogation system consists of an 8-inch PVC pipe with two interrogation coils (D-4 and D-6). Each coil is connected to an exciter card and a PIT tag reader. 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. However, the reading efficiency for both coils combined was not recorded.

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 inflow for the median travel time to determine how changes in discharge affected smolt migration rate through the Lower Salmon River and Lower Granite Reservoir.

Trap operations began on March 7 and continued through May 28 when operations were terminated for the season. The Salmon River trap was out of operation for two days during the 2004 season due to low numbers of wild fish and large numbers of Rapid River Hatchery Chinook salmon. 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 was converted to the 134 kHz frequency in 2000. The 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 2004. 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 relation of trap efficiency and discharge was derived to estimate efficiency at any given discharge. During the 2004 trap operations, trap efficiencies were not calculated for either of the smolt traps. 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 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 daily data were combined with another day's data or the data were not used. If they were combined, they were added to daily data from an adjacent release day that had similar discharge and travel time.

Smolt migration rate/discharge relations through Lower Granite Reservoir were investigated using linear regression analysis after both variables were stratified into 5 kcfs discharge intervals (Mosteller and Tukey 1977) and log (ln) transformed (Zar 1984). 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 1987 to 2004 for the Snake River trap, 1989 to 1995 for the Clearwater River trap, and 1993 to 2004 for the Salmon River trap. The data have been examined to ensure that multiple interrogations within a dam and between dams have been removed.

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

	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
Asotin Creek rel. site	470.3	756.7	146.0	234.9	38.5	61.9	6.4	10.3	—	—	—	—
Big Canyon Creek	585.9	942.7	261.6	420.9	154.1	247.9	122.0	196.3	—	—	—	—
Catherine Creek	636.9	1024.8	312.6	503.0	205.1	330.0	173.0	278.4	—	—	—	—
Clearwater R. trap site	470.0	756.2	145.7	234.4	38.2	61.5	—	—	0.0	0.0	—	—
Cottonwood Creek	521.7	839.4	197.4	317.6	89.9	144.6	57.8	93.0	—	—	—	—
Crooked River	604.3	972.3	280.0	450.5	172.5	277.6	—	—	134.3	216.0	—	—
Deer Creek	504.3	811.4	180.0	289.6	72.5	116.7	40.4	65.0	—	—	—	—
Dworshak NFH	504.3	811.4	180.0	289.6	72.5	116.6	—	—	34.3	55.2	—	—
E.F. Salmon @ trap site	873.6	1405.6	549.3	883.8	441.8	710.9	409.7	659.2	—	—	297.0	478.0
Grande Ronde R. mouth	493.0	793.2	168.7	271.4	61.2	98.5	29.1	46.8	—	—	—	—
Hazard Creek	618.7	995.5	294.4	473.7	186.9	300.7	154.8	249.1	—	—	42.1	67.9
Hells Canyon Dam	571.3	919.2	247.0	397.4	139.5	224.5	107.4	172.8	—	—	—	—
Highway 95 boat launch	473.2	761.4	148.9	239.6	41.5	66.8	—	—	3.2	5.1	—	—
Imnaha Coll. Facility	565.6	910.2	241.3	388.3	133.8	215.4	101.7	163.6	—	—	—	—
Imnaha River mouth	516.0	830.3	191.7	309.1	84.2	135.7	52.1	83.8	—	—	—	—
Kooskia NFH	541.6	871.4	217.3	349.6	109.8	176.7	—	—	71.5	115.0	—	—
Little Sheep Creek	553.8	891.1	229.5	369.3	122.0	196.3	89.9	144.6	—	—	—	—
Lookingglass Creek	580.4	933.9	256.1	412.1	148.6	239.1	116.5	187.4	—	—	—	—
Lower Granite Dam	431.8	694.8	107.5	173.0	0.0	0.0	32.1	51.6	38.3	61.5	144.8	232.8
Lower Monumental Dam	365.9	588.7	41.6	66.9	65.9	106.0	98.0	157.7	—	—	192.1	308.9
Pahsimeroi Hatchery	817.5	1315.4	493.2	793.6	385.7	620.6	353.6	568.9	—	—	240.1	387.7
Rapid River Hatchery	605.8	974.7	281.5	452.9	174.0	280.0	141.9	228.3	—	—	29.2	47.1
Red River rearing pond	618.0	994.4	293.7	472.6	186.2	299.6	—	—	148.0	238.1	—	—
Salmon River mouth	512.5	824.6	188.2	302.8	80.7	129.8	48.6	78.2	—	—	64.1	103.0
Salmon River trap site	576.6	927.6	252.3	405.8	144.8	232.8	112.7	181.2	—	—	0.0	0.0
Sawtooth Hatchery	896.7	1444.2	573.3	922.4	465.8	749.5	433.7	697.8	—	—	321.0	516.6
Snake River mouth	324.3	521.8	0.0	0.0	107.5	172.9	139.6	224.6	145.7	234.5	252.3	405.8
Snake River trap site	463.9	746.4	139.6	224.6	32.1	51.6	0.0	0.0	—	—	112.7	181.2
S.F. Salmon @ Knox Bridge	719.7	1158.0	395.4	636.2	287.9	463.2	255.8	411.6	—	—	143.1	230.4
Spring Creek	614.4	988.6	290.1	466.8	182.6	293.8	150.5	242.2	—	—	—	—
Wildcat Creek	546.2	878.8	221.9	357.0	114.4	184.3	82.3	132.4	—	—	—	—

RESULTS AND DISCUSSION

Hatchery Releases

Chinook Salmon

Spring Chinook salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at four locations in Idaho and one in Oregon (Table 2). A total of 7,092,163 spring Chinook salmon smolts were released at ten locations in Idaho, and 1,508,222 were released at six locations in Oregon during 2004.

Summer Chinook salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at two locations in Idaho (Table 2). A total of 2,310,078 summer Chinook salmon were released at three locations in Idaho during 2004.

Fall Chinook salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at one location in Idaho, one location in Oregon, and one location in Washington during 2004 (Table 2). A total of 261,201 age-1 fall Chinook salmon were released at two locations in Idaho. A total of 153,251 age-1 fall Chinook salmon were released at one location in Washington. A total of 1,006,277 age-0 fall Chinook salmon were released at three locations in Idaho. A total of 9,957 age-0 fall Chinook salmon were released at one location in Oregon. A total of 500,739 age-0 fall Chinook salmon were released at one location in Washington.

Steelhead Trout

Steelhead trout released into the Snake River drainage upstream of Lower Granite Dam were reared at four locations in Idaho, one in Oregon, and one in Washington (Table 3). A total of 7,318,356 steelhead trout smolts were released at 33 locations in Idaho, and 1,749,256 were released at six locations in Oregon during 2004. A total of 137,915 steelhead trout smolts were released at one location in Washington during 2004. 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 one location in Washington (Table 4). A total of 952,678 coho smolts were released at three locations in Idaho during 2004. Summer and fall releases of coho salmon have not been included in this report.

Hatchery sockeye salmon that contributed to the 2004 out-migration were reared at one location in Idaho (Table 4). A total of 76,884 sockeye salmon were released at four locations for migration year 2004.

Table 2. Hatchery Chinook salmon released into the Snake River system upriver from Lower Granite Dam contributing to the 2004 out-migration.

Drainage Release Site	Hatchery	Stock	Release Date	No. Released (No. PIT Tagged)
Clearwater River				
Clear Creek Above Kooskia Nat'l Fish Hatchery	Dworshak	Spring	03/16/04	50,969 (751)
North Fork Clearwater River	Dworshak	Spring	03/19/04	1,078,923 (51,744)
Walton Creek	Clearwater	Spring	03/25/04	376,797 (293)
Kooskia Nat'l Fish Hatchery	Dworshak	Spring	03/26/04	592,534 (750)
Crooked River Acclimation Ponds	Clearwater	Spring	04/07/04	707,500 (299)
Red River	Clearwater	Spring	04/07/04	354,868 (206)
Papoose Creek	Clearwater	Spring	04/08/04	56,174 (801)
			Drainage Total	**3,217,765** **(54,934)**
Big Canyon Creek	Lyons Ferry	Fall 1+	04/14/04	109,758 (4,984)
			Drainage Total	**109,758** **(4,984)**
Big Canyon Creek	Lyons Ferry	Fall 0+	06/03/04	473,556 (2,490)
Nez Perce Tribal Hatchery - Site 1705	NPTH	Fall 0+	06/04/04	169,596 (2,615)
			Drainage Total	**643,152** **(5,105)**
Salmon River				
Rapid River Hatchery	Rapid River	Spring	03/15/04	2,762,058 (51,972
Hazard Creek	Rapid River	Spring	03/18/04	300,140
South Fork of Salmon River @ Knox Bridge	McCall	Summer	03/21/04	1,088,210 (71,567)
E Fork of S Fork Salmon River @ Johnson Creek	McCall	Summer	03/21/04	112,870 (12,186)
Pahsimeroi Ponds	Pahsimeroi	Summer	04/11/04	1,108,998 (970)
Sawtooth Hatchery	Sawtooth	Spring	04/13/04	812,200 (1,000)
			Drainage Total	**6,184,476** **(137,695)**
Snake River				
Snake River @ Hells Canyon Dam	Rapid River	Spring	03/15/04	499,956
Catherine Creek Acclimation Pond	Lookingglass	Spring	03/15/04	91,797 (15,759)
Lookingglass Creek	Lookingglass	Spring	03/15/04	53,195 (5,193)

Table 2. Continued.

Drainage Release Site	Hatchery	Stock	Release Date	No. Released (No. PIT Tagged)
Snake River, continued.				
Grande Ronde Acclimation Pond	Lookingglass	Spring	03/15/04	75,063 (982)
Lostine Acclimation Pond	Lookingglass	Spring	03/15/04	116,396 (6,633)
Lostine Acclimation Pond	Lookingglass	Spring	03/29/04	133,703 9,276
Catherine Creek Acclimation Pond	Lookingglass	Spring	03/31/04	70,071 (5,235)
Grande Ronde Acclimation Pond	Lookingglass	Spring	03/31/04	69,856 (500)
Imnaha Acclimation Pond	Lookingglass	Spring	04/15/04	398,185 (20,910)
			Drainage Total	**1,508,222 (64,488)**
Captain John's Rapid	Lyons Ferry	Fall 1+	04/07/04	153,251 (4,982)
Pittsburg Landing	Lyons Ferry	Fall 1+	04/12/04	151,443 (4,983)
			Drainage Total	**304,694 (9,965)**
Snake River @ Pittsburg Landing	Oxbow	Fall 0+	05/24/04	165,438
Snake River @ Hells Canyon Dam	Oxbow	Fall 0+	05/28/04	9,957 (9,957)
Pittsburg Landing	Lyons Ferry	Fall 0+	05/31/04	197,687 (2,496)
Captain John's Rapid	Lyons Ferry	Fall 0+	06/01/04	500,739 (2,493)
			Drainage Total	**873,821 (14,946)**
			Grand Total	**12,841,888 (292,117)**

Table 3. Hatchery steelhead trout released into the Snake River system upriver from Lower Granite Dam contributing to the 2004 out-migration.

Drainage Release Site	Hatchery	Stock	Release Date	No. Released (No. PIT Tagged)
Clearwater River				
Clear Creek	Clearwater	B	04/12/04	209,732
S. Fork Clearwater River @ Red House Hole	Clearwater	B	04/12/04	213,900
Red River Rearing Ponds	Clearwater	B	04/16/04	268,174 (7,372)
Clearwater River	Clearwater	B	04/19/04	1,202,055 (1,498)
Newsome Creek	Clearwater	B	04/19/04	65,080
S. Fork Clearwater River @ Red House Hole	Clearwater	B	04/19/04	314,963 (297)
Crooked River	Clearwater	B	04/20/04	257,604 (599)
Clear Creek	Clearwater	B	04/21/04	103,718
American River	Clearwater	B	04/23/04	74,620
Lolo Creek	Clearwater	B	04/27/04	51,859 (297)
Meadow Creek (Selway River Tributary)	Clearwater	B	04/27/04	25,961
S. Fork Clearwater River @ Meadow Creek	Clearwater	B	04/27/04	1,061 (1,061)
S. Fork Clearwater River @ Mill Creek	Clearwater	B	04/27/04	27,466 (1,504)
			Drainage Total	**2,816,193 (12,628)**
Salmon River				
Little Salmon River	Hagerman	A	03/29/04	177,094 (300)
Little Salmon River	Hagerman	B	03/29/04	100,494 (300)
Little Salmon River @ Stinky Springs	Niagara Springs	A	04/05/04	208,185 (298)
Squaw Creek Ponds	Magic Valley	B	04/05/04	64,840
Little Salmon River	Magic Valley	A	04/06/04	198,623 (300)
Salmon River @ Sawtooth Hatchery	Hagerman	A	04/06/04	756,607 (298)
Squaw Creek Ponds	Magic Valley	B	04/06/04	58,377
Little Salmon River @ Stinky Springs	Niagara Springs	A	04/07/04	103,510 (300)
Lower Hazard Creek	Hagerman	A	04/07/04	42,001
Pahsimeroi Hatchery	Niagara Springs	A	04/07/04	109,139
Hammer Creek	Magic Valley	A	04/08/04	178,984 (300)
Pahsimeroi River	Niagara Springs	A	04/09/04	960,660 (292)

Table 3. Continued.

Drainage Release Site	Hatchery	Stock	Release Date	No. Released (No. PIT Tagged)
Salmon River Continued				
Salmon River @ Red Rock	Magic Valley	A	04/12/04	132,528 (291)
Salmon River @ Colston Corner	Magic Valley	A	04/13/04	122,915 (297)
Lemhi River	Magic Valley	A	04/14/04	70,780
Lemhi River @ Hayden Creek	Magic Valley	A	04/15/04	18,600
Lemhi River @ St. Charles Bridge	Magic Valley	A	04/15/04	88,254 (599)
Pahsimeroi hatchery	Magic Valley	B	04/16/04	26,836
Salmon River @ McNabb Point	Magic Valley	A	04/16/04	127,740 (300)
Salmon River @ Tunnel Rock	Magic Valley	A	04/19/04	57,800
Squaw Creek	Magic Valley	B	04/20/04	179,536 (500)
E Fk Salmon River @ Dumpster	Magic Valley	B	04/21/04	196,402
Squaw Creek	Magic Valley	B	04/21/04	19,200
E Fk Salmon River Trap	Magic Valley	B	04/26/04	42,953
Yankee Fk @ 3rd Bridge Up	Magic Valley	A	04/26/04	64,624 (299)
Yankee Fk @ 3rd Bridge Up	Magic Valley	B	04/26/04	123,258
Valley Creek	Magic Valley	B	04/28/04	24,156 (299)
Lemhi River	Hagerman	A	05/06/04	13,330
E Fk Salmon River Trap	Hagerman	B	05/07/04	96,073 (268)
Yankee Fork	Hagerman	A	05/11/04	138,664 (296)
			Drainage Total	**4,502,163 (5,537)**
Snake River				
Snake River Hells Canyon Dam	Niagara Springs	A	03/22/04	108,181
Snake River Hells Canyon Dam	Niagara Springs	A	03/24/04	108,652
Snake River Hells Canyon Dam	Niagara Springs	A	03/26/04	103,284
Snake River Hells Canyon Dam	Niagara Springs	A	03/28/04	342,295 (297)
Little Sheep Creek Facility	Irrigon	A	04/11/04	130,072 (481)
Big Sheep Creek	Irrigon	A	04/12/04	100,002 (220)
Big Canyon Facility	Irrigon	A	04/12/04	15,440 (251)
Wallowa Hatchery	Irrigon	A	04/12/04	408,045 (280)

Table 3. Continued.

Drainage Release Site	Hatchery	Stock	Release Date	No. Released (No. PIT Tagged)
Grande Ronde River	Cottonwood Creek Pond	A	04/13/04	137,915
Little Sheep Creek Facility	Irrigon	A	04/28/04	71,839 (251)
Wallowa Hatchery	Irrigon	A	04/28/04	148,887 (250)
Big Canyon Facility	Irrigon	A	04/29/04	75,450 (249)
Deer Creek	Irrigon	A	05/06/04	1,109 (1,109)
			Drainage Total	**1,887,171 (3,388)**
			Grand Total	**9,205,527 (21,553)**

Table 4. Hatchery coho and sockeye salmon released into the Snake River system upstream from Lower Granite Dam contributing to the 2004 out-migration.

Drainage Release Site	Species	Hatchery	Release Date	No. Released (No. PIT Tagged)
Clearwater River				
Potlatch River	Coho	Eagle Creek	03/02/04	297,271 (1,000)
Lapwai Creek	Coho	Eagle Creek	03/09/04	299,084 (1,000)
Clear Creek	Coho	Dworshak	04/27/04	356,323 (1,500)
			Drainage Total	**952,678 (3,500)**
Salmon River				
Altural Lake	Sockeye	Sawtooth	10/06/03	2,017 (2,017)
Pettit Lake	Sockeye	Sawtooth	10/06/03	14,961 (2,014)
Redfish Lake	Sockeye	Sawtooth	10/07/03	59,810 (1,519)
Salmon River Below Sawtooth Hatchery Weir	Sockeye	Sawtooth	05/13/04	96 (96)
			Drainage Total	**76,884 (5,646)**

Smolt Monitoring Traps

Snake River Trap Operation

The Snake River trap captured 3,849 hatchery and 1,473 wild age-1 Chinook salmon, 978 age-0 Chinook salmon of unknown rearing, 8,698 hatchery and 1,972 wild steelhead trout, 23 hatchery and 18 unknown rearing sockeye salmon, and 60 coho salmon of unknown rearing in 2004 (Table 5).

Age-1 hatchery Chinook salmon first arrived at the trap on March 18 (one fish). Significant numbers of fish were not trapped until April 28 (111 fish). The daily catch fluctuated between zero and 1,161 fish per day (Figure 2). Four percent (138) of the total season catch was collected in March, 24% (916) in April, 24% (926) in May, and 48% (1,869) in June.

It would be reasonable to believe that a high percentage of the Chinook collected in June were fall Chinook because approximately 700,000 fall Chinook were released from Pittsburg Landing and Captain John Acclimation Pond on May 31 and June 1, combined (Table 2). Also, there were 16 PIT tag interrogations during the four days of trap operation in June and they were all from these two releases. If in fact most of the Chinook collected in June were fall Chinook then the total number of age-1 Chinook collected for the season would be significantly less and the number of age-0 Chinook would be greater.

Age-1 wild Chinook salmon first arrived at the trap on March 16 (one fish). Significant numbers of fish were not trapped until May 29 (140 fish). The daily catch fluctuated between zero and 155 fish per day (Figure 2). Five percent (67) of the total season catch was collected in March, 18% (268) in April, 68% (1,002) in May, and 9% (136) in June.

Physical characteristics were used to differentiate between age-0 Chinook salmon and older salmon. This year, 978 age-0 Chinook salmon were captured. One percent (12) of the total season catch was collected in March, 12% (118) in April, 80% (781) in May, and 7% (67) in June.

Hatchery steelhead trout first arrived at the trap on March 26 (one fish). Significant numbers of fish were not trapped until April 20 (215 fish). The daily catch fluctuated between zero and 1,397 fish per day (Figure 3). Less than 1% (38) of the total season catch was collected in March, 21% (1,840) in April, 78% (6,789) in May, and less than 1% (29) in June.

Wild steelhead trout first arrived at the trap on March 12 (one fish). Significant numbers of fish were not trapped until May 5 (136 fish). The daily catch fluctuated between zero and 253 fish per day (Figure 3). Two percent (40) of the total season catch was collected in March, 24% (463) in April, 74% (1,459) in May, and less than 1% (10) in June.

Hatchery sockeye salmon first arrived at the trap on May 8 (2 fish). The daily catch fluctuated between zero and three fish per day. Ninety-one percent (21) of the total season catch was collected in May and 9% (2) in June.

Sockeye salmon of unknown origin first arrived at the trap on April 9 (1 fish). The daily trap catch fluctuated between zero and two fish per day. Eleven percent (2) of the total season catch was collected in April, 83% (15) in May, and 6% (1) in June.

Coho salmon of unknown rearing first arrived at the trap on March 18 (1 fish). The daily trap catch fluctuated between zero and six fish per day. About 15% (9) of the total season catch was collected in March, 5% (3) in April, and 80% (48) in May.

Snake River discharge measured at the Anatone gauge ranged between 20.9 kcfs and 71.3 kcfs (Table 6). Water temperature at the Snake River trap ranged between 5.3°C and 15.9°C (Figure 4). Secchi disk transparency at the Snake River trap ranged between 0.5 m and 2.3 m (Figure 4).

Table 5. 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 1995 through 2004.

Year	Species / Run	Snake River Trap	Clearwater River Trap	Salmon River Trap
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
1997	HC	1,543	No Data	2,280
	WC	898		1,065
	HS	1,600		1,267
	WS	196		66
1996	HC	3,163	No Data	6,205
	WC	1,140		1,776
	HS	8,921		9,566
	WS	896		304
1995	HC	26,919	13,475	45,349
	WC	6,564	1,534	9,396
	HS	23,994	8,314	3,948
	WS	1,750	285	499

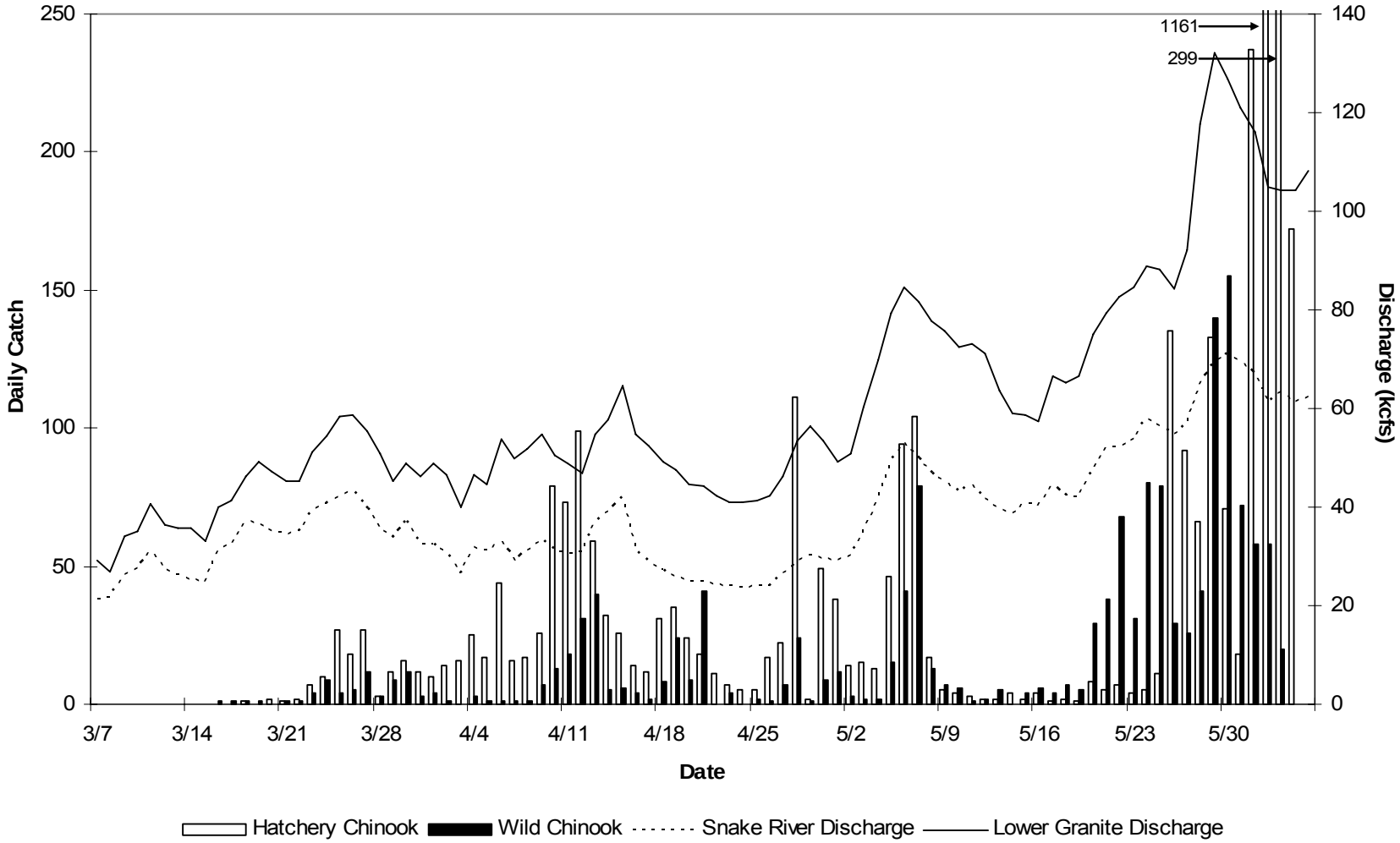

Figure 2. Snake River trap daily catch of hatchery Chinook salmon and wild Chinook salmon overlaid by Snake River and Lower Granite discharge, 2004.

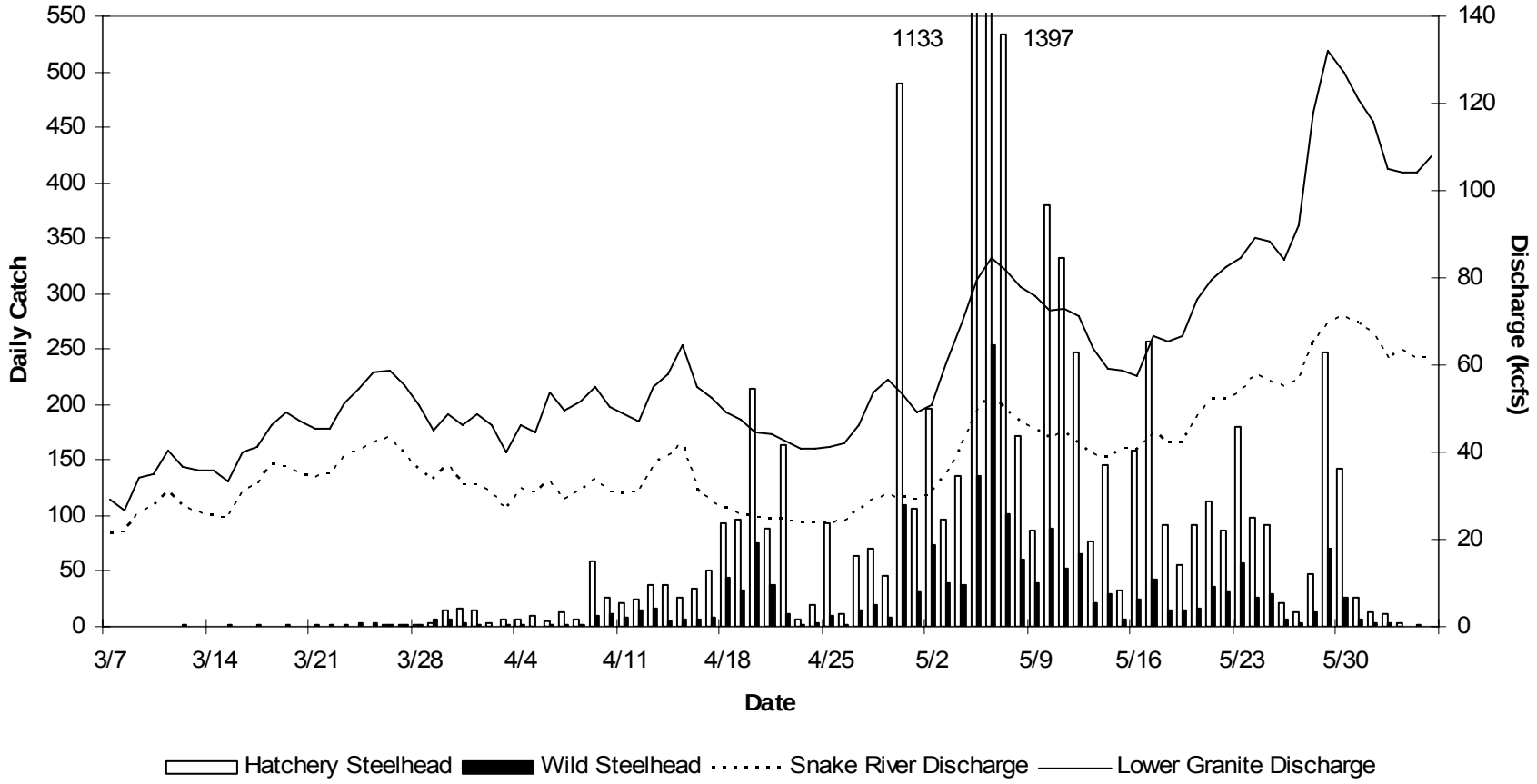

Figure 3. Snake River trap daily catch of hatchery steelhead trout and wild steelhead trout overlaid by Snake River and Lower Granite discharge, 2004.

Table 6. Monthly Snake River discharge at Anatone, Washington, and 2004 comparison with previous three years. Comparison data is reported as 2004 discharge minus annual interval discharge.

		2004	2001		2002		2003	
		Discharge (cfs)	Discharge (cfs)	2004 Comparison (kcfs)	Discharge (cfs)	2004 Comparison (kcfs)	Discharge (cfs)	2004 Comparison (kcfs)
March	Min	20,907	13,485	7.4	14,630	6.3	15,408	5.5
	Max	43,392	29,141	14.3	41,260	2.1	37,936	5.5
	Average	31,141	20,368	10.8	24,046	7.1	28,250	2.9
April	Min	23,597	18,146	5.5	25,339	-1.7	30,722	-7.1
	Max	41,914	32,714	9.2	60,143	-18.2	43,349	-1.4
	Average	29,607	23,726	5.9	39,457	-9.9	36,830	-7.2
May	Min	29,108	27,589	1.5	26,963	2.1	31,274	-2.2
	Max	71,257	58,021	13.2	84,175	-12.9	146,719	-75.5
	Average	48,553	39,361	9.2	44,887	3.7	55,989	-7.4
June	Min	27,279	16,517	10.8	35,306	-8.0	27,280	0.0
	Max	66,920	35,923	31.0	83,131	-16.2	131,563	-64.6
	Average	45,472	22,414	23.1	53,175	-7.7	62,639	-17.2

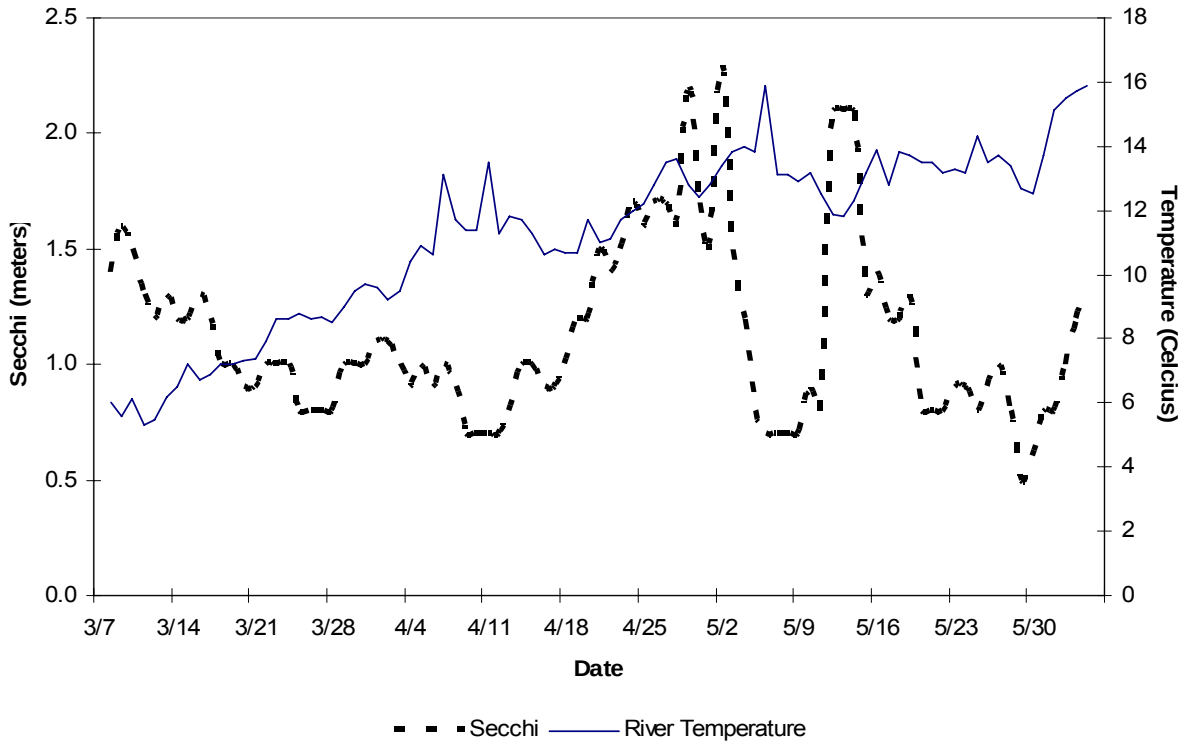

Figure 4. Daily river water temperature and Secchi disk transparency at the Snake River trap, 2004.

Salmon River Trap Operations

The Salmon River scoop trap captured 32,038 hatchery and 7,567 wild age-1 Chinook salmon, 2,480 hatchery and 248 wild steelhead trout in 2004 (Table 5). This trap also captured eight hatchery sockeye salmon, and eight sockeye salmon of unknown rearing.

A significant numbers of age-1 hatchery Chinook salmon were not trapped until March 17 (175 fish). The daily catch fluctuated between zero and 2,214 fish per day (Figure 5). About 49% (15,867) of the season total was captured in March, 50% (16,034) in April, and less than 1% (137) in May.

Age-1 wild Chinook salmon first appeared on March 11 (two fish). Significant numbers of fish were not trapped until March 16 (112 fish). The daily catch fluctuated between zero and 528 fish per day (Figure 5). About 64% (4,862) of the season total was captured in March, 33% (2,496) in April, and 3% (209) in May.

Hatchery steelhead trout first appeared at the trap on April 1 (six fish). Significant numbers of fish were not trapped until April 23 (116 fish). The daily catch fluctuated between zero and 190 fish per day (Figure 6). About 56% (1,380) of the season total was captured in April and 44% (1,100) in May.

Wild steelhead trout first appeared on March 17 (one fish). The daily trap catch remained below 100 fish throughout the trapping season. Daily catch fluctuated between zero and 18 fish per day (Figure 6). About 3% (7) of the season total was captured in March, 52% (128) in April, and 45% (113) in May.

Hatchery sockeye salmon first appeared at the trap on May 10 (one fish). The daily catch fluctuated between zero and two fish per day. One hundred percent (8) of the season total was captured in May.

Sockeye salmon of unknown rearing first appeared at the trap an May 13 (2 fish). The daily catch fluctuated between zero and four fish per day. Four were trapped on May 15. One hundred percent (8) of the season total was captured in May.

Salmon River discharge measured at the White Bird gauge ranged between 3.6 kcfs and 36.5 kcfs (Table 7). Water temperature at the Salmon River trap ranged between 3.5°C to 11.0°C (Figure 7). Secchi disk transparency at the Salmon River trap ranged between 0.2 m and 1.7 m (Figure 7).

The trap was operated at a position approximately 10 meters from the west shoreline from March 7 through May 4. The trap position was changed to approximately 30 meters from the west shoreline on May 5 and 35 meters on May 6 to avoid large amounts of woody debris. The trap remained at 35 meters until May 12 when it was moved back to 30 meters. On May 14, the trap was returned to the 10 meter position where it remained until May 21. The trap was changed to the 35 meter position on May 21 to avoid large amounts of woody debris. The trap remained at 35 meters for the rest of the trapping period.

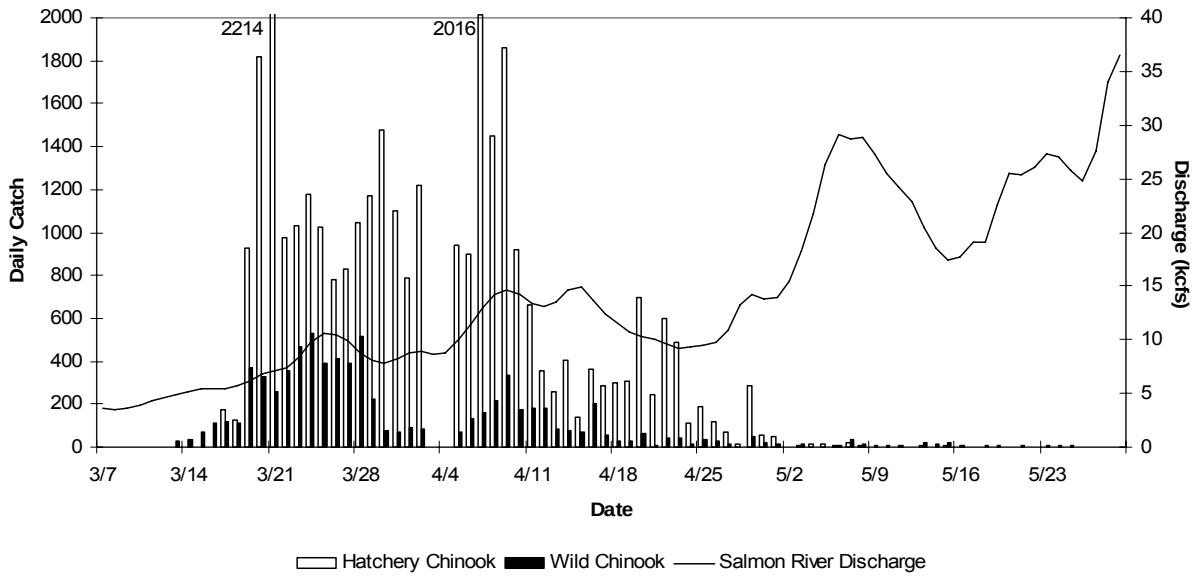

Figure 5. Salmon River trap daily catch of hatchery Chinook salmon and wild Chinook salmon overlaid by Salmon River discharge, 2004.

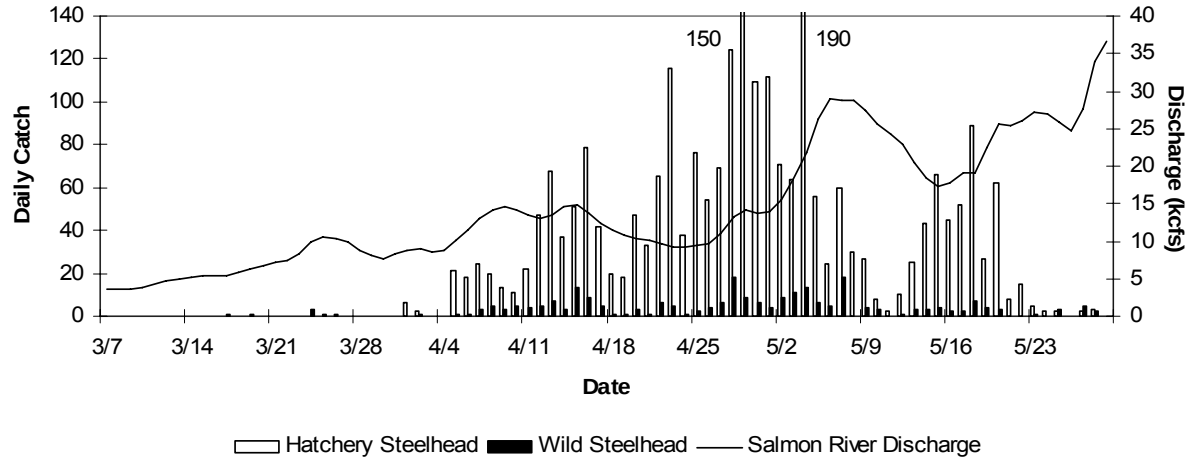

Figure 6. Salmon River trap daily catch of hatchery steelhead trout and wild steelhead trout overlaid by Salmon River discharge, 2004.

Table 7. Monthly Salmon River discharge at White Bird, Idaho, and 2004 comparison with previous three years. Comparison data is reported as 2004 discharge minus annual interval discharge.

		2004	2001		2002		2003	
		Discharge (cfs)	Discharge (cfs)	2004 Comparison (kcfs)	Discharge (cfs)	2004 Comparison (kcfs)	Discharge (cfs)	2004 Comparison (kcfs)
March	Min	3,554	3,149	0.4	3,169	0.4	3,765	-0.2
	Max	10,632	6,855	3.8	5,514	5.1	9,433	1.2
	Average	6,071	4,613	1.5	4,137	1.9	6,286	-0.2
April	Min	8,632	4,438	4.2	5,962	2.7	7,255	1.4
	Max	14,932	16,427	-1.5	23,423	-8.5	18,041	-3.1
	Average	11,688	6,693	5.0	12,357	-0.7	12,173	-0.5
May	Min	13,980	12,477	1.5	12,543	1.4	12,588	1.4
	Max	36,523	31,168	5.4	52,568	-16.0	90,290	-53.8
	Average	24,558	20,238	4.3	25,006	-0.4	30,156	-5.6

Travel Time and Migration Rates

Release Sites to Snake River Trap

Hatchery Spring Chinook Salmon—In 2004, 36 PIT-tagged hatchery spring Chinook salmon were interrogated at the Snake River trap (Table 8). Two were from the Catherine Creek Pond (median travel time 60.6 d), three were from the Dworshak National Fish Hatchery (median 9.2 d), seven were from the Imnaha River weir (median 22.5 d), two were from the Lookingglass Hatchery (median 33.2), two were from the Lostine River Pond (median 17.5 d), 19 were from the Rapid River Hatchery (median 24.7 d), and one was from the Salmon River (travel time 23.5 d).

Wild Spring Chinook Salmon—In 2004, ten PIT-tagged wild spring Chinook salmon were interrogated at the Snake River trap (Table 8). One was from Bear Valley Creek (travel time 273.8 d), one was from Camas Creek (travel time 287.8 d), two were from the Grande Ronde River (section 2) (median travel time 19.3 d), three were from the Grande Ronde River trap (median 2.2 d), one was from the Lostine River (travel time 238.6 d), one was from the Marsh Creek trap (travel time 184.6 d), and one was from the Sawtooth trap (travel time 239.3 d).

Hatchery Summer Chinook Salmon—In 2004, 18 PIT-tagged hatchery summer Chinook salmon were interrogated at the Snake River trap (Table 8). Five were from Johnson Creek (median travel time 45.5 d), and 13 were from Knox Bridge (median 68.4 d).

Wild Summer Chinook Salmon—In 2004, 13 PIT-tagged wild summer Chinook salmon were interrogated at the Snake River trap (Table 8). Six were from the Imnaha River trap (median travel time 2.6 d), four were from the Johnson Creek trap (median 72.9 d), one was from the Pahsimeroi River trap (travel time 7.1 d), and two were from the South Fork Salmon River trap (median 25.7d).

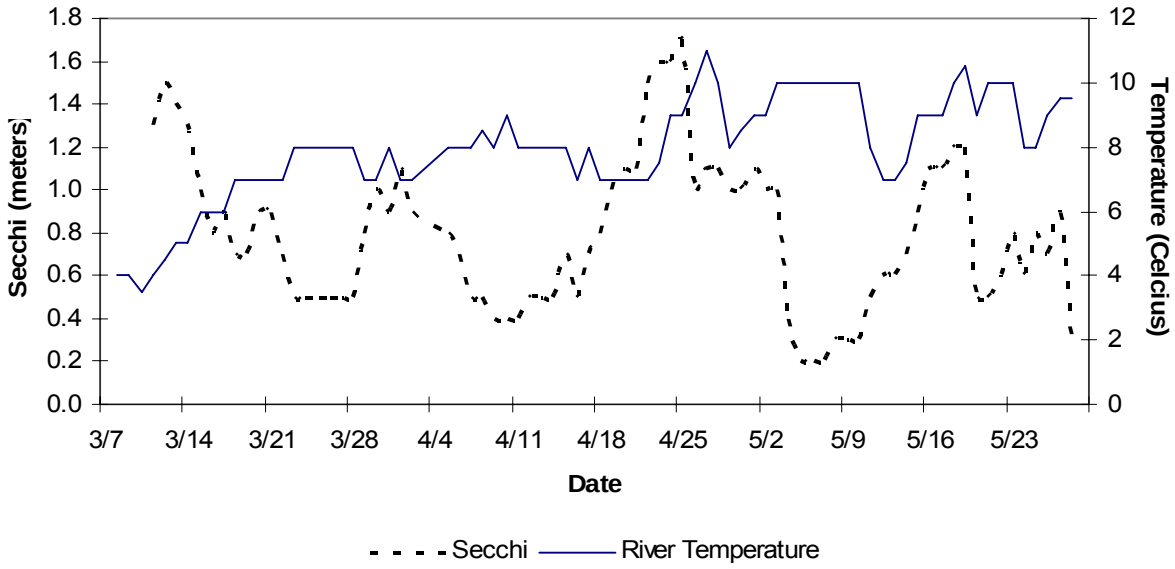

Figure 7. Daily river water temperature and Secchi disk transparency at the Salmon River trap, 2004.

Hatchery Fall Chinook Salmon—In 2004, 31 PIT-tagged hatchery fall Chinook salmon were interrogated at the Snake River trap (Table 8). Twelve were from the Captain John Rapids Acclimation Pond (median travel time 0.6 d), 13 were from Hells Canyon Dam (median less than 0.1 d), and six were from Pittsburg Landing Acclimation Facility (median 1.7 d).

Hatchery Unknown Run Chinook Salmon—In 2004, two PIT-tagged hatchery unknown run Chinook salmon were interrogated at the Snake River trap (Table 8). They were from the Salmon River trap, and their median travel time to the Snake River trap was 11.8 d.

Wild Unknown Run Chinook Salmon—In 2004, 12 PIT-tagged wild unknown run Chinook salmon were interrogated at the Snake River trap (Table 8). One was from the Salmon River trap (travel time 5.9 d), ten were from the Snake River (section 3) (median travel time 8.4 d), and one was from the Snake River (section 4) (travel time 12.4 d).

Hatchery Summer Steelhead Trout—In 2004, 33 hatchery summer steelhead trout were interrogated at the Snake River trap (Table 8). Three were from the Big Canyon Facility (median travel time 14.0 d), ten were from the Grande Ronde River trap (median 0.6 d), four were from the Imnaha River trap (median 0.6 d), one was from the Lemhi River (travel time 13.9 d), two were from the Little Salmon River (median 16.1 d), one was from the Salmon River (section 1) (travel time 25.9 d), two were from the Salmon River (section 3) (median 24.7 d), eight were from the Salmon River trap (median 2.4 d), and two were from Squaw Creek (median 33.1 d).

Wild Summer Steelhead Trout—In 2004, 20 wild summer steelhead trout were interrogated at the Snake River trap (Table 8). One was from Bargamin Creek (travel time 302.5 d), one was from the Grande Ronde River (section 2) (travel time 35.7 d), one was from the Grande Ronde River trap (travel time 0.6 d), 14 were from the Imnaha River trap (median travel

time 2.1 d), one was from the Johnson Creek trap (travel time 238.7 d), one was from the Salmon River trap (travel time 1.8 d), and one was from the Sawtooth trap (travel time 18.5 d).

Hatchery Sockeye Salmon—In 2004, five hatchery sockeye salmon were interrogated at the Snake River trap (Table 8). One was from Pettit Lake (travel time 223.4 d), one was from Redfish Lake (travel time 238.9 d), and three were from the Redfish Lake Creek trap (median travel time 7.0 d).

Wild Sockeye Salmon—In 2004, three wild sockeye salmon were interrogated at the Snake River trap (Table 8). They were from the Redfish Lake Creek trap (median travel time 9.7 d).

Release Sites to Salmon River Trap

Hatchery Spring Chinook Salmon—In 2004, 469 hatchery spring Chinook salmon were interrogated at the Salmon River trap (Table 9). Four hundred sixty-six were from the Rapid River Hatchery (median travel time 15.9 d) and three were from the Salmon River (median 9.8 d).

Wild Spring Chinook Salmon—In 2004, 16 wild spring Chinook salmon were interrogated at the Salmon River trap (Table 9). One was from Elk Creek (travel time 242.1 d), 12 were from the Lemhi River weir (median travel time 131.0 d), two were from Marsh Creek (median 96.5 d), and one was from the Sawtooth trap (travel time 22.5 d).

Hatchery Summer Chinook Salmon—In 2004, 284 hatchery summer Chinook salmon were interrogated at the Salmon River Trap (Table 9). Seventeen were from Johnson Creek (median travel time 24.8 d) and 267 were from Knox Bridge (median 17.8 d).

Wild Summer Chinook Salmon—In 2004, ten wild summer Chinook salmon were interrogated at the Salmon River trap (Table 9). Four were from the Johnson Creek trap (median travel time 145.8 d), three were from the Pahsimeroi River trap (median 8.7 d), and three were from the South Fork Salmon River trap (median 178.9 d).

Hatchery Summer Steelhead Trout—In 2004, three hatchery summer steelhead trout were interrogated at the Salmon River trap (Table 9). One was from the Salmon River (travel time 17.8 d), one was from the East Fork Salmon River (travel time 7.8 d), and one was from the Squaw Creek Acclimation Pond (travel time 5.6 d).

Wild Summer Steelhead Trout—In 2004, one wild summer steelhead trout from the Marsh Creek trap (travel time 34.8 d) was interrogated at the Salmon River trap (Table 9).

Table 8. Travel time, separated by species, run and rearing type, from the point of release to the Snake River trap, 2004.

Species/Run/Rearing	Release Site	Distance From Release Site To Trap (km)	Number Of Receptors	Minimum Travel Time (days)	Maximum Travel Time (days)	Median Travel Time (days)
Chinook / Spring / Hatchery	Catherine Creek Pond	326	2	53.57	67.55	60.56
	Dworshak National Fish Hatchery	66	3	4.21	35.53	9.23
	Imnaha River Weir	157	7	8.41	40.38	22.47
	Lookingglass Hatchery	186	2	11.20	55.14	33.17
	Lostine River Pond	240	2	8.73	26.29	17.51
	Rapid River Hatchery	231	19	14.54	60.45	24.71
	Salmon River	78	1	23.46	23.46	
Chinook / Spring / Wild	Bear Valley Creek	567	1	273.81	273.81	
	Camas Creek	454	1	287.83	287.83	
	Grande Ronde River (Section 2)	177	2	3.32	35.25	19.28
	Grande Ronde River Trap	48	3	1.62	3.52	2.22
	Lostine River	219	1	238.58	238.58	
	Marsh Creek Trap	578	1	184.62	184.62	
	Sawtooth Trap	695	1	239.25	239.25	
Chinook / Summer / Hatchery	Johnson Creek	377	5	50.50	74.96	45.50
	Knox Bridge	405	13	7.54	58.61	68.35
Chinook / Summer / Wild	Imnaha River Trap	90	6	1.59	7.30	2.55
	Johnson Creek Trap	384	4	52.04	183.12	72.89
	Pahsimeroi River Trap	569	1	7.08	7.08	
	South Fork Salmon River Trap	408	2	25.39	25.98	25.68
Chinook / Fall / Hatchery	Captain John Rapids Acclimation Pond	38	12	-0.47[a]	2.61	
	Hells Canyon Dam	172	13	-1.56[a]	2.57	
	Pittsburg Landing Acclimation Facility	121	6	1.48	4.24	1.65
Chinook / Unknown / Hatchery	Salmon Trap	181	2	5.71	17.80	11.76
Chinook / Unknown / Wild	Salmon Trap	181	1	5.85	5.85	
	Snake River (Section 3)	1	10	.81	17.71	8.42
	Snake River (Section 4)	78	1	12.42	12.42	
Steelhead / Summer / Hatchery	Big Canyon Facility	196	3	2.55	44.53	14.00
	Grande Ronde River Trap	48	10	0.29	5.94	0.64
	Imnaha River Trap	90	4	-0.25	1.85	0.62
Steelhead / Summer / Hatchery Continued	Lemhi River	494	1	13.85	13.85	
	Little Salmon River	218	2	6.49	25.78	16.14
	Salmon River (Section 1)	78	1	25.87	25.87	
	Salmon River (Section 3)	397	2	24.01	25.48	24.74
	Salmon Trap	181	8	1.48	5.18	2.36
	Squaw Creek	254	2	25.20	40.95	33.08

Table 8. Continued.

Species/Run/Rearing	Release Site	Distance From Release Site To Trap (km)	Number Of Receptors	Minimum Travel Time (days)	Maximum Travel Time (days)	Median Travel Time (days)
Steelhead / Summer / Wild	Bargamin Creek	333	1	302.50	302.50	
	Grande Ronde River (Section 2)	177	1	35.71	35.71	
	Grande Ronde River Trap	48	1	0.56	0.56	
	Imnaha River Trap	90	14	0.93	15.96	2.12
	Johnson Creek Trap	384	1	238.74	238.74	
	Salmon Trap	181	1	1.75	1.75	
	Sawtooth Trap	695	1	18.52	18.52	
Sockeye / Summer / Hatchery	Pettit Lake	715	1	223.35	223.35	
	Redfish Lake	698	1	238.86	238.86	
	Redfish Lake Creek Trap	696	3	5.99	7.59	6.96
Sockeye / Summer / Wild	Redfish Lake Creek Trap	696	3	6.84	9.77	9.72

[a] Fish were released prior to reported date of release.

Table 9. Travel time, separated by species, run and rearing type, from the point of release to the Salmon River trap, 2004.

Species/Run/Rearing	Release Site	Distance From Release Site To Trap (km)	Number Of Receptors	Minimum Travel Time (days)	Maximum Travel Time (days)	Median Travel Time (days)
Chinook / Spring / Hatchery	Rapid River Hatchery	50	466	2.02	38.71	15.94
	Salmon River		3	9.76	10.82	9.76
Chinook / Spring / Wild	Elk Creek	400	1	242.11	242.11	
	Lemhi River Weir	362	12	9.27	176.90	130.97
	Marsh Creek Trap	397	2	7.89	185.04	96.46
	Sawtooth Trap	514	1	22.52	22.52	
Chinook / Summer / Hatchery	Johnson Creek	196	17	6.93	52.79	24.79
	Knox Bridge	224	267	3.93	51.79	17.83
Chinook / Summer / Wild	Johnson Creek Trap	203	4	16.68	240.69	145.78
	Pahsimeroi River Trap	388	3	7.68	9.55	8.69
	South Fork Salmon River Trap	227	3	160.93	215.89	178.94
Steelhead / Summer / Hatchery	Salmon River		1	17.82	17.82	
	East Fork Salmon River	449	1	7.83	7.83	
	Squaw Creek Acclimation Pond	462	1	5.63	5.63	
Steelhead / Summer / Wild	Marsh Creek Trap	397	1	34.82	34.82	

Snake River Trap to Lower Granite Dam

A removable spillway weir (RSW) was installed at Lower Granite Dam in 2001. When the RSW is operated there is a significant increase in the number of smolts that pass the facility by spill thus reducing the number of smolts passing via the collection facility or through the turbines. Therefore, when the RSW is in operation there are fewer PIT tag interrogations at Lower Granite Dam. The RSW was operated for fish passage from April 3 through April 23, May 5 and 6. The RSW was operated from May 27 through June 10, 2004 because hydraulic capacity was exceeded. After that the facility was operated for maximum collection and transport so PIT tag interrogations at Lower Granite Dam were significantly higher than the previous two years. Because fewer smolts pass Lower Granite Dam there were fewer smolts interrogated at Little Goose, Lower Monumental, and McNary Dams than during the last two years.

Hatchery Chinook Salmon PIT Tag Groups—Sufficient numbers of hatchery Chinook salmon (2,127 individual fish) were PIT tagged daily at the Snake River trap to provide 38 daily release groups for median migration rate calculations through Lower Granite Reservoir from March 25 through June 2 (Appendix A, Table 1). Median travel time ranged from 26.2 to 2.4 d (2.0 km/d to 21.5 km/d migration rate).

Age-0 fall Chinook releases began on May 24 and were a significant portion of the trap catch by May 26. Travel time for hatchery Chinook salmon PIT tag groups released from the Snake River trap after May 25 was significantly slower. Because hatchery Chinook PIT tag groups released after May 25 were dominated by age-0 fall Chinook, which travel much slower than spring/summer Chinook, they were not used in the median migration rate/discharge analysis.

Data stratified by 5 kcfs groups were used in the regression analysis (Table 10). Linear regression analysis detected a significant relation 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 11). The equation shows that as discharge increases, migration rate increases.

Wild Chinook Salmon PIT-Tag Groups—Sufficient numbers of wild Chinook salmon (1,389 individual fish) were PIT tagged daily at the Snake River trap to provide 9 daily release groups for median migration rate calculations through Lower Granite Reservoir from April 12 through June 2 (Appendix A, Table 2). Median travel time ranged from 24.4 to 2.9 d (1.7 km/d to 17.9 km/d migration rate).

Age-0 wild fall Chinook became a significant portion of the trap catch by May 21. Travel time for wild Chinook salmon PIT tag groups released from the Snake River trap after May 20 was significantly slower. Because wild Chinook PIT tag groups released after May 20 were dominated by age-0 fall Chinook, which travel much slower than spring/summer Chinook, they were not used in the median migration rate/discharge analysis.

Data stratified by 5 kcfs groups were used in the regression analysis (Table 10). Linear regression analysis detected a significant relation 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 11). The equation shows that as discharge increases, migration rate increases.

Hatchery Steelhead Trout PIT Tag Groups—Sufficient numbers of hatchery steelhead trout (4,843 individual fish) were PIT tagged daily at the Snake River trap to provide 50 daily release groups for median migration rate calculations through Lower Granite Reservoir from March 30 through June 2 (Appendix A, Table 3). Median travel time ranged from 6.5 to 1.4 d (7.9 km/d to 36.7 km/d migration rate).

Data stratified by 5 kcfs groups were used in the regression analysis (Table 10). Linear regression analysis detected a significant relation between migration rate in Lower Granite Reservoir and average Lower Granite inflow for PIT tagged hatchery steelhead trout groups (Table 11). The equation shows that as discharge increases, migration rate increases.

Wild Steelhead Trout PIT-Tag Groups—Sufficient numbers of wild steelhead trout (1,923 individual fish) were PIT tagged daily at the Snake River trap to provide 36 daily release groups for median migration rate calculations through Lower Granite Reservoir from April 18 through May 30 (Appendix A, Table 4). Median travel time ranged from 6.0 to 1.5 d (8.7 km/d to 34.4 km/d migration rate).

Data stratified by 5 kcfs groups were used in the regression analysis (Table 10). Linear regression analysis detected a significant relation between migration rate in Lower Granite Reservoir and average Lower Granite inflow for PIT-tagged wild steelhead trout groups (Table 11). 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 (4,187 individual fish) were PIT tagged daily at the Salmon River trap to provide 37 daily release groups for median migration rate calculations through Lower Granite Reservoir from March 17 through May 7 (Appendix A, Table 5). Median travel time ranged from 40.5 to 6.0 d (5.8 km/d to 38.6 km/d migration rate).

Data stratified by 5 kcfs groups were used in the regression analysis (Table 12). Linear regression analysis detected a significant relation 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 11). The equation shows that as discharge increases, migration rate increases.

Wild Chinook Salmon PIT-Tag Groups—Sufficient numbers of wild Chinook salmon (7,291 individual fish) were PIT tagged daily at the Salmon River trap to provide 50 daily release groups for median migration rate calculations through Lower Granite Reservoir from March 14 through May 19 (Appendix A, Table 6). Median travel time ranged from 38.6 to 5.3 d (6.0 km/d to 43.9 km/d migration rate).

Data stratified by 5 kcfs groups were used in the regression analysis (Table 12). Linear regression analysis detected a significant relation 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 11). The equation shows that as discharge increases, migration rate increases.

Hatchery Steelhead Trout PIT Tag Groups—Sufficient numbers of hatchery steelhead trout (2,241 individual fish) were PIT tagged daily at the Salmon River trap to provide 40 daily

release groups for median migration rate calculations through Lower Granite Reservoir from April 7 through May 22 (Appendix A, Table 7). Median travel time ranged from 9.7 to 3.3 d (24.2 km/d to 70.6 km/d migration rate).

Data stratified by 5 kcfs groups were used in the regression analysis (Table 12). The linear regression analysis detected a significant relation 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 11). The equation shows that as discharge increases, migration rate increases.

Wild Steelhead Trout PIT-Tag Groups—Sufficient numbers (239 individual fish) of wild steelhead trout were PIT tagged daily at the Salmon River trap to provide seven daily release groups for median migration rate calculations through Lower Granite Reservoir from April 28 through May 7 (Appendix A, Table 8). Median travel time ranged from 6.1 to 3.3 d (38.1 km/d to 71.4 km/d migration rate).

Data stratified by 5 kcfs groups were used in the regression analysis (Table 12). Linear regression analysis was unable to detect a significant relation between migration rate in Lower Granite Reservoir and average Lower Granite inflow for PIT-tagged wild steelhead trout groups (Table 11). The lack of sufficient numbers of PIT tagged wild steelhead from the Salmon River trap is the cause of the failure to detect the relation.

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 detection rates. A fourth collection facility in the system, Lower Monumental Dam, became operational in 1993. Total interrogations are likely to be greater beginning in 1993 than in previous years, under similar spill conditions. A removable spillway weir (RSW) was installed at Lower Granite Dam in 2001 and tested in 2002. The RSW increased spillway passage efficiency thereby reduce the number of fish collected and detected at a given spill level. Therefore, any comparison in trends of cumulative detection at dams must be done cautiously, in a manner that incorporates these variations in collection efficiency.

After combining to remove groups with small sample size, mean percent interrogation of Snake River trap hatchery Chinook salmon daily PIT tag release groups at Lower Granite Dam was 50.6% and ranged between 7.4% and 50.9% for hatchery fish (Appendix B, Table 1). The mean for wild Chinook salmon was 54.5% and ranged from 8.3% to 100% (Appendix B, Table 2). Seasonal cumulative interrogation rate of PIT-tagged hatchery Chinook salmon to Lower Granite, Little Goose, Lower Monumental, and McNary dams ranged between 50.0% and 100%, and averaged 82.1% and wild Chinook salmon ranged from 63.6% to 100% and averaged 76.9% (Table 13).

Percent interrogation of Salmon River trap hatchery Chinook salmon daily PIT tag release groups at Lower Granite Dam, after combining to remove groups with small sample size, ranged from 30.2% to 83.3% and averaged 48.6% (Appendix B, Table 5). Wild Chinook salmon ranged from 27.7% to 88.9% and averaged 45.7% (Appendix B, Table 6). Seasonal cumulative interrogation rate of PIT-tagged hatchery Chinook salmon to Lower Granite, Little Goose, Lower Monumental, and McNary dams ranged between 40.0% and 91.7% and

averaged 67.5% (Table 13). Wild Chinook salmon cumulative interrogation rates ranged between 41.7% and 100% and averaged 69.6% (Table 13).

Percent interrogation of Snake River trap hatchery steelhead trout and wild steelhead trout daily PIT tag release groups at Lower Granite Dam, after combining to remove groups with small sample size, ranged from 6.1% to 98.1% for hatchery fish and averaged 72.7% (Appendix B, Table 3). Wild steelhead trout ranged from 0% to 100% and averaged 75.8% (Appendix B, Table 4). Seasonal cumulative interrogation rate of PIT-tagged hatchery steelhead trout to Lower Granite, Little Goose, Lower Monumental, and McNary dams ranged between 50.0% and 100% and averaged 90.4% (Table 13). Wild steelhead trout cumulative interrogation rates ranged between 35.7% and 100% and averaged 90.0% (Table 13).

Percent interrogation of Salmon River trap hatchery steelhead trout daily PIT tag release groups at Lower Granite Dam, after combining to remove groups with small sample size, ranged from 4.8% to 87.5% and averaged 66.6% (Appendix B, Table 7). Wild steelhead trout ranged from 0% to 100% and averaged 61.5% (Appendix B Table 8). Seasonal cumulative interrogation rate of PIT-tagged hatchery steelhead trout to Lower Granite, Little Goose, Lower Monumental, and McNary dams ranged between 0% and 100% and averaged 80.0% (Table 13). Wild steelhead trout ranged from 57.1% to 100% and averaged 79.1% (Table 13).

Table 10. Migration rates (km/day) stratified by 5 kcfs intervals from the Snake River trap to Lower Granite Dam, 2004.

	Hatchery Chinook		Wild Chinook		Hatchery Steelhead		Wild Steelhead	
Discharge Interval	Migration Rate (km/day)	Number Recaptured	Migration Rate (km/day)	Number Recaptured	Migration Rate (km/day)	Number Recaptured	Migration Rate (km/day)	Number Recaptured
40-45	6.79	51	9.13	48	10.72	287	9.57	99
45-50	4.08	154	5.58	6	11.09	107	12.57	9
50-55	5.35	95	9.68	47	12.82	149	12.81	30
55-60	9.73	133	12.54	7	13.03	69	11.75	95
60-65	12.76	26	13.06	12	10.52	786	13.80	121
65-70	14.40	9			8.52	323	14.27	193
70-75	16.82	19	16.95	18	10.73	578	17.22	160
75-80	15.62	84	14.45	63	14.50	284	17.58	133
80-85	17.28	101	14.19	77	17.74	389	19.93	392
85-90			7.70	38	19.72	244	20.93	111
90-95			3.82	28				
95-100			5.57	199	20.12	41		
100-105	5.65[a]	49	3.34	155	32.27	7		
105-110	6.15[a]	91						
110-115	6.14[a]	190			31.58	12		
115-120								
120-125					36.73	55	28.13	10
125-130					32.66	19	34.42	50
130-135					36.33	100		

[a] Not used in the statistical analysis because these groups contained age-0 fall Chinook.

Table 11. Linear regression statistics for migration rate/discharge relations by species rearing type and trap using data stratifies by 5-kcfs intervals, 2004.

Species	Trap	N	Intercept	Slope	r^2	P
Hatchery Chinook	Snake Salmon	9	2.025	-5.919	0.793	0.001
Wild Chinook	Snake Salmon	7	2.804	-8.307	0.868	0.002
Wild Chinook	Snake Salmon	8	1.252	-2.630	0.706	0.009
Hatchery Steelhead	Snake Salmon	7	2.242	-5.922	0.819	0.005
Hatchery Steelhead	Snake Salmon	16	1.218	-2.416	0.787	<0.001
Wild Steelhead	Snake Salmon	9	1.934	-4.550	0.926	<0.001
Wild Steelhead	Snake Salmon	12	1.024	-1.515	0.954	<0.001
		5	1.240	-1.324	0.565	0.143

Table 12. Migration rates (km/day) stratified by 5 kcfs intervals from the Salmon River trap to Lower Granite Dam, 2004.

	Hatchery Chinook		Wild Chinook		Hatchery Steelhead		Wild Steelhead	
Discharge Interval	Migration Rate (km/day)	Number Recaptured	Migration Rate (km/day)	Number Recaptured	Migration Rate (km/day)	Number Recaptured	Migration Rate (km/day)	Number Recaptured
45-50	8.90	1078	9.94	2988	18.62	109		
50-55	12.81	650	18.07	134	19.49	354		
55-60	23.30	61	26.88	14	23.19	33	38.70	21
60-65	30.93	141	33.06	14	27.15	83		
65-70	34.75	53	33.32	95	30.58	387	54.59	6
70-75	31.37	13	34.30	23	44.76	222	42.35	12
75-80	37.22	15			41.58	228	50.23	18
80-85			40.52	8	62.50	53	71.42	6
85-90					51.12	7		

Table 13. Interrogations of PIT-tagged fish from the Snake River trap, 1987-2004; Clearwater River trap, 1989-1995; and Salmon River trap 1993-2004, 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 Monu-mental	% LMJ	Ints at McNary	% MCJ	Grand Total Ints	Total % Obs.
Snake	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%	—	0.0%	48	11.7%	297	72.4%
Snake	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%	—	0.0%	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%
	1992	CU	615	249	40.5%	106	17.2%	—	0.0%	72	11.7%	427	69.4%
	1991	CU	2,131	929	43.6%	409	19.2%	—	0.0%	115	5.4%	1,453	68.2%
	1990	CU	2,245	956	42.6%	310	13.8%	—	0.0%	180	8.0%	1,446	64.4%
	1989	CU	6,222	2,384	38.3%	1,367	22.0%	—	0.0%	482	7.7%	4,233	68.0%
	1988	CU	3,767	1,237	32.8%	543	14.4%	—	0.0%	299	7.9%	2,079	55.2%
	1987[b]	CU	3,275	1,067	32.6%	338	10.3%	—	0.0%	308	9.4%	1,713	52.3%
Snake	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%
	1997	SH	1,459	750	51.4%	328	22.5%	123	8.4%	12	0.8%	1,213	83.1%
	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%	—	0.0%	30	0.8%	1,753	44.9%
	1991	SH	2,577	2,032	78.9%	268	10.4%	—	0.0%	11	0.4%	2,311	89.7%
	1990	SH	3,112	2,272	73.0%	282	9.1%	—	0.0%	33	1.1%	2,587	83.1%
	1989	SH	2,525	1,773	70.2%	268	10.6%	—	0.0%	35	1.4%	2,076	82.2%
	1988	SH	1,743	1,069	61.3%	190	10.9%	—	0.0%	12	0.7%	1,271	72.9%
	1987	SH	827	324	39.2%	52	6.3%	—	0.0%	6	0.7%	382	46.2%
Snake	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%

Table 13. Continued.

Site	Year	Species[a]	No. Tagged	Number Interrogated / Site: Ints at Lower Granite	% GRJ	Ints at Little Goose	% GOJ	Ints at Lower Monu-mental	% LMJ	Ints at McNary	% MCJ	Grand Total Ints	Total % Obs.
Snake	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%	—	0.0%	31	1.2%	1,849	72.9%
	1991	SW	3,549	2,266	63.8%.	625	17.6%	—	0.0%	66	1.9%	2,957	83.3%
	1990	SW	3,078	2,016	65.5%	356	11.6%	—	0.0%	60	1.9%	2,432	79.0%
	1989	SW	1,798	1,170	65.1%	240	13.3%	—	0.0%	52	2.9%	1,462	81.3%
	1988	SW	1,186	698	58.9%	166	14.0%	—	0.0%	20	1.7%	884	74.5%
	1987	SW	464	229	49.4%	48	10.3%	—	0.0%	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%	—	0.0%	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%	—	0.0%	136	9.3%	840	57.5%
	1991	CU	3,943	1,483	37.6%	668	16.9%	—	0.0%	235	6.0%	2,386	60.5%
	1990	CU	4,242	1,359	32.0%	674	15.9%	—	0.0%	281	6.6%	2,314	54.6%
	1989	CU	2,441	756	31.0%	452	18.5%	—	0.0%	140	5.7	1,348	55.2%
Clearwater	1995	SH	867	602	69.4%	69	8.0%	56	6.5%	3	0.3%	730	84.2%
	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%	—	0.0%	6	0.4%	947	60.4%
	1991	SH	1,215	926	76.2%	89	7.3%	—	0.0%	3	0.2%	1,018	83.8%
	1990	SH	1,228	880	71.7%	63	5.1%	—	0.0%	10	0.8%	953	77.6%
	1989	SH	290	173	59.7%	16	5.5%	—	0.0%	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%	—	0.0%	113	3.8%	2,189	73.1%
	1991	SW	1,300	767	59.0%	126	9.7%	—	0.0%	22	1.7%	915	70.4%
	1990	SW	727	409	56.3%	102	14.0%	—	0.0%	28	3.9%	539	74.1%
	1989	SW	104	53	51.0%	16	15.4%	—	0.0%	3	2.9%	72	69.2%
Salmon	2004	CH	4,187	2,033	48.6%	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%
	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	1128	20.1%	1,551	27.6%	604	10.8%	240	4.3%	3,523	62.8%
	1998	CH	3,025	1098	36.3%	565	18.7%	201	6.6%	87	2.9%	1951	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	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%
	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	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%

Table 13. Continued.

Site	Year	Species[a]	No. Tagged	Number Interrogated / Site: Ints at Lower Granite	% GRJ	Ints at Little Goose	% GOJ	Ints at Lower Monu-mental	% LMJ	Ints at McNary	% MCJ	Grand Total Ints	Total % Obs.
Salmon	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	2004	SW	239	147	61.5%	39	16.3%	3	1.3%	0	0.0%	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	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	0.0%	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%

[a] CH = Hatchery Chinook, CW = wild Chinook, CU = unknown Chinook, SH = hatchery steelhead, SW = wild steelhead.

[b] Bias may exist as only "quality" fish were tagged.

SUMMARY

Hatchery spring/summer Chinook salmon releases above Lower Granite Dam for 2004 were 101% of the previous year's release. Hatchery fall Chinook salmon releases were 59% of the previous year. Hatchery steelhead trout releases were 104% of 2003 numbers. Hatchery sockeye releases were 54% of 2003 numbers. Hatchery coho releases were 112% of last year's. Hatchery production of spring/summer Chinook salmon in the Clearwater River drainage was 88%, the Snake River and non-Idaho tributaries 103%, and the Salmon River drainage 108% of 2003 production. Hatchery production of steelhead trout in the Clearwater River drainage was 92%, the Snake River and non-Idaho tributaries was 98%, and the Salmon River was 118% of last year's total. Hatchery production of Chinook salmon and steelhead trout released above Lower Granite Dam was 12,841,888 and 9,205,527, respectively, in 2004. Significant numbers of hatchery sockeye salmon (76,884) and hatchery coho salmon (952,678) were released for migratory year 2004.

The Snake River trap was operated on the east side of the river from March 7 through June 4, 2004 and was out of operation for zero days during this period due to high flow and mechanical failures. The Snake River trap captured 3,849 age-1 hatchery and 1,473 wild Chinook salmon, 978 age-0 Chinook salmon of unknown rearing, 8,698 hatchery and 1,972 wild steelhead trout, 23 hatchery sockeye, 18 sockeye/kokanee of unknown rearing, and 60 coho of unknown rearing.

The Salmon River trap was operated on the west side of the river from March 7 through May 28, 2004 and was out of operation for two days during this period due to low numbers of

wild Chinook and excessive numbers of Rapid River hatchery Chinook. The Salmon River trap captured 32,038 age-1 hatchery and 7,567 wild Chinook salmon, 2,480 hatchery and 248 wild steelhead trout, eight hatchery sockeye salmon, and eight sockeye salmon of unknown rearing.

Significant migration rate/discharge relations were detected for hatchery Chinook, wild Chinook salmon, hatchery steelhead, and wild steelhead released from the Snake River trap to Lower Granite Dam. Initially the statistical analysis was unable to detect a migration rate/discharge relation for hatchery Chinook salmon from the Snake River trap to Lower Granite Dam because age-0 and age-1 Chinook salmon smolts were combined in the data set. Age-0 Chinook salmon migrate significantly slower than age-1 Chinook salmon. Once the groups with age-0 Chinook salmon were removed from the analysis, a significant relation was detected.

A significant migration rate/discharge relation was detected for hatchery Chinook, wild Chinook salmon, and hatchery steelhead trout released from the Salmon River trap to Lower Granite Dam. Because of a lack of sufficient data, the analysis was unable to detect a migration rate/discharge relation for wild steelhead trout.

In all instances where the migration rate/discharge relation was significant, the same trend was seen; as discharge increased, migration rate increased.

The four-dam interrogation rates for 2004 must be compared with caution due to the addition of a new collection facility at Lower Monumental Dam in 1993 and the RSW at Lower Granite Dam in 2001. Since the installation and operation of the RSW at Lower Granite Dam interrogation rates at Lower Granite Dam have decreased and interrogation rates at the other three collector dams have increased. The RSW was not operated in 2001 due to very low runoff.

LITERATURE CITED

Buettner, E. W. 1991. Smolt monitoring at the head of Lower Granite Reservoir and Lower Granite Dam. Report of Idaho Department of Fish and Game to Bonneville Power Administration, Project 83-323B, Portland, Oregon.

Mason, J. E. 1966. The migrant dipper: a trap for downstream migrating fish. Progressive Fish Culturist 28:96-102.

Mosteller, F., and J. W. Tukey. 1977. Data analysis and regression. Addison-Wesley Publishing, Reading, Massachusetts.

Ott, L. 1977. An introduction to statistical methods and data analysis. Duxbury Press, North Scituate, Massachusetts.

Prentice, E. F., T. A. Flagg, and S. McCutcheon. 1987. A study to determine the biological feasibility of a new fish tagging system, 1986-1987. Report of U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northwest and Alaska Fisheries Center to Bonneville Power Administration, Project 83-19, Portland, Oregon.

Raymond, H. L., and G. B. Collins. 1974. Techniques for appraisal of migrating juvenile anadromous fish populations in the Columbia River Basin. IN: Symposium on methodology for the survey, monitoring and appraisal of fishery resources in lakes and large rivers. Food and Agricultural Organization of the United Nations, European Inland Fisheries Advisory Commission, EIFAC/74/I/Symposium-24, Rome, Italy.

Steinhorst, K., B. Dennis, A. Byrne, and A. Polymenopoulos. 1988. Tools for analyzing fish travel time. Report of University of Idaho Statistical Consulting Center to Idaho Department of Fish and Game, Boise, Idaho.

Zar, J. H. 1984. Biostatistical analysis, 2nd edition. Prentice-Hall, Inc., Englewood Cliffs, New Jersey

APPENDICES

Appendix A. Table 1. PIT-tagged hatchery Chinook salmon travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2004.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/25/04	12.57	8.82	20.46	6.64	31.40	9	27	33.33%	49.5	4.1
03/26/04[b]	10.45	0.00	0.00	8.89	12.12	4	18	22.22%	48.3	4.9
03/27/04[b]	11.87	0.00	0.00	10.58	13.16	2	27	7.41%	48.3	4.3
03/29/04[b]	16.36	0.00	0.00	14.93	29.68	3	12	25.00%	49.1	3.2
03/30/04	7.47	4.43	9.12	4.43	9.12	6	14	42.86%	46.9	6.9
03/31/04[b]	8.69	0.00	0.00	7.23	9.28	3	9	33.33%	48.3	5.9
04/01/04[b]	15.37	0.00	0.00	7.20	23.54	2	10	20.00%	50.9	3.4
04/02/04[b]	11.33	0.00	0.00	7.38	35.16	5	13	38.46%	49.1	4.6
04/03/04[b]	29.98	0.00	0.00	23.33	37.69	4	16	25.00%	49.5	1.7
04/04/04	26.21	8.93	31.44	7.53	32.14	11	23	47.83%	49.4	2.0
04/05/04[b]	28.82	0.00	0.00	19.69	29.34	3	14	21.43%	50.6	1.8
04/06/04	24.20	17.62	28.19	10.51	35.28	10	39	25.64%	49.8	2.1
04/07/04	10.80	6.60	33.62	6.60	33.62	7	15	46.67%	53.0	4.8
04/08/04[b]	24.02	0.00	0.00	7.75	28.63	4	16	25.00%	49.6	2.1
04/09/04	6.60	4.69	26.33	4.69	26.33	7	25	28.00%	54.2	7.8
04/10/04	12.16	6.64	20.63	5.39	25.37	19	73	26.03%	50.7	4.2
04/11/04	12.48	7.45	17.28	3.38	21.99	23	66	34.85%	49.9	4.1
04/12/04	14.39	10.54	14.81	3.33	24.86	38	97	39.18%	48.3	3.6
04/13/04	13.08	11.59	15.02	4.61	21.32	31	57	54.39%	48.4	3.9
04/14/04	15.49	11.38	20.88	5.85	23.04	13	29	44.83%	49.0	3.3
04/15/04	13.34	8.77	16.90	7.72	20.20	14	26	53.85%	47.5	3.9
04/16/14	9.63	7.79	16.94	7.79	16.94	6	14	42.86%	45.5	5.4
04/17/04	11.06	7.66	12.77	5.70	13.71	10	11	90.91%	45.5	4.7
04/18/04	9.21	7.95	13.16	5.50	18.14	21	28	75.00%	44.0	5.6
04/19/04	10.38	9.43	14.86	4.56	17.05	19	32	59.38%	45.5	5.0
04/20/04	7.68	5.48	8.67	4.06	13.51	15	21	71.43%	44.1	6.7
04/21/04	6.07	4.68	8.83	3.54	13.82	15	18	83.33%	42.6	8.5
04/22/04[b]	4.91	0.00	0.00	4.09	11.92	5	11	45.45%	42.4	10.5
04/23/04	8.60	4.09	12.00	4.09	12.00	6	7	85.71%	47.5	6.0
04/24/05[b]	14.01	0.00	0.00	4.35	23.67	2	3	66.67%	59.2	3.7
04/25/04[b]	6.78	0.00	0.00	3.57	8.90	4	5	80.00%	49.2	7.6
04/26/04	6.87	4.52	22.04	4.52	22.04	8	15	53.33%	51.6	7.5
04/27/04	4.90	3.68	6.22	3.18	7.56	12	15	80.00%	51.7	10.5
04/28/04	5.91	5.28	6.11	2.57	10.67	92	105	87.62%	56.3	8.7
04/29/04[b]	6.42	0.00	0.00	4.78	8.05	2	2	100.00%	60.0	8.0
04/30/04	4.31	4.11	4.90	3.22	8.65	41	47	87.23%	56.7	12.0
05/01/04	4.04	3.41	4.19	2.88	8.43	26	33	78.79%	61.9	12.8
05/02/04	3.58	2.95	3.84	2.86	3.85	9	12	75.00%	69.0	14.4
05/03/04	2.60	2.20	2.93	2.20	2.93	7	14	50.00%	73.6	19.8
05/04/04	2.40	2.12	3.86	2.12	3.86	7	12	58.33%	78.0	21.5
05/05/04	2.62	2.39	2.88	1.71	5.05	39	43	90.70%	80.9	19.7
05/06/04	3.28	2.84	3.59	1.78	11.87	62	87	71.26%	80.0	15.7
05/07/04	3.42	3.25	3.50	2.23	12.43	77	95	81.05%	77.0	15.1
05/08/04	3.42	2.77	5.09	2.39	9.39	12	15	80.00%	74.8	15.1
05/09/04[b]	9.16	0.00	0.00	9.16	9.06	1	3	33.33%	66.4	5.6
05/10/04[b]	3.78	0.00	0.00	3.42	4.80	4	4	100.00%	67.9	13.7
05/11/04[b]	3.85	0.00	0.00	3.85	3.85	1	2	50.00%	65.2	13.4
05/12/04[b]	5.06	0.00	0.00	5.06	5.06	1	2	50.00%	62.8	10.2
05/13/04[b]	5.12	0.00	0.00	5.12	5.12	1	2	50.00%	61.9	10.1
05/14/04[b]	6.31	0.00	0.00	4.75	7.87	2	3	66.67%	64.2	8.2
05/16/04[b]	4.48	0.00	0.00	3.44	4.52	3	3	100.00%	66.3	11.5
05/17/04[b]	3.69	0.00	0.00	3.69	3.69	1	1	100.00%	70.7	14.0
05/18/04[b]	3.52	0.00	0.00	3.52	3.52	1	2	50.00%	73.8	14.7
05/19/04[b]	3.43	0.00	0.00	3.43	3.43	1	1	100.00%	76.0	15.0
05/20/04[b]	2.19	0.00	0.00	1.73	3.44	4	7	57.14%	79.1	23.6
05/21/04[b]	2.45	0.00	0.00	2.43	2.50	3	4	75.00%	82.2	21.1
05/22/04[b]	3.70	0.00	0.00	2.48	5.41	5	5	100.00%	85.7	13.9
05/24/04[b]	3.43	0.00	0.00	3.43	3.43	1	4	25.00%	88.4	15.0
05/25/04[b]	3.40	0.00	0.00	2.24	8.05	5	10	50.00%	95.6	15.2
05/26/04	8.60	5.60	10.56	2.13	21.04	39	135	28.89%	110.4	6.0
05/27/04	10.15	8.60	11.70	2.31	36.46	41	90	45.56%	112.3	5.1
05/28/04	10.61	8.48	12.06	1.70	19.42	25	61	40.98%	112.9	4.9
05/29/04	8.07	5.75	9.54	1.13	30.30	50	126	39.68%	113.9	6.4

Appendix A. Table 1. Continued.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
05/30/04	6.39	4.66	7.23	2.15	11.46	35	69	50.72%	112.2	8.1
05/31/04[b]	5.61	0.00	0.00	5.61	5.61	1	16	6.25%	109.5	9.2
06/01/04	8.38	6.75	9.43	3.22	30.41	91	202	45.05%	106.0	6.2
06/02/04	9.14	7.64	11.34	3.51	38.14	49	100	49.00%	101.6	5.6

[a] Confidence intervals calculated with nonparametric statistics.

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

Appendix A. Table 2. PIT-tagged wild Chinook salmon travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2004.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/25/04[b]	5.03	0.00	0.00	4.62	5.43	2	4	50.00%	52.9	10.3
03/26/04[b]	20.69	0.00	0.00	7.66	33.73	2	5	40.00%	50.9	2.5
03/27/04[b]	7.51	0.00	0.00	7.51	7.51	1	12	8.33%	47.6	6.9
03/28/04[b]	11.19	0.00	0.00	11.19	11.19	1	3	33.33%	48.8	4.6
03/29/04[b]	17.29	0.00	0.00	7.60	41.44	3	8	37.50%	50.0	3.0
03/30/04[b]	30.61	0.00	0.00	16.82	34.13	3	11	27.27%	48.9	1.7
03/31/04[b]	29.28	0.00	0.00	29.28	29.28	1	3	33.33%	48.8	1.8
04/01/04[b]	9.64	0.00	0.00	9.64	9.64	1	4	25.00%	48.7	5.4
04/02/04[b]	22.89	0.00	0.00	22.89	22.89	1	1	100.00%	48.7	2.3
04/05/04[b]	33.27	0.00	0.00	33.27	33.27	1	1	100.00%	54.2	1.6
04/09/04[b]	5.48	0.00	0.00	4.54	6.42	2	5	40.00%	52.3	9.4
04/10/04[b]	5.39	0.00	0.00	5.37	6.51	3	12	25.00%	53.9	9.6
04/11/04[b]	5.39	0.00	0.00	4.59	16.92	3	17	17.65%	54.7	9.6
04/12/04	10.88	6.65	18.97	3.07	24.05	13	30	43.33%	50.0	4.7
04/13/04	7.66	4.52	14.68	4.52	14.68	7	39	17.95%	52.2	6.7
04/14/04[b]	10.73	0.00	0.00	9.60	14.43	3	5	60.00%	48.4	4.8
04/15/04[b]	8.59	0.00	0.00	8.59	8.59	1	6	16.67%	48.2	6.0
04/16/04[b]	8.40	0.00	0.00	7.69	10.09	3	4	75.00%	46.3	6.1
04/17/04[b]	6.23	0.00	0.00	5.99	6.47	2	2	100.00%	45.9	8.3
04/18/04	9.25	6.70	10.58	6.70	10.58	6	8	75.00%	46.3	5.6
04/19/04	6.04	5.43	7.29	3.47	8.24	19	23	82.61%	43.1	8.5
04/20/04[b]	6.09	0.00	0.00	5.37	8.09	4	8	50.00%	42.4	8.5
04/21/04	5.43	5.08	6.70	4.44	10.08	29	39	74.36%	42.0	9.5
04/23/04[b]	5.19	0.00	0.00	4.49	11.71	4	4	100.00%	44.2	9.9
04/25/04[b]	4.48	0.00	0.00	4.02	4.94	2	2	100.00%	48.0	11.5
04/26/04[b]	3.69	0.00	0.00	3.69	3.69	1	1	100.00%	50.4	14.0
04/27/04	3.59	3.19	7.97	3.19	7.97	7	7	100.00%	51.8	14.4
04/28/04	4.20	3.11	6.33	2.45	6.91	20	23	86.96%	52.7	12.3
04/29/04[b]	5.39	0.00	0.00	5.39	5.39	1	1	100.00%	56.7	9.6
04/30/04	4.12	3.92	4.83	3.92	4.83	7	9	77.78%	56.7	12.5
05/01/04	3.95	3.32	4.16	3.16	4.58	12	12	100.00%	61.9	13.1
05/02/04[b]	2.66	0.00	0.00	2.38	4.56	3	3	100.00%	65.2	19.4
05/04/04[b]	2.18	0.00	0.00	2.01	2.34	2	2	100.00%	78.0	23.7
05/05/04	2.99	2.24	4.53	2.06	15.53	14	15	93.33%	80.9	17.3
05/06/04	3.37	2.76	4.15	2.16	9.43	32	39	82.05%	80.0	15.3
05/07/04	3.57	3.44	3.91	1.96	14.41	63	79	79.75%	76.2	14.4
05/08/04	2.93	2.41	3.36	2.35	12.58	12	13	92.31%	74.8	17.6
05/09/04[b]	4.36	0.00	0.00	2.38	5.44	5	6	83.33%	71.3	11.8
05/10/04[b]	4.23	0.00	0.00	2.21	5.80	5	6	83.33%	67.9	12.2
05/11/04[b]	12.13	0.00	0.00	12.13	12.13	1	1	100.00%	69.5	4.3
05/12/04[b]	4.40	0.00	0.00	4.40	4.40	1	1	100.00%	62.1	11.7
05/13/04[b]	5.20	0.00	0.00	3.67	5.42	4	5	80.00%	61.9	9.9
05/15/04[b]	3.49	0.00	0.00	2.97	4.18	4	4	100.00%	62.1	14.8
05/16/04[b]	3.65	0.00	0.00	3.23	5.10	5	6	83.33%	66.3	14.2
05/17/04[b]	3.77	0.00	0.00	3.07	4.47	4	4	100.00%	70.7	13.7
05/18/04	3.30	2.34	5.45	2.34	5.45	6	7	85.71%	71.7	15.6
05/19/04[b]	2.49	0.00	0.00	2.07	3.01	5	5	100.00%	76.0	20.7
05/20/04	2.89	2.17	4.88	1.94	29.54	19	29	65.52%	80.5	17.9
05/21/04	12.04	2.38	23.12	1.87	45.54	20	36	55.56%	101.5	4.3
05/22/04	24.41	3.19	32.00	1.89	48.55	34	68	50.00%	98.4	2.1
05/23/04	4.00	2.58	23.11	1.65	47.74	20	30	66.67%	87.6	12.9
05/24/04	19.39	6.27	27.77	3.39	41.05	36	79	45.57%	103.4	2.7
05/25/04	3.42	3.29	4.12	1.67	39.69	41	76	53.95%	95.6	15.1
05/26/04	26.83	21.63	32.45	9.51	36.96	18	28	64.29%	88.6	1.9
05/27/04	30.37	24.56	34.14	18.16	40.57	12	25	48.00%	83.8	1.7
05/28/04	18.44	10.57	31.62	2.44	38.08	27	39	69.23%	102.1	2.8
05/29/04	17.62	16.46	21.36	1.49	71.80	68	132	51.52%	99.1	2.9
05/30/04	14.27	9.16	17.39	1.81	32.92	72	153	47.06%	102.7	3.6
05/31/04	14.52	9.62	20.75	4.71	40.71	33	71	46.48%	97.7	3.6
06/01/04	11.64	6.85	19.47	3.91	26.75	23	54	42.59%	99.4	4.4
06/02/04	13.50	7.55	18.06	3.46	30.90	28	57	49.12%	92.5	3.8

[a] Confidence intervals calculated with nonparametric statistics.

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

Appendix A. Table 3. PIT-tagged hatchery steelhead trout travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2004.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/26/04[b]	2.46	0.00	0.00	2.46	2.46	1	1	100.00%	55.0	21.0
03/27/04[b]	4.96	0.00	0.00	4.96	4.96	1	2	50.00%	49.2	10.4
03/28/04[b]	6.11	0.00	0.00	5.65	6.58	2	2	100.00%	46.6	8.4
03/29/04[b]	5.14	0.00	0.00	4.98	8.77	3	3	100.00%	45.9	10.0
03/30/04	4.83	3.00	7.77	2.99	16.48	9	14	64.29%	46.1	10.7
03/31/04[b]	6.68	0.00	0.00	3.96	9.40	2	16	12.50%	47.0	7.7
04/01/04[b]	5.39	0.00	0.00	5.23	9.30	3	14	21.43%	46.7	9.6
04/03/04[b]	3.75	0.00	0.00	3.75	3.75	1	6	16.67%	46.9	13.8
04/04/04[b]	3.68	0.00	0.00	3.27	4.09	2	6	33.33%	49.2	14.0
04/05/04[b]	3.10	0.00	0.00	2.93	3.92	5	10	50.00%	50.0	16.6
04/07/04[b]	3.53	0.00	0.00	3.16	3.90	2	13	15.38%	51.1	14.6
04/08/04[b]	4.24	0.00	0.00	2.54	5.95	2	7	28.57%	50.6	12.2
04/09/04	3.67	3.18	4.91	3.01	14.65	9	59	15.25%	51.2	14.1
04/10/04	4.52	3.48	4.72	2.83	5.77	9	24	37.50%	53.9	11.4
04/11/04	3.72	2.80	5.29	2.80	10.85	11	21	52.38%	54.6	13.9
04/12/04	3.40	2.65	4.36	2.50	4.40	9	21	42.86%	56.1	15.2
04/13/04	3.06	2.52	3.76	2.46	5.00	11	37	29.73%	58.1	16.9
04/14/04	2.81	2.45	3.49	2.45	3.49	8	38	21.05%	57.5	18.4
04/15/04	2.91	2.70	3.73	2.70	3.73	6	24	25.00%	55.3	17.8
04/16/04[b]	2.96	0.00	0.00	2.90	3.02	2	33	6.06%	51.0	17.4
04/17/04[b]	4.52	0.00	0.00	2.87	13.47	5	48	10.42%	46.7	11.4
04/18/04	3.75	2.85	6.82	2.53	7.77	10	92	10.87%	45.5	13.8
04/19/04	3.48	2.77	5.15	2.17	6.83	15	96	15.63%	44.6	14.8
04/20/04	6.01	5.68	6.62	2.46	28.87	99	209	47.37%	42.4	8.6
04/21/04	4.76	4.61	5.57	2.56	33.19	68	83	81.93%	42.0	10.8
04/22/04	4.27	3.81	4.72	2.45	36.57	105	120	57.50%	41.6	12.1
04/23/04[b]	5.53	0.00	0.00	2.79	26.58	5	6	83.33%	46.0	9.3
04/24/04	4.67	3.38	6.01	1.71	22.57	16	18	88.89%	46.8	11.1
04/25/04	4.79	4.70	5.02	3.55	28.90	72	92	78.26%	48.9	10.8
04/26/04	4.01	2.91	8.71	2.82	11.32	9	11	81.82%	50.4	12.9
04/27/04	3.55	2.79	3.87	1.67	24.52	51	62	82.26%	51.8	14.5
04/28/04	4.62	3.67	6.58	2.54	25.60	60	69	86.96%	54.0	11.2
04/29/04	5.58	4.78	7.75	3.33	26.26	35	45	77.78%	60.0	9.2
04/30/04	4.72	4.65	5.59	2.49	28.35	282	366	77.05%	60.5	10.9
05/01/04	5.65	5.24	6.22	2.78	23.49	76	100	76.00%	68.0	9.1
05/02/04	4.74	4.64	5.20	2.58	30.06	144	192	75.00%	71.2	10.9
05/03/04	3.61	3.54	3.80	2.44	25.00	72	92	78.26%	75.2	14.3
05/04/04	3.68	3.36	3.82	2.37	24.44	116	129	89.95%	78.7	14.0
05/05/04	3.48	2.72	3.71	1.64	23.82	95	100	95.00%	80.9	14.8
05/06/04	3.48	2.77	4.43	1.55	17.45	103	110	93.64%	80.0	14.8
05/07/04	3.85	3.64	5.08	1.54	19.50	47	52	90.38%	76.2	13.4
05/08/04	6.15	3.79	8.55	2.38	21.83	44	53	83.02%	70.5	8.4
05/09/04	5.58	4.53	7.61	2.45	18.12	74	85	87.06%	67.7	9.3
05/10/04	6.51	6.38	6.63	1.94	20.04	173	200	86.50%	65.3	7.9
05/11/04	5.76	5.65	6.69	2.74	15.93	181	200	90.50%	64.3	9.0
05/12/04	4.74	4.67	5.05	2.35	14.11	176	200	88.00%	62.8	10.9
05/13/04	4.48	3.73	5.69	2.73	13.21	66	75	88.00%	61.2	11.5
05/14/04	4.63	3.76	5.58	2.41	10.56	56	71	78.87%	62.4	11.2
05/15/04	4.98	4.61	6.62	2.03	9.03	25	31	80.65%	63.0	10.4
05/16/04	5.60	5.00	5.74	1.85	10.68	137	156	87.82%	70.5	9.2
05/17/04	4.68	4.51	4.75	2.49	9.51	176	200	88.00%	72.7	11.0
05/18/04	3.75	3.67	4.35	2.68	8.38	77	89	86.52%	73.8	13.8
05/19/04	3.04	2.73	3.60	2.46	8.63	49	53	92.45%	76.0	17.0
05/20/04	2.78	2.47	3.16	1.67	9.94	85	89	95.51%	80.5	18.5
05/21/04	2.29	2.25	2.34	1.70	5.82	106	108	98.15%	82.2	22.5
05/22/04	2.67	2.46	2.86	1.68	6.74	75	83	90.36%	86.2	19.4
05/23/04	2.58	2.48	2.76	1.59	44.53	93	100	93.00%	86.5	20.0
05/24/04	2.62	2.46	2.69	1.63	6.73	76	98	77.55%	88.4	19.7
05/25/04	2.56	2.46	2.68	1.58	7.78	41	91	45.05%	95.6	20.1
05/26/04[b]	2.13	0.00	0.00	1.70	2.67	5	19	26.32%	98.0	24.3
05/27/04[b]	1.62	0.00	0.00	1.54	1.69	2	12	16.67%	114.0	31.9
05/28/04	1.58	1.47	1.75	1.18	4.09	19	45	42.22%	125.6	32.7
05/29/04	1.42	1.37	1.51	1.07	10.61	100	141	70.92%	129.6	36.3

Appendix A. Table 3. Continued

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
05/30/04	1.41	1.36	1.62	0.92	3.05	55	140	39.29%	124.0	36.7
05/31/04	1.63	1.47	2.33	1.24	6.09	12	26	46.15%	113.9	31.6
06/01/04[b]	1.95	0.00	0.00	1.46	2.00	4	11	36.36%	108.4	26.5
06/02/04	1.60	1.39	3.12	1.39	3.12	7	12	58.33%	104.5	32.3
06/03/04[b]	1.80	0.00	0.00	1.80	1.80	1	4	25.00%	105.6	28.7

[a] Confidence intervals calculated with nonparametric statistics.

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

Appendix A. Table 4. PIT-tagged wild steelhead trout travel time with 95% confidence intervals from the Snake River Trap to Lower Granite Dam, 2004.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/25/04[b]	5.43	0.00	0.00	5.43	5.43	1	4	25.00%	52.9	9.5
03/26/04[b]	7.09	0.00	0.00	7.09	7.09	1	1	100.00%	50.0	7.3
03/27/04[b]	7.98	0.00	0.00	7.98	7.98	1	2	50.00%	47.6	6.5
03/28/04[b]	10.34	0.00	0.00	3.84	16.84	2	2	100.00%	47.3	5.0
03/29/04[b]	10.01	0.00	0.00	3.63	35.92	4	6	66.67%	47.4	5.2
03/30/04[b]	3.75	0.00	0.00	3.43	3.81	3	7	42.86%	46.1	13.7
03/31/04[b]	10.03	0.00	0.00	3.56	16.49	2	4	50.00%	48.5	5.1
04/04/04[b]	11.67	0.00	0.00	11.67	11.67	1	1	100.00%	52.3	4.4
04/09/04[b]	4.72	0.00	0.00	3.97	5.47	2	10	20.00%	52.3	10.9
04/10/04[b]	3.05	0.00	0.00	2.84	3.26	2	10	20.00%	50.3	16.9
04/11/04[b]	4.66	0.00	0.00	3.27	5.74	3	8	37.50%	54.7	11.1
04/12/04[b]	2.76	0.00	0.00	2.69	3.40	4	14	28.57%	56.1	18.7
04/13/04[b]	6.72	0.00	0.00	2.64	11.43	3	15	20.00%	53.2	7.7
04/14/04[b]	3.77	0.00	0.00	2.48	5.06	2	5	40.00%	55.8	13.7
04/15/04[b]	9.12	0.00	0.00	9.12	9.12	1	6	16.67%	48.2	5.7
04/17/04[b]	2.51	0.00	0.00	2.51	2.51	1	8	12.50%	48.4	20.5
04/18/04	5.09	2.75	9.26	2.75	9.26	8	43	18.60%	44.8	10.1
04/19/04	5.95	2.45	35.59	2.45	35.59	8	31	25.81%	43.1	8.7
04/20/04	5.46	4.60	5.70	3.43	16.62	48	74	64.86%	42.4	9.4
04/21/04	5.17	3.77	5.64	3.02	21.41	26	37	70.27%	42.0	10.0
04/22/04	5.51	3.85	13.29	3.74	15.05	9	10	90.00%	44.0	9.4
04/24/04[b]	2.77	0.00	0.00	2.63	4.67	3	3	100.00%	42.7	18.6
04/25/04	4.11	3.49	8.32	3.39	11.61	9	10	90.00%	48.0	12.6
04/26/04[b]	2.82	0.00	0.00	2.82	2.82	1	1	100.00%	49.7	18.3
04/27/04	4.82	3.47	7.32	2.60	10.19	14	14	100.00%	51.7	10.7
04/28/04	3.52	2.72	5.34	2.64	8.58	16	19	84.21%	52.7	14.7
04/29/04	5.24	3.49	7.00	3.49	7.00	6	9	66.67%	56.7	9.9
04/30/04	4.35	4.13	4.69	2.66	9.78	89	108	82.41%	56.7	11.9
05/01/04	3.55	3.34	3.98	3.08	5.13	26	30	86.67%	61.9	14.6
05/02/04	3.47	3.19	3.86	2.42	7.16	49	73	67.12%	65.2	14.9
05/03/04	3.19	2.78	3.45	2.10	6.23	22	35	62.86%	73.6	16.2
05/04/04	2.56	2.51	2.67	2.35	3.48	33	37	89.19%	79.0	20.2
05/05/04	2.60	2.51	2.76	1.46	21.38	119	136	87.50%	80.9	19.9
05/06/04	2.65	2.55	2.77	1.51	9.77	226	252	89.68%	80.0	19.5
05/07/04	3.16	2.70	3.37	1.76	10.85	87	101	86.14%	77.0	16.3
05/08/04	2.63	2.60	2.91	2.40	12.84	50	61	81.97%	74.8	19.6
05/09/04	2.70	2.47	3.30	2.31	7.70	32	39	82.05%	73.2	19.1
05/10/04	3.76	3.52	4.36	2.43	13.14	75	88	85.23%	67.9	13.7
05/11/04	3.49	3.38	3.68	2.47	7.19	45	53	84.91%	66.8	14.8
05/12/04	4.45	3.72	4.54	2.40	7.19	53	65	81.54%	62.1	11.6
05/13/04	3.55	3.42	4.48	3.18	6.51	19	22	86.36%	61.2	14.5
05/14/04	2.96	2.68	3.50	2.45	7.11	23	28	82.14%	60.5	17.4
05/15/04[b]	4.47	0.00	0.00	2.81	5.28	5	6	83.33%	63.0	11.6
05/16/04	3.74	3.53	4.48	2.69	14.49	24	25	96.00%	66.3	13.8
05/17/04	3.62	3.42	4.00	2.42	6.57	43	43	100.00%	70.7	14.3
05/18/04	3.41	2.74	3.85	2.56	7.11	13	14	92.86%	71.7	15.2
05/19/04	2.67	2.49	3.12	2.05	3.99	13	14	92.86%	76.0	19.3
05/20/04	2.57	2.13	2.98	1.76	4.74	16	16	100.00%	80.5	20.1
05/21/04	2.24	2.17	2.39	1.92	3.85	31	35	88.57%	82.2	23.1
05/22/04	2.50	2.33	2.65	1.97	3.73	25	30	83.33%	86.2	20.6
05/23/04	2.58	2.44	2.61	1.62	6.79	52	57	91.23%	86.5	20.0
05/24/04	2.45	2.42	2.67	1.74	5.76	21	26	80.77%	87.1	21.0
05/25/04	2.07	1.85	2.44	1.75	2.55	13	29	44.83%	88.2	25.0
05/26/04[b]	3.16	0.00	0.00	3.16	3.16	1	6	16.67%	106.6	16.3
05/27/04[b]	2.49	0.00	0.00	1.82	2.97	4	4	100.00%	114.0	20.7
05/28/04[b]	1.51	0.00	0.00	1.41	1.60	4	13	30.77%	125.6	34.1
05/29/04	1.50	1.40	1.61	1.14	3.61	50	71	70.42%	126.7	34.4
05/30/04	1.83	1.33	2.88	0.96	3.82	10	25	40.00%	121.3	28.1
05/31/04[b]	1.44	0.00	0.00	1.44	1.44	1	4	25.00%	118.5	35.9
06/01/04[b]	1.80	0.00	0.00	1.80	1.80	1	4	25.00%	108.4	28.6
06/02/04[b]	1.57	0.00	0.00	1.57	1.57	1	4	25.00%	104.6	32.8

[a] Confidence intervals calculated with nonparametric statistics.

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

Appendix A. Table 5. PIT-tagged hatchery Chinook salmon travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2004.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/17/04	40.59	37.55	43.15	18.00	52.82	49	162	30.25%	48.821	5.8
03/18/04	39.67	35.06	41.79	16.66	48.22	40	118	33.90%	49.005	5.9
03/19/04	38.65	37.59	40.77	13.96	52.39	98	324	30.25%	49.073	6.0
03/22/04	38.31	35.76	41.89	11.29	45.27	40	121	33.06%	49.523	6.1
03/23/04	34.50	33.41	37.67	12.25	50.02	45	118	38.14%	49.331	6.8
03/24/04	37.32	34.62	40.75	20.56	44.17	52	119	43.70%	49.689	6.3
03/25/04	34.36	33.44	37.05	14.58	47.38	60	119	50.42%	49.249	6.8
03/26/04	34.54	33.12	36.90	20.53	42.15	43	124	34.68%	49.319	6.8
03/29/04	31.44	27.79	32.67	14.58	41.34	45	99	45.45%	48.659	7.4
03/30/04	32.49	29.40	33.97	14.60	39.57	68	140	48.57%	48.982	7.2
03/31/04	31.34	28.44	33.32	11.72	37.25	60	120	50.00%	48.925	7.5
04/01/04	26.25	23.96	28.52	9.39	34.78	55	120	45.83%	48.400	8.9
04/02/04	27.43	25.51	29.01	13.47	36.41	60	121	49.59%	48.861	8.5
04/05/04	24.85	22.07	28.16	8.69	36.52	53	122	43.44%	49.565	9.4
04/06/04	22.74	22.16	25.69	8.47	32.01	64	120	53.33%	49.613	10.3
04/07/04	24.79	23.12	26.09	10.69	29.03	70	120	58.33%	49.631	9.4
04/08/04	25.02	23.94	25.91	12.81	32.58	80	123	65.04%	50.038	9.3
04/09/04	24.96	23.99	25.55	15.81	32.03	71	116	61.21%	50.735	9.4
04/12/04	22.14	21.91	23.01	14.07	28.44	71	121	58.68%	50.652	10.6
04/13/04	21.16	19.98	22.03	10.98	28.53	73	125	58.40%	50.818	11.0
04/14/04	20.59	20.11	21.02	11.63	35.50	78	125	62.40%	51.936	11.3
04/15/04	19.96	19.66	20.14	13.55	25.55	73	132	55.30%	51.657	11.7
04/16/04	17.94	15.64	18.84	10.12	27.37	48	98	48.98%	49.511	13.0
04/19/04	13.76	12.71	14.18	7.44	18.84	62	129	48.06%	47.613	17.0
04/20/04	14.98	14.00	15.14	7.12	21.79	75	120	62.50%	51.013	15.6
04/21/04	13.44	12.02	14.16	6.14	25.81	66	121	54.55%	49.436	17.4
04/22/04	13.03	12.40	13.22	6.56	23.53	69	121	57.02%	51.964	17.9
04/23/04	11.53	11.30	12.17	7.85	20.59	60	113	53.10%	52.700	50.3
04/24/04	11.50	11.10	12.21	10.30	15.08	28	58	48.28%	56.054	20.3
04/26/04	9.04	8.50	9.84	6.40	12.25	33	76	43.42%	56.180	25.8
04/28/04	9.18	6.32	10.62	6.32	10.62	7	13	53.85%	63.970	25.5
04/29/04	7.48	7.18	7.66	5.31	22.45	134	244	54.92%	63.038	31.2
04/30/04	6.96	6.00	7.67	5.08	21.62	25	52	48.08%	66.200	33.6
05/01/04	6.52	5.52	7.52	4.23	13.66	28	48	58.33%	69.238	35.8
05/02/04[b]	5.69	0.00	0.00	5.69	5.69	1	3	33.33%	72.114	41.0
05/03/04[b]	5.16	0.00	0.00	3.71	6.71	4	7	57.14%	75.650	45.3
05/04/04	6.66	5.01	12.47	5.01	12.47	6	15	40.00%	76.875	35.1
05/05/04	6.04	5.19	7.43	4.25	10.40	9	12	75.00%	77.871	38.6
05/06/04[b]	10.93	0.00	0.00	5.79	12.45	3	5	60.00%	70.217	21.4
05/07/04	7.45	4.98	11.35	4.35	14.52	13	19	68.42%	71.875	31.4
05/08/04[b]	6.65	0.00	0.00	5.98	12.52	5	6	83.33%	69.000	35.1
05/11/04[b]	7.16	0.00	0.00	6.76	7.57	2	2	100.00%	64.425	32.6
05/12/04[b]	11.90	0.00	0.00	11.90	11.90	1	1	100.00%	70.762	19.6
05/13/04[b]	6.66	0.00	0.00	6.66	6.66	1	5	20.00%	64.125	35.1
05/14/04[b]	7.39	0.00	0.00	7.23	7.56	2	2	100.00%	66.088	31.6
05/15/04[b]	6.55	0.00	0.00	6.51	6.60	2	5	40.00%	69.025	35.6
05/18/04[b]	3.57	0.00	0.00	3.57	3.57	1	1	100.00%	73.840	65.4

[a] Confidence intervals calculated with nonparametric statistics.

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

Appendix A. Table 6. PIT-tagged wild Chinook salmon travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2004.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/14/04	36.43	24.51	46.31	20.81	51.30	12	35	34.29%	49.100	6.4
03/15/04	29.57	23.06	42.28	18.38	49.20	21	70	30.00%	48.781	7.9
03/16/04	36.41	30.51	43.29	12.44	53.40	31	112	27.68%	49.63	6.4
03/17/04	38.63	28.74	40.41	13.12	54.03	51	120	42.50%	49.050	6.0
03/18/04	30.35	27.38	39.82	16.61	54.60	31	108	28.70%	50.635	7.7
03/19/04	36.29	32.46	37.91	8.69	67.38	133	266	36.34%	49.543	6.4
03/20/04	36.59	34.01	37.91	12.66	71.65	136	328	41.46%	49.145	6.4
03/21/04	36.54	34.58	40.04	16.40	56.23	94	259	36.29%	49.121	6.4
03/22/04	35.93	34.73	36.99	11.74	71.35	134	354	37.85%	49.224	6.5
03/23/04	35.01	33.52	37.16	10.37	54.48	165	454	36.34%	49.331	6.7
03/24/04	34.77	33.33	35.36	9.35	62.49	212	527	40.23%	49.394	6.7
03/25/04	33.99	32.23	35.57	10.58	64.36	157	393	39.95%	49.249	6.9
03/26/04	31.00	29.77	31.96	9.54	52.35	154	397	38.79%	48.925	7.5
03/27/04	30.39	29.28	32.45	12.06	65.16	177	385	45.97%	48.610	7.7
03/28/04	29.89	28.56	31.85	9.39	53.69	229	511	44.81%	48.319	7.8
03/29/04	28.93	17.75	41.22	15.76	46.25	11	24	45.83%	48.233	8.1
03/30/04	30.77	25.95	36.10	14.10	54.40	40	79	50.63%	48.919	7.6
03/31/04	30.87	19.37	35.04	13.53	52.07	28	70	40.00%	48.925	7.6
04/01/04	25.12	23.51	30.50	13.38	51.87	40	94	42.55%	48.481	9.3
04/02/04	24.14	22.83	26.90	10.13	39.65	41	86	47.67%	48.468	9.7
04/05/04	21.58	11.85	28.50	7.65	31.10	27	73	36.99%	48.917	10.8
04/06/04	21.27	19.54	25.60	8.05	42.89	44	131	33.59%	49.118	11.0
04/07/04	19.54	18.63	22.24	6.72	45.45	68	160	42.50%	48.895	12.0
04/08/04	18.54	16.12	22.00	7.17	42.94	94	218	43.12%	48.885	12.6
04/09/04	18.27	17.46	19.47	6.46	44.83	161	333	48.35%	48.700	12.8
04/10/04	17.61	16.58	19.73	6.46	48.68	101	176	57.39%	48.632	13.3
04/11/04	16.52	15.49	18.76	7.47	42.58	119	181	65.75%	48.528	14.1
04/12/04	15.90	14.54	16.70	9.82	39.44	95	180	52.78%	48.518	14.7
04/13/04	14.67	13.09	19.01	8.45	42.36	53	86	61.63%	48.613	15.9
04/14/04	14.94	12.26	20.12	9.18	38.25	48	77	62.34%	48.713	15.6
04/15/04	13.48	11.85	14.59	9.12	38.27	48	66	72.73%	47.507	17.3
04/16/04	12.10	11.40	13.62	7.49	36.59	151	203	74.38%	46.192	19.3
04/17/04	14.73	12.26	17.25	9.24	31.64	42	59	71.19%	47.225	15.9
04/18/04	14.15	11.35	17.01	9.61	36.24	17	27	62.96%	46.873	16.5
04/19/04	12.99	9.34	16.82	8.24	30.19	13	26	50.00%	46.707	18.0
04/20/04	14.05	12.10	15.26	8.03	31.21	41	65	63.08%	49.113	16.6
04/21/04[b]	9.71	0.00	0.00	7.16	13.21	5	7	71.43%	46.455	24.1
04/22/04	12.63	11.39	16.78	7.72	36.71	24	39	61.54%	51.964	18.5
04/23/04	11.91	10.01	12.24	6.73	21.46	29	42	69.05%	52.700	19.6
04/24/04	10.52	9.38	12.45	8.01	27.98	20	31	64.52%	53.675	22.2
04/25/04	9.65	8.58	10.52	5.98	27.67	30	38	78.92%	54.827	24.2
04/26/04	8.69	7.03	12.85	6.55	15.91	14	26	53.85%	56.180	26.9
04/28/04[b]	7.06	0.00	0.00	6.40	9.89	3	3	100.00%	59.163	33.1
04/29/04	7.63	6.91	9.54	5.57	22.52	34	47	72.34%	65.122	30.6
04/30/04	7.37	5.56	10.23	5.13	16.41	15	18	83.33%	66.200	31.7
05/01/04	5.32	4.87	7.61	4.87	7.61	8	13	61.54%	65.717	43.9
05/02/04[b]	5.68	0.00	0.00	5.68	5.68	1	1	100.00%	72.114	41.1
05/03/04[b]	7.78	0.00	0.00	5.74	14.68	5	12	41.67%	75.033	30.0
05/04/04[b]	7.69	0.00	0.00	5.19	10.18	2	3	66.67%	76.244	30.4
05/05/04[b]	5.67	0.00	0.00	4.77	6.56	2	3	66.67%	77.871	41.2
05/06/04[b]	6.51	0.00	0.00	5.52	8.66	3	5	60.00%	75.063	35.9
05/07/04	6.81	5.07	8.19	3.57	27.61	23	33	69.70%	71.875	34.3
05/08/04	6.53	5.24	7.33	3.43	10.63	13	17	76.47%	69.000	35.8
05/09/04[b]	7.01	0.00	0.00	5.88	8.56	4	4	100.00%	66.463	33.3
05/10/04[b]	8.62	0.00	0.00	6.84	9.97	4	5	80.00%	65.450	27.1
05/11/04[b]	7.85	0.00	0.00	5.63	11.04	5	8	62.50%	64.667	29.8
05/13/04	7.07	6.65	12.22	5.56	20.73	14	21	66.67%	64.125	33.1
05/14/04	7.23	6.75	8.52	5.97	9.64	9	13	69.23%	66.088	32.3
05/15/04	6.91	6.32	8.83	5.66	13.74	16	19	84.21%	69.025	33.8
05/16/04[b]	7.42	0.00	0.00	6.43	10.53	4	6	66.67%	72.263	31.5
05/17/04[b]	6.52	0.00	0.00	6.52	6.52	1	2	50.00%	76.200	35.8
05/18/04[b]	6.73	0.00	0.00	5.53	7.27	3	5	60.00%	78.900	34.7
05/19/04	5.77	4.72	8.66	4.72	8.66	8	9	88.89%	80.829	40.5

Appendix A. Table 6. Continued

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
05/21/04[b]	5.95	0.00	0.00	5.07	7.28	4	8	50.00%	85.743	39.3
05/22/04[b]	5.48	0.00	0.00	4.32	6.65	2	2	100.00%	86.800	42.6
05/23/04[b]	5.05	0.00	0.00	3.88	6.78	3	4	75.00%	92.667	46.2
05/24/04[b]	6.75	0.00	0.00	3.88	9.62	2	5	40.00%	106.425	34.6
05/25/04[b]	10.60	0.00	0.00	4.58	15.03	3	7	42.86%	108.325	22.0
05/26/04[b]	7.62	0.00	0.00	5.34	9.90	2	2	100.00%	111.022	30.7

[a] Confidence intervals calculated with nonparametric statistics.

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

Appendix A. Table 7. PIT-tagged hatchery steelhead trout travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2004.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
04/01/04[b]	27.57	0.00	0.00	27.57	27.57	1	6	16.67%	48.9	8.5
04/05/04[b]	7.76	0.00	0.00	7.76	7.76	1	2	50.00%	50.6	30.1
04/06/04[b]	22.58	0.00	0.00	5.65	31.63	5	18	27.78%	49.6	10.3
04/07/04	9.73	5.57	39.67	5.57	39.67	8	24	33.33%	53.4	24.0
04/08/04	24.16	10.09	32.24	10.09	32.24	6	20	30.00%	49.6	9.7
04/09/04[b]	26.71	0.00	0.00	26.71	26.71	1	13	7.69%	53.0	8.7
04/10/04[b]	6.16	0.00	0.00	5.91	6.42	2	11	18.18%	54.1	37.9
04/11/04	14.90	5.29	26.83	4.59	41.64	11	22	50.00%	48.4	15.7
04/12/04	10.71	4.71	24.56	4.71	24.56	6	32	18.75%	50.0	21.8
04/13/04	15.68	11.37	26.62	5.55	39.55	17	68	25.00%	49.1	14.9
04/14/04	20.41	12.69	24.51	4.49	36.99	15	37	40.54%	50.6	11.4
04/15/04	21.46	13.62	22.78	6.46	34.45	19	51	37.25%	53.2	10.9
04/16/04	20.58	14.71	22.68	4.41	42.04	39	79	49.37%	53.9	11.4
04/19/04	11.50	7.63	18.64	7.45	27.61	13	18	72.22%	46.4	20.3
04/20/04	10.59	8.65	16.50	4.76	26.82	39	47	82.98%	46.3	22.1
04/21/04	12.76	8.70	18.00	7.55	36.79	23	33	69.70%	49.4	18.3
04/22/04	12.63	8.60	14.65	4.70	29.91	47	65	72.31%	52.0	18.5
04/23/04	11.94	9.13	13.62	5.56	35.74	91	116	78.45%	52.7	19.6
04/24/04	11.03	10.63	12.56	5.79	30.31	70	100	70.00%	53.7	21.2
04/25/04	8.49	6.12	9.72	3.66	16.98	59	76	77.63%	50.4	27.5
04/26/04	10.08	7.87	11.59	4.65	28.93	33	49	67.35%	58.8	23.2
04/28/04	8.71	8.24	9.36	4.63	29.90	77	122	63.11%	64.0	26.8
04/29/04	7.65	7.54	8.78	3.71	34.04	94	125	75.20%	65.1	30.5
04/30/04	7.56	6.81	7.98	4.77	25.28	73	109	66.97%	67.5	30.9
05/01/04	6.72	5.75	9.43	4.53	22.62	47	71	66.20%	69.2	34.8
05/02/04	5.68	4.72	5.87	3.56	21.23	51	69	73.91%	72.1	41.1
05/03/04	5.61	4.84	5.91	3.64	20.33	54	64	84.38%	75.7	41.6
05/04/04	5.64	4.76	6.64	3.49	22.71	105	128	82.03%	77.4	41.4
05/05/04	6.41	5.69	11.66	2.52	29.90	46	56	87.50%	77.9	36.4
05/06/04	8.57	4.64	12.87	2.80	25.60	19	24	79.17%	71.8	27.3
05/07/04	11.64	7.78	15.84	4.62	18.54	26	60	43.33%	68.5	20.1
05/08/04	8.55	3.94	12.57	3.67	15.94	21	30	70.00%	67.6	27.3
05/09/04	8.14	7.52	13.72	2.97	36.26	23	37	85.19%	66.5	28.7
05/10/04	6.71	6.54	12.14	6.54	12.14	7	8	87.50%	65.3	34.8
05/11/04[b]	6.15	0.00	0.00	5.72	6.57	2	2	100.00%	64.3	38.0
05/12/04	7.39	4.71	13.15	4.71	13.15	6	10	60.00%	63.6	31.6
05/13/04	8.57	6.53	10.32	4.80	10.41	13	23	56.52%	67.5	27.3
05/14/04	7.68	5.92	7.77	3.60	9.68	33	41	80.49%	67.9	30.4
05/15/04	6.80	6.60	7.48	4.57	32.42	50	64	78.13%	69.0	34.4
05/16/04	5.91	5.77	6.23	4.62	12.05	38	44	86.36%	70.5	39.5
05/17/04	4.82	4.70	5.55	3.95	6.67	43	50	86.00%	72.7	48.5
05/18/04	4.44	4.11	4.79	3.41	10.55	71	88	80.68%	73.8	52.6
05/19/04	4.27	3.57	4.74	2.80	14.83	20	24	83.33%	77.7	54.7
05/20/04	3.80	3.63	4.50	3.19	10.17	47	62	75.81%	82.2	61.5
05/21/04	3.31	2.82	4.99	2.82	4.99	6	8	75.00%	83.9	70.6
05/22/04	4.57	2.77	90.55	2.77	90.55	7	15	46.67%	86.8	51.1
05/23/04[b]	3.90	0.00	0.00	3.73	4.76	4	5	80.00%	87.6	60.0
05/24/04[b]	4.60	0.00	0.00	4.60	4.60	1	2	50.00%	100.6	50.8
05/25/04[b]	5.77	0.00	0.00	5.77	5.77	1	2	50.00%	108.9	40.5

[a] Confidence intervals calculated with nonparametric statistics.

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

Appendix A. Table 8. PIT-tagged wild steelhead trout travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2004.

Release Date	Median Travel Time	Lower Confidence Interval[a]	Upper Confidence Interval[a]	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/24/04[b]	40.99	0.00	0.00	40.99	40.99	1	3	33.33%	50.4	5.7
04/06/04[b]	17.79	0.00	0.00	17.79	17.79	1	1	100.00%	50.0	13.1
04/07/04[b]	5.75	0.00	0.00	5.75	5.75	1	3	33.33%	51.1	40.7
04/08/04[b]	6.20	0.00	0.00	4.85	7.55	2	5	40.00%	52.2	37.7
04/09/04[b]	5.46	0.00	0.00	5.46	5.46	1	3	33.33%	52.3	42.8
04/10/04[b]	5.03	0.00	0.00	5.03	5.03	1	5	20.00%	53.9	46.4
04/15/04[b]	5.40	0.00	0.00	4.76	10.73	3	13	23.08%	52.2	43.3
04/16/04[b]	8.70	0.00	0.00	5.54	11.05	4	9	44.44%	45.8	26.8
04/17/04[b]	8.39	0.00	0.00	7.87	8.92	2	5	40.00%	44.8	27.8
04/18/04[b]	19.18	0.00	0.00	19.18	19.18	1	1	100.00%	54.0	12.2
04/20/04[b]	10.04	0.00	0.00	8.01	16.54	3	3	100.00%	46.0	23.3
04/21/04[b]	7.57	0.00	0.00	7.57	7.57	1	1	100.00%	45.4	30.8
04/22/04[b]	13.14	0.00	0.00	6.54	14.71	4	6	66.67%	52.0	17.8
04/23/04[b]	10.48	0.00	0.00	6.86	13.66	4	5	80.00%	50.5	22.3
04/24/04[b]	10.90	0.00	0.00	10.09	13.08	4	7	57.14%	53.7	21.4
04/25/04[b]	6.29	0.00	0.00	5.75	6.82	2	2	100.00%	48.9	37.2
04/26/04[b]	7.03	0.00	0.00	5.62	8.33	4	4	100.00%	51.6	33.2
04/28/04	6.13	4.92	6.97	4.81	8.41	14	18	77.78%	56.3	38.1
04/29/04	5.87	5.03	6.43	5.03	6.43	7	9	77.78%	60.0	39.8
04/30/04[b]	5.15	0.00	0.00	4.71	7.8	5	6	83.33%	60.5	45.4
05/01/04[b]	5.16	0.00	0.00	4.19	6.06	4	4	100.00%	65.7	45.3
05/02/04	4.28	3.33	5.43	3.33	5.43	6	9	66.67%	69.0	54.6
05/03/04	4.93	3.61	7.57	3.60	18.30	10	11	90.91%	75.7	47.4
05/04/04	4.34	3.74	7.04	3.74	7.04	8	13	61.54%	78.7	53.8
05/05/04	3.27	2.70	6.51	2.70	6.51	6	6	100.00%	80.9	71.4
05/06/04[b]	4.54	0.00	0.00	3.98	5.52	5	5	100.00%	77.6	51.5
05/07/04	5.52	4.48	7.62	3.59	9.25	12	18	66.67%	73.7	42.4
05/09/04[b]	11.58	0.00	0.00	5.44	12.04	3	4	75.00%	68.1	20.2
05/10/04[b]	4.73	0.00	0.00	4.73	4.73	1	3	33.33%	66.4	49.4
05/12/04[b]	5.62	0.00	0.00	5.62	5.62	1	1	100.00%	63.2	41.5
05/13/04[b]	4.44	0.00	0.00	4.27	4.60	2	3	66.67%	61.2	52.7
05/14/04[b]	5.60	0.00	0.00	4.96	7.69	3	3	100.00%	64.2	41.8
05/15/04[b]	5.37	0.00	0.00	4.63	6.11	2	4	50.00%	65.0	43.5
05/16/04[b]	5.54	0.00	0.00	5.09	5.99	2	2	100.00%	70.5	42.2
05/17/04[b]	4.22	0.00	0.00	3.86	4.59	2	2	100.00%	70.7	55.3
05/18/04[b]	4.50	0.00	0.00	3.74	5.40	5	7	71.43%	75.7	52.0
05/19/04[b]	4.01	0.00	0.00	3.47	8.02	4	4	100.00%	77.7	58.3
05/20/04[b]	3.57	0.00	0.00	3.27	7.78	3	3	100.00%	82.2	65.4
05/23/04[b]	3.76	0.00	0.00	3.76	3.76	1	1	100.00%	87.6	62.2
05/25/04[b]	4.95	0.00	0.00	4.16	5.74	2	3	66.67%	106.9	47.2

[a] Confidence intervals calculated with nonparametric statistics.

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

Appendix B. 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, 2004.

Date	Number Released	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/25/04	27	9	33.33%	6	22.22%	4	14.81%	1	3.70%	20	74.07%
03/26/04	18	4	22.22%	2	11.11%	3	16.67%		0.00%	9	50.00%
03/27/04	27	2	7.41%	5	18.52%	10	37.04%	3	11.11%	20	74.07%
03/28/04	3		0.00%		0.00%		0.00%	1	33.33%	1	33.33%
03/29/04	12	3	25.00%	2	16.67%	2	16.67%		0.00%	7	58.33%
03/30/04	14	6	42.86%	3	21.43%	2	14.29%		0.00%	11	78.57%
03/31/04	9	3	33.33%	1	11.11%	3	33.33%	1	11.11%	8	88.89%
04/01/04	10	2	20.00%	3	30.00%	3	30.00%		0.00%	8	80.00%
04/02/04	13	5	38.46%	3	23.08%	1	7.69%	2	15.38%	11	84.62%
04/03/04	16	4	25.00%	4	25.00%	1	6.25%	4	25.00%	13	81.25%
04/04/04	23	11	47.83%	7	30.43%		0.00%		0.00%	18	78.26%
04/05/04	14	3	21.43%	4	28.57%	1	7.14%	2	14.29%	10	71.43%
04/06/04	39	10	25.64%	11	28.21%	4	10.26%	4	10.26%	29	74.36%
04/07/04	15	7	46.67%	5	33.33%		0.00%		0.00%	12	80.00%
04/08/04	16	4	25.00%	3	18.75%	1	6.25%	1	6.25%	9	56.25%
04/09/04	25	7	28.00%	7	28.00%	1	4.00%	5	20.00%	20	80.00%
04/10/04	73	19	26.03%	25	34.25%	5	6.85%	7	9.59%	56	76.71%
04/11/04	66	23	34.85%	28	42.4%	5	7.58%	3	4.55%	59	89.39%
04/12/04	97	38	39.18%	32	32.99%	4	4.12%	4	4.12%	78	80.41%
04/13/04	57	31	54.39%	18	31.58%	2	3.51%	3	5.26%	54	94.74%
04/14/04	29	13	44.83%	10	34.48%	2	6.90%		0.00%	25	86.21%
04/15/04	26	14	53.85%	5	19.23%	1	3.85%		0.00%	20	76.92%
04/16/04	14	6	42.86%	5	35.71%		0.00%		0.00%	11	78.57%
04/17/04	11	10	90.91%	1	9.09%		0.00%		0.00%	11	100.00%
04/18/04	28	21	75.00%	6	21.43%		0.00%		0.00%	27	96.43%
04/19/04	32	19	59.38%	5	15.63%		0.00%		0.00%	24	75.00%
04/20/04	21	15	71.43%	3	14.29%		0.00%		0.00%	18	85.71%
04/21/04	18	15	83.33%	2	11.11%		0.00%		0.00%	17	97.44%
04/22/04	11	5	45.45%	2	18.18%		0.00%		0.00%	7	63.64%
04/23/04	7	6	85.71%		0.00%		0.00%		0.00%	6	85.71%
04/24/04	3	2	66.67%		0.00%		0.00%		0.00%	2	66.67%
04/25/04	5	4	80.00%		0.00%		0.00%		0.00%	4	80.00%
04/26/04	15	8	53.33%	3	20.00%		0.00%	1	6.67%	12	80.00%
04/27/04	15	12	80.00%	1	6.67%		0.00%		0.00%	13	86.67%
04/28/04	105	92	87.62%	3	2.86%		0.00%	1	0.95%	96	91.43%
04/29/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
04/30/04	47	41	87.23%	3	6.38%		0.00%	1	2.13%	45	95.74%
05/01/04	33	26	78.79%	2	6.06%	1	3.03%	1	3.03%	30	90.91%
05/02/04	12	9	75.00%	2	16.67%		0.00%		0.00%	11	91.67%
05/03/04	14	7	50.00%	5	35.71%		0.00%	1	7.14%	13	92.86%
05/04/04	12	7	58.33%	2	16.67%		0.00%	1	8.33%	10	83.33%
05/05/04	43	39	90.70%	3	6.98%	1	2.33%		0.00%	43	100.00%
05/06/04	87	62	71.26%	16	18.39%	2	2.30%	1	1.15%	81	93.10%
05/07/04	95	77	81.05%	11	11.58%	1	1.05%		0.00%	89	93.68%
05/08/04	15	12	80.00%	2	13.33%		0.00%		0.00%	14	93.33%
05/09/04	3	1	33.33%	2	66.67%		0.00%		0.00%	3	100.00%
05/10/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
05/11/04	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
05/12/04	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
05/13/04	2	1	50.00%	1	50.00%		0.00%		0.00%	2	100.00%
05/14/04	3	2	66.67%	1	33.33%		0.00%		0.00%	3	100.00%
05/16/04	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
05/17/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/18/04	2	1	50.00%	1	50.00%		0.00%		0.00%	2	100.00%
05/19/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/20/04	7	4	57.14%	2	28.57%		0.00%		0.00%	6	85.71%
05/21/04	4	3	75.00%		0.00%		0.00%		0.00%	3	75.00%
05/22/04	5	5	100.00%		0.00%		0.00%		0.00%	5	100.00%
05/23/04	1		0.00%		0.00%		0.00%		0.00%		0.00%
05/24/04	4	1	25.00%	2	50.00%		0.00%		0.00%	3	75.00%
05/25/04	10	5	50.00%	1	10.00%	1	10.00%		0.00%	7	70.00%
05/26/04	135	39	28.89%	58	42.96%	7	5.19%		0.00%	104	77.04%

Appendix B. Table 1. Continued.

Date	Number Released	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
05/27/04	90	41	45.56%	24	26.67%	4	4.44%	2	2.22%	71	78.89%
05/28/04	61	25	40.98%	19	31.15%	3	4.92%	1	1.64%	48	78.69%
05/29/04	126	50	39.68%	44	34.92%	4	3.17%	1	0.79%	99	78.57%
05/30/04	69	35	50.72%	24	34.78%	2	2.90%		0.00%	61	88.41%
05/31/04	16	1	6.25%	6	37.50%		0.00%	1	6.25%	8	50.00%
06/01/04	202	91	45.05%	48	23.76%	12	5.94%	1	0.50%	152	75.25%
06/02/04	100	49	49.00%	29	29.00%	3	3.00%		0.00%	81	81.00%

Appendix B. 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, 2004.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/25/04	4	2	50.00%	1	25.00%		0.00%		0.00%	3	75.00%
03/26/04	5	2	40.00%		0.00%	1	20.00%		0.00%	3	60.00%
03/27/04	12	1	8.33%		0.00%	6	50.00%	2	16.67%	9	75.00%
03/28/04	3	1	33.33%		0.00%	1	33.33%	1	33.33%	3	100.00%
03/29/04	8	3	37.50%	3	37.50%		0.00%		0.00%	6	75.00%
03/30/04	11	3	27.27%	2	18.18%		0.00%	2	18.18%	7	63.64%
03/31/04	3	1	33.33%		0.00%		0.00%		0.00%	1	33.33%
04/01/04	4	1	25.00%	1	25.00%	2	50.00%		0.00%	4	100.00%
04/02/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/04/04	3		0.00%	1	33.33%		0.00%		0.00%	1	33.33%
04/05/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/06/04	1		0.00%		0.00%		0.00%		0.00%		0.00%
04/07/04	1		0.00%		0.00%		0.00%		0.00%		0.00%
04/09/04	5	2	40.00%	1	20.00%	1	20.00%		0.00%	4	80.00%
04/10/04	12	3	25.00%	3	25.00%	1	8.33%	1	8.33%	8	66.67%
04/11/04	17	3	17.65%	6	35.29%	3	17.65%	1	5.88%	13	76.47%
04/12/04	30	13	43.33%	10	33.33%	1	3.33%		0.00%	24	80.00%
04/13/04	39	7	17.95%	19	48.72%	1	2.56%		0.00%	27	69.23%
04/14/04	5	3	60.00%	2	40.00%		0.00%		0.00%	5	100.00%
04/15/04	6	1	16.67%	4	66.67%		0.00%		0.00%	5	83.33%
04/16/04	4	3	75.00%		0.00%		0.00%		0.00%	3	75.00%
04/17/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
04/18/04	8	6	75.00%	1	12.50%		0.00%		0.00%	7	87.50%
04/19/04	23	19	82.61%	2	8.70%		0.00%		0.00%	21	91.30%
04/20/04	8	4	50.00%	1	12.50%		0.00%		0.00%	5	62.50%
04/21/04	39	29	74.36%	1	2.56%		0.00%		0.00%	30	76.92%
04/23/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
04/25/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
04/26/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/27/04	7	7	100.00%		0.00%		0.00%		0.00%	7	100.00%
04/28/04	23	20	86.96%	1	4.35%		0.00%		0.00%	21	91.30%
04/29/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/30/04	9	7	77.78%	1	11.11%		0.00%		0.00%	8	88.89%
05/01/04	12	12	100.00%		0.00%		0.00%		0.00%	12	100.00%
05/02/04	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
05/03/04	2		0.00%	2	100.00%		0.00%		0.00%	2	100.00%
05/04/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/05/04	15	14	93.33%		0.00%		0.00%		0.00%	14	93.33%
05/06/04	39	32	82.05%	3	7.69%		0.00%		0.00%	35	89.74%
05/07/04	79	63	79.75%	10	12.66%		0.00%		0.00%	73	92.41%
05/08/04	13	12	92.31%	1	7.69%		0.00%		0.00%	13	100.00%
05/09/04	6	5	83.33%		0.00%		0.00%		0.00%	5	83.33%
05/10/04	6	5	83.33%	1	16.67%		0.00%		0.00%	6	100.00%
05/11/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/12/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/13/04	5	4	80.00%		0.00%		0.00%		0.00%	4	80.00%
05/15/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
05/16/04	6	5	83.33%		0.00%		0.00%		0.00%	5	83.33%
05/17/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
05/18/04	7	6	85.71%	1	14.29%		0.00%		0.00%	7	100.00%
05/19/04	5	5	100.00%		0.00%		0.00%		0.00%	5	100.00%
05/20/04	29	19	65.52%	5	17.24%		0.00%		0.00%	24	82.76%
05/21/04	36	20	55.56%	6	16.67%		0.00%	1	2.78%	27	75.00%
05/22/04	68	34	50.00%	16	23.53%		0.00%		0.00%	50	73.53%
05/23/04	30	20	66.67%	4	13.33%		0.00%		0.00%	24	80.00%
05/24/04	79	36	45.57%	21	26.58%		0.00%		0.00%	57	72.15%
05/25/04	76	41	53.95%	23	30.26%	1	1.32%		0.00%	65	85.53%
05/26/04	28	18	64.29%	3	10.71%		0.00%		0.00%	21	75.00%
05/27/04	25	12	48.00%	6	24.00%	1	4.00%		0.00%	19	76.00%
05/28/04	39	27	69.23%	4	10.26%		0.00%		0.00%	31	79.49%
05/29/04	132	68	51.52%	32	24.24%	5	3.79%	1	0.76%	106	80.30%
05/30/04	153	72	47.06%	51	33.33%	2	1.31%		0.00%	125	81.70%

Appendix B. Table 2. Continued.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
05/31/04	71	33	46.48%	16	22.54%	2	2.82%	1	1.41%	52	73.24%
06/01/04	54	23	42.59%	19	35.19%	1	1.85%		0.00%	43	79.63%
06/02/04	57	28	49.12%	14	24.56%	1	1.75%		0.00%	43	75.44%

Appendix B. 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, 2004.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/26/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
03/27/04	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
03/28/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
03/29/04	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
03/30/04	14	9	64.29%		0.00%	2	14.29%		0.00%	11	78.57%
03/31/04	16	2	12.50%	5	31.25%	2	12.50%	1	6.25%	10	62.50%
04/01/04	14	3	21.43%	2	14.29%	8	57.14%		0.00%	13	92.86%
04/02/04	3		0.00%	1	33.33%	2	66.67%		0.00%	3	100.00%
04/03/04	6	1	16.67%		0.00%	2	33.33%		0.00%	3	50.00%
04/04/04	6	2	33.33%		0.00%	2	33.33%	2	33.33%	6	100.00%
04/05/04	10	5	50.00%		0.00%	1	10.00%		0.00%	6	60.00%
04/06/04	5		0.00%		0.00%	2	40.00%		0.00%	2	40.00%
04/07/04	13	2	15.38%	3	23.08%	3	23.08%		0.00%	8	61.54%
04/08/04	7	2	28.57%	2	28.57%	2	28.57%	1	14.29%	7	100.00%
04/09/04	59	9	15.25%	16	27.12%	13	22.03%		0.00%	38	64.41%
04/10/04	24	9	37.50%	4	16.67%	3	12.50%		0.00%	16	66.67%
04/11/04	21	11	52.38%	2	9.52%	3	14.29%	1	4.76%	17	80.95%
04/12/04	21	9	42.86%	5	23.81%	3	14.29%	1	4.76%	18	85.71%
04/13/04	37	11	29.73%	12	32.43%	4	10.81%		0.00%	27	72.97%
04/14/04	38	8	21.05%	17	44.74%	3	7.89%	2	5.26%	30	78.95%
04/15/04	24	6	25.00%	12	50.00%	2	8.33%		0.00%	20	83.33%
04/16/04	33	2	6.06%	19	57.58%		0.00%		0.00%	21	63.64%
04/17/04	48	5	10.42%	34	70.83%	1	2.08%		0.00%	40	83.33%
04/18/04	92	10	10.87%	56	60.87%	3	3.26%	2	2.17%	71	77.17%
04/19/04	96	15	15.63%	62	64.58%	2	2.08%		0.00%	79	82.29%
04/20/04	209	99	47.37%	79	37.80%	4	1.91%		0.00%	182	87.08%
04/21/04	83	68	81.93%	8	9.64%		0.00%	1	1.20%	77	92.77%
04/22/04	120	105	87.50%	7	5.83%		0.00%		0.00%	112	93.33%
04/23/04	6	5	83.33%	1	16.67%		0.00%		0.00%	6	100.00%
04/24/04	18	16	88.89%	2	11.11%		0.00%		0.00%	18	100.00%
04/25/04	92	72	78.26%	15	16.30%		0.00%		0.00%	87	94.57%
04/26/04	11	9	81.82%		0.00%		0.00%		0.00%	9	81.82%
04/27/04	62	51	82.26%	7	11.29%	1	1.61%		0.00%	59	95.16%
04/28/04	69	60	86.96%	4	5.80%	2	2.90%		0.00%	66	95.65%
04/29/04	45	35	77.78%	7	15.56%	1	2.22%		0.00%	43	95.56%
04/30/04	366	282	77.05%	47	12.84%	5	1.37%		0.00%	334	91.26%
05/01/04	100	76	76.00%	14	14.00%	1	1.00%		0.00%	91	91.00%
05/02/04	192	144	75.00%	24	12.50%	2	1.04%		0.00%	170	88.54%
05/03/04	92	72	78.26%	12	13.04%	1	1.09%		0.00%	85	92.39%
05/04/04	129	116	89.92%	7	5.43		0.00%		0.00%	123	95.35%
05/05/04	100	95	95.00%	3	3.00%		0.00%		0.00%	98	98.00%
05/06/04	110	103	93.64%	4	3.64%		0.00%		0.00%	107	97.27%
05/07/04	52	47	90.38%	2	3.85%		0.00%		0.00%	49	94.23%
05/08/04	53	44	83.02%	1	1.89%		0.00%		0.00%	45	84.91%
05/09/04	85	74	87.03%	4	4.71%		0.00%		0.00%	78	91.76%
05/10/04	200	173	86.50%	5	2.50%	3	1.50%		0.00%	181	90.50%
05/11/04	200	181	90.50%	6	3.00%	1	.50%		0.00%	188	94.00%
05/12/04	200	176	88.00%	3	1.50%	1	0.50%		0.00%	180	90.00%
05/13/04	75	66	88.00%	5	6.67%		0.00%		0.00%	71	94.67%
05/14/04	71	56	78.87%	6	8.45%	2	2.82%		0.00%	64	90.14%
05/15/04	31	25	80.65%	4	12.90%		0.00%		0.00%	29	93.55%
05/16/04	156	137	87.82%	7	4.49%		0.00%		0.00%	144	92.31%
05/17/04	200	176	88.00%	12	6.00%		0.00%		0.00%	188	94.00%
05/18/04	89	77	86.52%	4	4.49%		0.00%		0.00%	81	91.01%
05/19/04	53	49	92.45%	1	1.89%		0.00%		0.00%	50	94.34%
05/20/04	89	85	95.51%	1	1.12%		0.00%		0.00%	86	96.63%
05/21/04	108	106	98.15%	1	0.93%		0.00%		0.00%	107	99.07%
05/22/04	83	75	90.36%	3	3.61%	2	2.41%		0.00%	80	96.39%
05/23/04	100	93	93.00%	1	1.00%		0.00%	1	1.00%	95	95.00%
05/24/04	98	76	77.55%	12	12.24%	3	3.06%	1	1.02%	92	93.88%
05/25/04	91	41	45.05%	35	38.46%	6	6.59%		0.00%	82	90.11%
05/26/04	19	5	26.32%	10	52.63%	2	10.53%		0.00%	17	89.47%

Appendix B. Table 3. Continued.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
05/27/04	12	2	16.67%	9	75.00%		0.00%		0.00%	11	91.67%
05/28/04	45	19	42.22%	24	53.33%		0.00%		0.00%	43	95.56%
05/29/04	141	100	70.92%	31	21.99%	1	0.71%		0.00%	132	93.62%
05/30/04	140	55	39.29%	68	48.57%	1	0.71%	1	0.71%	125	89.29%
05/31/04	26	12	46.15%	11	42.31%		0.00%		0.00%	23	88.46%
06/01/04	11	4	36.36%	5	45.45%		0.00%		0.00%	9	81.82%
06/02/04	12	7	58.33%	3	25.00%		0.00%		0.00%	10	83.33%
06/03/04	4	1	25.00%	1	25.00%		0.00%		0.00%	2	50.00%

Appendix B. 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, 2004.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/25/04	4	1	25.00%		0.00%		0.00%		0.00%	1	25.00%
03/26/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
03/27/04	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
03/28/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
03/29/04	6	4	66.67%	1	16.67%		0.00%		0.00%	5	83.33%
03/30/04	7	3	42.86%	1	14.29%	1	14.29%		0.00%	5	71.43%
03/31/04	4	2	50.00%	1	25.00%		0.00%		0.00%	3	75.00%
04/01/04	2		0.00%		0.00%	1	50.00%		0.00%	1	50.00%
04/03/04	1		0.00%		0.00%	1	100.00%		0.00%	1	100.00%
04/04/04	1	1	100.00%		0.0%		0.00%		0.00%	1	100.00%
04/06/04	1		0.00%	1	100.00%		0.00%		0.00%	1	100.00%
04/07/04	1		0.00%		0.00%	1	100.00%		0.00%	1	100.00%
04/08/04	2		0.00%	1	50.00%		0.00%		0.00%	1	50.00%
04/09/04	10	2	20.00%	2	20.00%	1	10.00%		0.00%	5	50.00%
04/10/04	10	2	20.00%	3	30.00%		0.00%		0.00%	5	50.00%
04/11/04	8	3	37.50%	2	25.00%	1	12.50%		0.00%	6	75.00%
04/12/04	14	4	28.57%		0.00%	1	7.14%		0.00%	5	35.71%
04/13/04	15	3	20.00%	3	20.00%	2	13.33%		0.00%	8	53.33%
04/14/04	5	2	40.00%		0.00%	1	20.00%		0.00%	3	60.00%
04/15/04	6	1	16.67%	3	50.00%		0.00%		0.00%	4	66.67%
04/16/04	6		0.00%	4	66.67%		0.00%		0.00%	4	66.67%
04/17/04	8	1	12.50%	5	62.50%		0.00%		0.00%	6	75.00%
04/18/04	43	8	18.60%	24	55.81%		0.00%	1	2.33%	33	76.74%
04/19/04	31	8	25.81%	19	61.29%		0.00%		0.00%	27	87.10%
04/24/04	74	48	64.86%	10	13.51%	1	1.35%		0.00%	59	79.73%
04/21/04	37	26	70.27%	5	13.51%		0.00%		0.00%	31	83.78%
04/22/04	10	9	90.00%	1	10.00%		0.00%		0.00%	10	100.00%
04/23/04	2		0.00%		0.00%		0.00%		0.00%		0.00%
04/24/04	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
04/25/04	10	9	90.0.0%	1	10.00%		0.00%		0.00%	10	100.00%
04/26/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/27/04	14	14	100.00%		0.00%		0.00%		0.00%	14	100.00%
04/28/04	19	16	84.21%	2	10.53%		0.00%		0.00%	18	94.74%
04/29/04	9	6	66.67%		0.00%	1	11.11%		0.00%	7	77.78%
04/30/04	108	89	82.41%	8	7.41%	1	0.93%		0.00%	98	90.74%
05/01/04	30	26	86.67%	2	6.67%		0.00%		0.00%	28	93.33%
05/02/04	73	49	67.12%	15	20.55%		0.00%		0.00%	64	87.67%
05/03/04	35	22	62.86%	6	17.14%	1	2.86%	1	2.86%	30	85.71%
05/04/04	37	33	89.19%	2	5.41%		0.00%		0.00%	35	94.59%
05/05/04	136	119	87.50%	12	8.82%		0.00%		0.00%	131	96.32%
05/06/04	252	226	89.68%	19	7.54%		0.00%		0.00%	245	97.22%
05/07/04	101	87	86.14%	6	5.94%		0.00%		0.00%	93	92.08%
05/08/04	61	50	81.97%	7	11.48%	2	3.28%		0.00%	59	96.72%
05/09/04	39	32	82.05%	4	10.26%		0.00%		0.00%	36	92.31%
05/10/04	88	75	85.23%	5	5.68%	1	1.14%		0.00%	81	92.05%
05/11/04	53	45	84.91%	4	7.55%		0.00%		0.00%	49	92.45%
05/12/04	65	53	81.54%		0.00%		0.00%		0.00%	53	81.54%
05/13/04	22	19	86.36%	1	4.55%		0.00%		0.00%	20	90.91%
05/14/04	28	23	82.14%	1	3.57%		0.00%		0.00%	24	85.71%
05/15/04	6	5	83.33%	1	16.67%		0.00%		0.00%	6	100.00%
05/16/04	25	24	96.00%		0.00%		0.00%		0.00%	24	96.00%
05/17/04	43	43	100.00%		0.00%		0.00%		0.00%	43	100.00%
05/18/04	14	13	92.86%	1	7.14%		0.00%		0.00%	14	100.00%
05/19/04	14	13	92.86%		0.00%		0.00%		0.00%	13	92.86%
05/20/04	16	16	100.00%		0.00%		0.00%		0.00%	16	100.00%
05/21/04	35	31	88.57%	2	5.71%		0.00%		0.00%	33	94.29%
05/22/04	30	25	83.33%	4	13.33%		0.00%		0.00%	29	96.67%
05/23/04	57	52	91.23%	2	3.51%		0.00%		0.00%	54	94.74%
05/24/04	26	21	80.77%	3	11.54%		0.00%		0.00%	24	92.31%
05/25/04	29	13	44.83%	14	48.28%		0.00%		0.00%	27	93.10%
05/26/04	6	1	16.67%	4	66.67%	1	16.67%		0.00%	6	100.00%
05/27/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%

Appendix B. Table 4. Continued.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
05/28/04	13	4	30.77%	9	69.23%		0.00%		0.00%	13	100.00%
05/29/04	71	50	70.42%	15	21.13%	1	1.41%		0.00%	66	92.96%
05/30/04	25	10	40.00%	9	36.00%		0.00%		0.00%	19	76.00%
05/31/04	4	1	25.00%	3	75.00%		0.00%		0.00%	4	100.00%
06/01/04	4	1	25.00%	3	75.00%		0.00%		0.00%	4	100.00%
06/02/04	4	1	25.00%	2	50.00%		0.00%		0.00%	3	75.00%

Appendix B. 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, 2004.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/17/04	162	49	30.25%	32	19.75%	9	5.56%	4	2.47%	94	58.02%
03/18/04	118	40	33.90%	16	13.56%	4	3.39%	4	3.39%	64	54.24%
03/19/04	324	98	30.25%	56	17.28%	23	7.10%	11	3.40%	188	58.02%
03/22/04	121	40	33.06%	24	19.83%	12	9.92%	1	0.83%	77	63.64%
03/23/04	118	45	38.14%	24	20.34%	5	4.24%	7	5.93%	81	68.64%
03/24/04	119	52	43.70%	17	14.29%	4	3.36%	2	1.68%	75	63.03%
03/25/04	119	60	50.42%	12	10.08%	2	1.68%	2	1.68%	76	63.87%
03/26/04	124	43	34.68%	19	15.32%	5	4.03%	3	2.42%	70	56.45%
03/29/04	99	45	45.45%	20	20.20%	2	2.02%		0.00%	67	67.68%
03/30/04	140	68	48.57%	30	21.43%	2	1.43%	5	3.57%	105	75.00%
03/31/04	120	60	50.00%	24	20.00%	1	0.83%	2	1.67%	87	72.50%
04/01/04	120	55	45.83%	24	20.00%	2	1.67%	2	1.67%	83	69.17%
04/02/04	121	60	49.59%	25	20.66%	2	1.65%	3	2.48%	90	74.38%
04/05/04	122	53	43.44%	29	23.77%	3	2.46%		0.00%	85	69.67%
04/06/04	120	64	53.33%	19	15.83%		0.00%	3	2.50%	86	71.67%
04/07/04	120	70	58.33%	14	11.67%	1	0.83%	1	0.83%	86	71.67%
04/08/04	123	80	65.04%	15	12.20%		0.00%		0.00%	95	77.24%
04/09/04	116	71	61.21%	16	13.79%	1	0.86%	2	1.72%	90	77.59%
04/12/04	121	71	58.68%	18	14.88%		0.00%		0.00%	89	73.55%
04/13/04	125	73	58.40%	19	15.20%		0.00%		0.00%	92	73.60%
04/14/04	125	78	62.40%	17	13.60%		0.00%	1	0.80%	96	76.80%
04/15/04	132	73	55.30%	16	12.12%	2	1.52%	4	3.03%	95	71.97%
04/16/04	98	48	48.98%	13	13.27%	1	1.02%	1	1.02%	63	64.29%
04/19/04	129	62	48.06%	14	10.85%		0.00%	1	0.78%	77	59.69%
04/20/04	120	75	62.50%	14	11.67%		0.00%	1	0.83%	90	75.00%
04/21/04	121	66	54.55%	15	12.40%	1	0.83%	1	0.83%	83	68.60%
04/22/04	121	69	57.02%	14	11.57%		0.00%		0.00%	83	68.60%
04/23/04	113	60	53.10%	11	9.73%		0.00%	1	0.88%	72	63.72%
04/24/04	58	28	48.28%	6	10.34%	2	3.45%		0.00%	36	62.07%
04/26/04	76	33	43.42%	8	10.53%	1	1.32%		0.00%	42	55.26%
04/28/04	13	7	53.85%	2	15.38%		0.00%		0.00%	9	69.23%
04/29/04	244	134	54.92%	32	13.11%	1	0.41%	5	2.05%	172	70.49%
04/30/04	52	25	48.08%	13	25.00%		0.00%		0.00%	38	73.08%
05/01/04	48	28	58.33%	7	14.58%		0.00%		0.00%	35	72.92%
05/02/04	3	1	33.33%	1	33.33%		0.00%		0.00%	2	66.67%
05/03/04	7	4	57.14%		0.00%		0.00%		0.00%	4	57.14%
05/04/04	15	6	40.00%		0.00%		0.00%		0.00%	6	40.00%
05/05/04	12	9	75.00%	1	8.33%	1	8.33%		0.00%	11	91.67%
05/06/04	5	3	60.00%	1	20.00%		0.00%		0.00%	4	80.00%
05/07/04	19	13	68.42%	3	15.79%		0.00%		0.00%	16	84.21%
05/08/04	6	5	83.33%		0.00%		0.00%		0.00%	5	83.33%
05/10/04	2		0.00%		0.00%		0.00%		0.00%		0.00%
05/11/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/12/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/13/04	5	1	20.00%		0.00%		0.00%		0.00%	1	20.00%
05/14/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/15/04	5	2	40.00%		0.00%		0.00%		0.00%	2	40.00%
05/18/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%

Appendix B. 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, 2004.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/14/04	35	12	34.29%	3	8.57%	5	14.29%	1	2.86%	21	60.00%
03/15/04	70	21	30.00%	11	15.71%	8	11.43%	6	8.57%	46	65.71%
03/16/04	112	31	27.68%	21	18.75%	9	8.04%	3	2.68%	64	57.14%
03/17/04	120	51	42.50%	14	11.67%	15	12.50%	3	2.50%	83	69.17%
03/18/04	108	31	28.70%	25	23.15%	10	9.26%	2	1.85%	68	62.96%
03/19/04	366	133	36.34%	61	16.67%	21	5.74%	17	4.64%	232	63.39%
03/20/04	328	136	41.46%	56	17.07%	27	8.23%	7	2.13%	226	68.90%
03/21/04	259	94	36.29%	38	14.67%	16	6.18%	11	4.25%	159	61.39%
03/22/04	354	134	37.85%	63	17.80%	21	5.93%	11	3.11%	229	64.69%
03/23/04	454	165	36.34%	81	17.84%	28	6.17%	17	3.74%	291	64.10%
03/24/04	527	212	40.23%	93	17.65%	31	5.88%	14	2.66%	350	66.41%
03/25/04	393	157	39.95%	68	17.30%	24	6.11%	11	2.80%	260	66.16%
03/26/04	397	154	38.79%	73	18.39%	22	5.54%	14	3.53%	263	66.25%
03/27/04	385	177	45.97%	74	19.22%	17	4.42%	8	2.08%	276	71.69%
03/28/04	511	229	44.81%	88	17.22%	28	5.48%	13	2.54%	358	70.06%
03/29/04	24	11	45.83%	4	16.67%	2	8.33%		0.00%	17	70.83%
03/30/04	79	40	50.63%	14	17.72%	3	3.80%	1	1.27%	58	73.42%
03/31/04	70	28	40.00%	12	17.14%	6	8.57%	2	2.86%	48	68.57%
04/01/04	94	40	42.55%	20	21.28%	6	6.38%	3	3.19%	69	73.40%
04/02/04	86	41	47.67%	18	20.93%	5	5.81%		0.00%	64	74.42%
04/05/04	73	27	36.99%	13	17.81%	4	5.48%	5	6.85%	49	67.12%
04/06/04	131	44	33.59%	22	16.79%	4	3.05%	4	3.05%	74	56.49%
04/07/04	160	68	42.50%	30	18.75%	3	1.88%	6	3.75%	107	66.88%
04/08/04	218	94	43.12%	60	27.52%	6	2.75%	6	2.75%	166	76.15%
04/09/04	333	161	48.35%	84	25.23%	4	1.20%	7	2.10%	256	76.88%
04/10/04	176	101	57.39%	33	18.75%	1	0.57%	3	1.70%	138	78.41%
04/11/04	181	119	65.75%	32	17.68%	2	1.10%	2	1.10%	155	85.64%
04/12/04	180	95	52.78%	26	14.44%	1	0.56%	2	1.11%	124	68.89%
04/13/04	86	53	61.63%	9	10.47%		0.00%	1	1.16%	63	73.26%
04/14/04	77	48	62.34%	7	9.09%		0.00%		0.00%	55	71.43%
04/15/04	66	48	72.73%	3	4.55%		0.00%		0.00%	51	77.27%
04/16/04	203	151	74.38%	14	6.90%		0.00%	2	0.99%	167	82.27%
04/17/04	59	42	71.19%	4	6.78%		0.00%		0.00%	46	77.97%
04/18/04	27	17	62.96%	5	18.52%		0.00%		0.00%	22	81.48%
04/19/04	26	13	50.00%	4	15.38%		0.00%		0.00%	17	65.38%
04/20/04	65	41	63.08%	7	10.77%		0.00%		0.00%	48	73.85%
04/21/04	7	5	71.43%		0.00%		0.00%		0.00%	5	71.43%
04/22/04	39	24	61.54%	2	5.13%		0.00%		0.00%	26	66.67%
04/23/04	42	29	69.05%	2	4.76%		0.00%		0.00%	31	73.81%
04/24/04	31	20	64.52%		0.00%		0.00%		0.00%	20	64.52%
04/25/04	38	30	78.95%	3	7.89%		0.00%		0.00%	33	86.84%
04/26/04	26	14	53.85%	2	7.69%		0.00%		0.00%	16	61.54%
04/28/04	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
04/29/04	47	34	72.34%	6	12.77%		0.00%		0.00%	40	85.11%
04/30/04	18	15	83.33%	1	5.56%		0.00%		0.00%	16	88.89%
05/01/04	13	8	61.54%	1	7.69%	1	7.69%		0.00%	10	76.92%
05/02/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/03/04	12	5	41.67%		0.00%		0.00%		0.00%	5	41.67%
05/04/04	3	2	66.67%		0.00%		0.00%		0.00%	2	66.67%
05/05/04	3	2	66.67%		0.00%		0.00%		0.00%	2	66.67%
05/06/04	5	3	60.00%		0.00%		0.00%		0.00%	3	60.00%
05/07/04	33	23	69.70%	2	6.06%	1	3.03%		0.00%	26	78.79%
05/08/04	17	13	76.47%	1	5.88%		0.00%		0.00%	14	82.35%
05/09/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
05/10/04	5	4	80.00%	1	20.00%		0.00%		0.00%	5	100.00%
05/11/04	8	5	62.50%	1	12.50%		0.00%		0.00%	6	75.00%
05/13/04	21	14	66.67%	2	9.52%		0.00%		0.00%	16	76.19%
05/14/04	13	9	69.23%		0.00%		0.00%		0.00%	9	69.23%
05/15/04	19	16	84.21%		0.00%		0.00%		0.00%	16	84.21%
05/16/04	6	4	66.67%		0.00%		0.00%		0.00%	4	66.67%
05/17/04	2	1	50.00%	1	50.00%		0.00%		0.00%	2	100.00%
05/18/04	5	3	60.00%	1	20.00%		0.00%		0.00%	4	80.00%

Appendix B. Table 6. Continued.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
05/19/04	9	8	88.89%	1	11.11%		0.00%		0.00%	9	100.00%
05/21/04	8	4	50.00%	2	25.00%		0.00%		0.00%	6	75.00%
05/22/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/23/04	4	3	75.00%	1	25.00%		0.00%		0.00%	4	100.00%
05/24/04	5	2	40.00%	1	20.00%		0.00%		0.00%	3	60.00%
05/25/04	7	3	42.86%	4	57.14%		0.00%		0.00%	7	100.00%
05/26/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%

Appendix B. 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, 2004.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
04/01/04	6	1	16.67%	3	50.00%	1	16.67%		0.00%	5	83.33%
04/02/04	2		0.00%		0.00%	1	50.00%		0.00%	1	50.00%
04/05/04	21	1	4.76%	6	28.57%	3	14.29%	3	14.29%	13	61.90%
04/06/04	18	5	27.78%	6	33.33%		0.00%	1	5.56%	12	66.67%
04/07/04	24	8	33.33%	4	16.67%	1	4.17%		0.00%	13	54.17%
04/08/04	20	6	30.00%	7	35.00%	2	10.00%		0.00%	15	75.00%
04/09/04	13	1	7.69%	5	38.46%	1	7.69%		0.00%	7	53.85%
04/10/04	11	2	18.18%	7	63.64%		0.00%		0.00%	9	81.82%
04/11/04	22	11	50.00%	1	4.55%		0.00%		0.00%	12	54.55%
04/12/04	32	6	18.75%	12	37.50%	2	6.25%	1	3.13%	21	65.63%
04/13/04	68	17	25.00%	22	32.35%	2	2.94%	2	2.94%	43	63.24%
04/14/04	37	15	40.54%	9	24.32%	1	2.70%		0.00%	25	67.57%
04/15/04	51	19	37.25%	23	45.10%		0.00%		0.00%	42	82.35%
04/16/04	79	39	49.37%	24	30.38%	2	2.53%		0.00%	65	82.28%
04/19/04	18	13	72.22%	2	11.11%		0.00%		0.00%	15	83.33%
04/20/04	47	39	82.98%	2	4.26%		0.00%		0.00%	41	87.23%
04/21/04	33	23	69.70%	4	12.12%		0.00%		0.00%	27	81.82%
04/22/04	65	47	72.31%	6	9.23%	1	1.54%		0.00%	54	83.08%
04/23/04	116	91	78.45%	8	6.90%		0.00%		0.00%	99	85.34%
04/24/04	100	70	70.00%	10	10.00%	1	1.00%		0.00%	81	81.00%
04/25/04	76	59	77.63%	7	9.21%	1	1.32%		0.00%	67	88.16%
04/26/04	49	33	67.35%	4	8.16%		0.00%		0.00%	37	75.51%
04/28/04	122	77	63.11%	13	10.66%	2	1.64%	1	0.82%	93	76.23%
04/29/04	125	94	75.20%	13	40.40%	2	1.60%		0.00%	109	87.20%
04/30/04	109	73	66.97%	17	15.60%		0.00%		0.00%	90	85.57%
05/01/04	71	47	66.20%	7	9.86%	2	2.82%		0.00%	56	78.78%
05/02/04	69	51	73.91%	5	7.25%		0.00%		0.00%	56	81.16%
05/03/04	64	54	84.38%	1	1.56%		0.00%	1	1.56%	56	87.50%
05/04/04	128	105	82.03%	6	4.69%		0.00%		0.00%	111	86.72%
05/05/04	56	49	87.50%	1	1.79%	1	1.79%		0.00%	51	91.07%
05/06/04	24	19	79.17%	2	8.33%		0.00%		0.00%	21	87.50%
05/07/04	60	26	43.33%	1	1.67%		0.00%		0.00%	27	45.00%
05/08/04	30	21	70.00%		0.00%		0.00%		0.00%	21	70.00%
05/09/04	27	23	85.19%		0.00%		0.00%		0.00%	23	85.19%
05/10/04	8	7	87.50%		0.00%		0.00%		0.00%	7	87.50%
05/11/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/12/04	10	6	60.00%	2	20.00%		0.00%		0.00%	8	80.00%
05/13/04	23	13	56.52%	2	8.70%	1	4.35%		0.00%	16	69.57%
05/14/04	41	33	80.49%	2	4.88%		0.00%		0.00%	35	85.37%
05/15/04	64	50	78.13%	1	1.56%		0.00%		0.00%	51	79.69%
05/16/04	44	38	86.36%	1	2.27%		0.00%		0.00%	39	88.64%
05/17/04	50	43	86.00%	1	2.00%		0.00%		0.00%	44	88.00%
05/18/04	88	71	80.68%	4	4.55%	1	1.14%		0.00%	76	86.36%
05/19/04	24	20	83.33%		0.00%		0.00%		0.00%	20	83.33%
05/20/04	62	47	75.81%	4	6.45%		0.00%		0.00%	51	82.26%
05/21/04	8	6	75.00%	1	12.50%		0.00%		0.00%	7	87.50%
05/22/04	15	7	46.67%	4	26.67%	1	6.67%		0.00%	12	80.00%
05/23/04	5	4	80.00%	1	20.00%		0.00%		0.00%	5	100.00%
05/24/04	2	1	50.00%		0.00%	1	50.00%		0.00%	2	100.00%
05/25/04	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%

Appendix B. 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, 2004.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/17/04	1		0.00%		0.00%		0.00%		0.00%		0.00%
03/19/04	1		0.00%	1	100.00%		0.00%		0.00%	1	100.00%
03/24/04	3	1	33.33%		0.00%	1	33.33%		0.00%	2	66.67%
03/25/04	1		0.00%	1	100.00%		0.00%		0.00%	1	100.00%
03/26/04	1		0.00%	1	100.00%		0.00%		0.00%	1	100.00%
04/02/04	1		0.00%		0.00%	1	100.00%		0.00%	1	100.00%
04/05/04	1		0.00%		0.00%		0.00%		0.00%		0.00%
04/06/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/07/04	3	1	33.33%		0.00%		0.00%		0.00%	1	33.33%
04/08/04	5	2	40.00%	1	20.00%		0.00%		0.00%	3	60.00%
04/09/04	3	1	33.33%	1	33.33%		0.00%		0.00%	2	66.67%
04/10/04	5	1	20.00%		0.00%	1	20.00%		0.00%	2	40.00%
04/11/04	4		0.00%	1	25.00%		0.00%		0.00%	1	25.00%
04/12/04	3		0.00%	2	66.67%		0.00%		0.00%	2	66.67%
04/13/04	7		0.00%	4	57.14%		0.00%		0.00%	4	57.14%
04/14/04	3		0.00%	3	100.00%		0.00%		0.00%	3	100.00%
04/15/04	13	3	23.08%	8	61.54%		0.00%		0.00%	11	84.62%
04/16/04	9	4	44.44%	3	33.33%		0.00%		0.00%	7	77.78%
04/17/04	5	2	40.00%	2	40.00%		0.00%		0.00%	4	80.00%
04/18/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/19/04	1		0.00%		0.00%		0.00%		0.00%		0.00%
04/20/04	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
04/21/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/22/04	6	4	66.67%	1	16.67%		0.00%		0.00%	5	83.33%
04/23/04	5	4	80.00%	1	20.00%		0.00%		0.00%	5	100.00%
04/24/04	7	4	57.14%		0.00%		0.00%		0.00%	4	57.14%
04/25/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
04/26/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
04/28/04	18	14	77.78%	1	5.56%		0.00%		0.00%	15	83.33%
04/29/04	9	7	77.78%	1	11.11%		0.00%		0.00%	8	88.89%
04/30/04	6	5	83.33%	1	16.67%		0.00%		0.00%	6	100.00%
05/01/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
05/02/04	9	6	66.67%	2	22.22%		0.00%		0.00%	8	88.89%
05/03/04	11	10	90.91%	1	9.09%		0.00%		0.00%	11	100.00%
05/04/04	13	8	61.54%	1	7.69%		0.00%		0.00%	9	69.23%
05/05/04	6	6	100.00%		0.00%		0.00%		0.00%	6	100.00%
05/06/04	5	5	100.00%		0.00%		0.00%		0.00%	5	100.00%
05/07/04	18	12	66.67%	1	5.56%		0.00%		0.00%	13	72.22%
05/09/04	4	3	75.00%		0.00%		0.00%		0.00%	3	75.00%
05/10/04	3	1	33.33%		0.00%		0.00%		0.00%	1	33.33%
05/12/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/13/04	3	2	66.67%		0.00%		0.00%		0.00%	2	66.67%
05/14/04	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
05/15/04	4	2	50.00%		0.00%		0.00%		0.00%	2	50.00%
05/16/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/17/04	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/18/04	7	5	71.43%		0.00%		0.00%		0.00%	5	71.43%
05/19/04	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
05/20/04	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
05/23/04	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/25/04	3	2	66.67%	1	33.33%		0.00%		0.00%	3	100.00%

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