

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

**Annual Report  
2001 Operations**

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## PREFACE

Project 8712700 addresses measure 5.9A.1 of the 1994 Northwest Power Planning Council Fish and Wildlife Program and the biological need to provide information on the migrating characteristics of the various stocks of salmon and steelhead within the Snake River basin. The National Marine Fisheries Service, which built and installed the traps on the Clearwater, Salmon, and Snake rivers, initiated this project in FY 1983. Idaho Department of Fish and Game assumed this work in 1984 and continues to operate traps as part of the annual coordinated Columbia and Snake River Smolt Monitoring Program. This program monitors smolt movement, marks groups of fish for reach survival estimates, and provides other environmental data necessary for water management decisions that are beneficial to maximizing smolt survival.

The management information provided by this project include: 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.

The following report presents results from the 2001 out-migration season and represents the 19<sup>th</sup> consecutive year of field monitoring in the Snake River system.

Listed below are other reports in this series that are available from Bonneville Power Administration, Division of Fish and Wildlife, P.O. Box 3621, Portland, Oregon 97208-3621.

Buettner, E. W., S. A. Putnam. 2002. (In Press) Smolt monitoring at the head of Lower Granite Reservoir and Lower Granite Dam. Idaho Department of Fish and Game, Boise, Idaho. Annual Report 2000 (LIB REF #D???; DOE/BP #11631-??) to Bonneville Power Administration, Project 87-127-00, Contract 98-FG-02117.

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## ABSTRACT

This project monitored the daily passage of chinook salmon *Oncorhynchus tshawytscha*, steelhead trout *O. mykiss*, and sockeye salmon smolts *O. nerka* during the 2001 spring out-migration at migrant traps on the Snake River and Salmon River.

In 2001 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 11% of the 2000 numbers. The wild chinook catch was 3% of the previous year's catch. Hatchery steelhead trout catch was 49% of 2000 numbers. Wild steelhead trout catch was 69% of 2000 numbers. The Snake River trap collected 28 age-0 chinook salmon. During 2001 the Snake River trap captured zero hatchery and zero wild/natural sockeye salmon and six hatchery coho salmon *O. kisutch*. 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. The significant reduction in catch during 2001 was due to a reduction in hatchery chinook production (60% of 2000 release) and due to extreme low flows. Trap operations began on March 11 and were terminated on June 29. The trap was out of operation for a total of two days due to mechanical failure or debris.

Hatchery chinook salmon catch at the Salmon River trap was 47% and wild chinook salmon catch was 67% of 2000 numbers. The hatchery steelhead trout collection in 2001 was 178% of the 2000 numbers. Wild steelhead trout collection in 2001 was 145% of the previous year's catch. Trap operations began on March 11 and were terminated on June 8 due to the end of the smolt monitoring season. There were no days where the trap was out of operation due to high flow or debris. The decrease in hatchery chinook catch in 2001 was due to a reduction in hatchery production (39% of 2000 releases). The increase in hatchery and wild steelhead trap catch is due to the ability to operate the trap in the thalweg for a longer period of time because of the extreme low flow condition in 2001.

Travel time (d) and migration rate (km/d) through Lower Granite Reservoir for PIT-tagged chinook salmon and steelhead trout marked at the head of the reservoir were affected by discharge. There were not enough hatchery and wild chinook salmon tagged at the Snake River trap in 2001 to allow migration rate/discharge analysis. For steelhead trout tagged at the Snake River trap, statistical analysis of 2001 data detected a significant relation between migration rate and Lower Granite Reservoir inflow discharge. For hatchery and wild steelhead trout, there was a 2.2-fold and a 1.5-fold increase in migration rate in, 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 2001 data detected a significant relation between migration rate and Lower Granite Reservoir inflow discharge for hatchery and wild chinook salmon and hatchery and wild steelhead trout. Migration rate increased 3.7-fold for hatchery chinook salmon and 2.5-fold for wild chinook salmon between 50 and 100 kcfs. For hatchery steelhead there was a 1.6-fold increase in migration rate, and for wild steelhead trout there was a 2.2-fold increase between 50 kcfs and 100 kcfs.

Fish tagged with passive integrated transponder (PIT) tags at the Snake River trap 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, cumulative interrogation data is not comparable with the prior five years (1988-1992). Cumulative interrogations at the four dams for fish marked at the Snake River trap were 86% for hatchery chinook, 70% for wild chinook, 71% for hatchery steelhead, and 89% for wild steelhead. Cumulative interrogations at the four dams for fish marked at the Salmon River trap were 74% for hatchery chinook, 83% for wild chinook salmon, 75% for hatchery steelhead trout, and 81% 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 NMFS established a Technical Management Team (TMT) to oversee implementation of the BIOP measures. The TMT utilizes out-migration monitoring data provided by the Idaho Department of Fish and Game (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.

To provide information to the Fish Passage Center (FPC) for use by the TMT on smolt movement prior to arrival at the lower Snake River reservoirs, IDFG monitors the daily passage of smolts at the head of Lower Granite Reservoir. This information allows the FPC and other managers to recommend operations for fish passage to the TMT to improve passage and migration conditions.

Smolt monitoring is a key component of BIOP implementation under all flow conditions and becomes critical when low flow conditions constrain BIOP measures and 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 steelhead trout 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 of steelhead trout, 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.

## **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. 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.
3. 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.
4. Determine reservoir travel time for hatchery spring/summer chinook salmon, wild spring/summer chinook salmon, hatchery steelhead trout, and wild steelhead trout 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, 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 2001 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 2001.

## SMOLT MONITORING TRAPS

During the 2001 out-migration, two smolt-monitoring traps were operated to monitor the passage of juvenile chinook salmon and steelhead trout. A scoop trap (Raymond and Collins 1974) was located on the Salmon River near Slate Creek, Idaho. A dipper trap (Mason 1966) was located on the Snake River near Lewiston, Idaho (Figure 1). Prior to the 1996 out-migration season, the Fish Passage Center requested that all smolt-monitoring projects reduce handling of fish listed under the ESA. To comply with this request, sampling regimes and PIT tag quotas were adjusted at this project's collection sites. Sampling periods were based on a standard work week (Monday-Friday) with Saturday and Sunday left available, if necessary, to fill weekly PIT tag quotas. 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 to the nearest millimeter, daily. Up to 2,000 fish were examined daily for hatchery brands at the Snake River trap. Fish were not examined for brands at the Salmon River trap. Smolts were anesthetized before handling with tricaine methanesulfonate (MS-222) and allowed to recover before being returned to the river.

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

### Snake River Trap

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

Chinook salmon and steelhead trout smolts were PIT tagged at the Snake River trap to estimate travel time from the head of Lower Granite Reservoir to Lower Granite Dam. Median travel time of the daily PIT-tagged release groups was converted to migration rate. Migration rate was correlated with the mean Lower Granite Reservoir 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 11 and continued through June 29. The Snake River trap was out of operation for a total of two days during the 2001 season due to mechanical failure, heavy debris loads, or because weekly PIT tag quotas were reached. All fish captured in the Snake River trap were passively interrogated for PIT tags as they entered the livewell. Interrogation and tagging information was sent daily to the PTAGIS Data Center (managed by the Pacific States Marine Fisheries Commission).

The PIT tag interrogation system on the Snake River trap was converted to the new 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. A total of 500 test tags were sent through the system. The reading efficiency was calculated to be 99.4% for both coils combined.

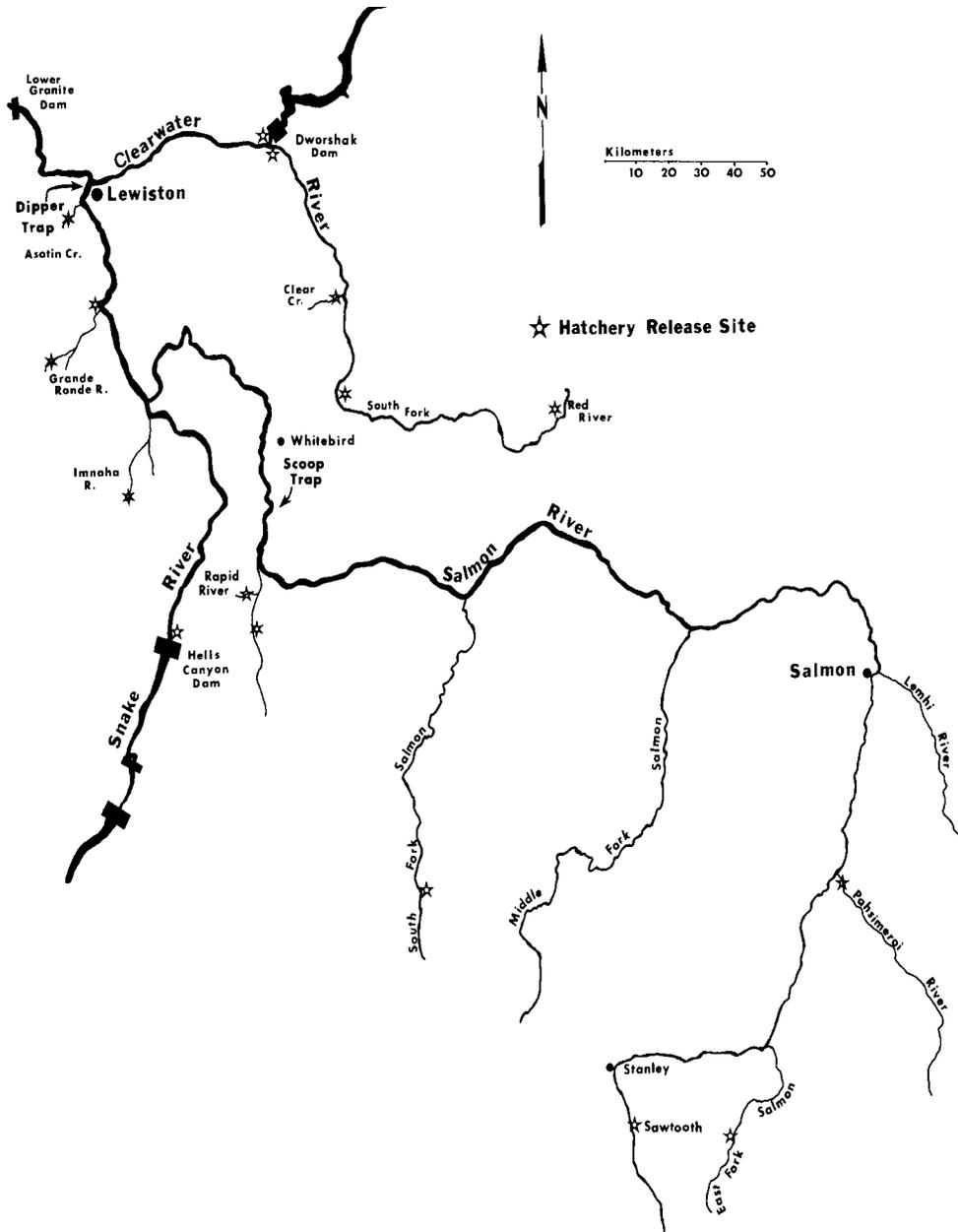


Figure 1. Map of study area.

## **Salmon River Trap**

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

Chinook salmon and steelhead trout juveniles were tagged with PIT tags at the Salmon River trap to estimate smolt travel time from the lower portion of the Salmon River to Lower Granite Dam. Median travel time for the daily PIT-tagged release groups was converted to migration rate. Migration rate was correlated with mean Lower Granite Reservoir 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 operation began on March 11 and continued through June 8 when operations were terminated for the season. The Salmon River trap was out of operation for zero days during the 2001 season due to mechanical failure, heavy debris loads, or because weekly PIT tag quotas were reached. All fish were interrogated for PIT tags as they were removed from the livewell. 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 new 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 2001. 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 2001 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 50<sup>th</sup> 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 migration rate in a free-flowing section of river plus Lower Granite Reservoir. Distances from selected release points to recovery location 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 estimations, 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). The 0.05 level 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 or 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 Monumental Dam, and McNary Dam collection facilities included data from 1987 to 2001 for the Snake River trap, 1989 to 1995 for the Clearwater River trap, and 1993 to 2001 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		Cleanwater 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	—	—	—	—
Cleatonwater 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 five locations in Idaho and four in Oregon (Table 2). A total of 1,814,917 spring chinook salmon smolts were released at nine locations in Idaho and 396,290 were released at four locations in Oregon during 2001. A total of 185,342 spring chinook salmon presmolts were released at two locations in Idaho and 24,201 were released at one location in Oregon during 2000.

Summer chinook salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at two locations in Idaho. A total of 1,448,294 summer chinook salmon were released at three locations in Idaho during 2001 (Table 2). A total of 178,712 summer chinook presmolts were released at two locations in Idaho during 2000.

Fall chinook salmon released into the Snake River drainage upstream of Lower Granite Dam were reared at one location in Washington. A total of 969,995 fall chinook salmon were released at one location in Idaho, and 1,195,631 were released into the Snake River above Lower Granite Dam during 2001 (Table 2).

#### **Steelhead Trout**

Steelhead trout released into the Snake River drainage upstream of Lower Granite Dam were reared at five locations in Idaho, four in Oregon, and one in Washington (Table 3). A total of 7,585,764 steelhead trout smolts were released at 38 locations in Idaho, 1,192,404 were released at five location in Oregon, and 215,584 were released at one location in Washington during 2001. A total of 579,467 were released into the Snake River below Hells Canyon Dam. 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 592,383 coho smolts were released at three locations in Idaho during 2001. Summer and fall releases of coho salmon have not been included in this report.

Hatchery sockeye salmon that contributed to the 2001 out-migration were reared at one location in Idaho. A total of 13,903 sockeye salmon were released at one location during 2001 (Table 4). Summer and fall releases of sockeye salmon were not included in this report.

Table 2. Hatchery chinook salmon released into the Snake River system upriver from Lower Granite Dam contributing to the 2001 out-migration.

<b>Drainage Release Site</b>	<b>Hatchery</b>	<b>Stock</b>	<b>Release Date</b>	<b>No. Released (No. PIT Tagged)</b>
<b>Salmon River</b>				
Rapid River Hatchery	Rapid River	Spring	3/15/01	736,601 (54,986)
Sawtooth Hatchery	Sawtooth	Spring	4/18/01	57,134 (500)
			<b>Spring Total</b>	<b>793,735 (55,486)</b>
Stolle Meadows Acclimation Pond	McCall	Summer	9/07/00	54,232 (600)
S Fork Salmon River	McCall	Summer	9/28/00	124,480
S Fork Salmon River @ Knox Bridge	McCall	Summer	3/26/01	1,077,077 (5,471)
S Fork Salmon River	McCall	Summer	3/27/01	88,154 (508)
Pahsimeroi Ponds	Pahsimeroi	Summer	4/15/01	283,063 (1,001)
			<b>Summer Total</b>	<b>1,627,006 (7,580)</b>
			<b>Drainage Total</b>	<b>2,420,741</b>
<b>Clearwater River</b>				
Crooked River Acclimation Pond	Clearwater	Spring	9/21/00	105,607 (600)
Red River Acclimation Pond	Clearwater	Spring	9/21/00	79,735 (600)
Lolo Creek	Clearwater	Spring	3/21/01	155,195 (1,046)
Clear Creek	Kooskia	Spring	3/27/01	80,430 (749)
North Fork Clearwater River	Dworshak	Spring	3/28/01	333,120 (55,142)
Crooked River	Clearwater	Spring	3/29/01	38,943 (299)
Newsome Creek	Clearwater	Spring	3/29/01	155,140 (1,059)
Walton Creek	Clearwater	Spring	4/12/01	212,648 (299)
Crooked Fork Creek	Clearwater	Spring	4/13/01	45,706
			<b>Spring Total</b>	<b>1,206,524 (59,794)</b>
Big Canyon Creek	Lyons Ferry	Fall	4/09/01-4/11/01	113,027 (7,499)
Big Canyon Creek	Lyons Ferry	Fall	5/29/01	499,606 (2,027)
Big Canyon Creek	Lyons Ferry	Fall	6/13/01	357,362 (2,495)
			<b>Fall Total</b>	<b>969,995 (12,021)</b>
			<b>Drainage Total</b>	<b>2,176,519</b>

Table 2. Continued.

<b>Drainage Release Site</b>	<b>Hatchery</b>	<b>Stock</b>	<b>Release Date</b>	<b>No. Released (No. PIT Tagged)</b>
<b>Snake River and Non-Idaho Tributaries</b>				
Lookingglass Creek	Lookingglass	Spring	6/29/00	24,201 —
Upper Grand Ronde Acclimation Pond	Grand Ronde Acclimation	Spring	3/26/01	2,560 —
Lostine River Acclimation Facility	Lookingglass	Spring	3/29/01	133,883 (7,900)
Catherine Creek Acclimation Pond	Catherine Creek Acclimation	Spring	4/16/01	136,833 (21,317)
Imnaha River	Imnaha Pond	Spring	4/16/01	123,014 (23,918)
			<b>Spring Total</b>	<b>420,491 (37,335)</b>
Pittsburgh Landing	Lyons Ferry	Fall	4/10/01-4/12/01	103,741 (7,503)
Captain John's Rapid	Lyons Ferry	Fall	4/13/01	101,471 (2,518)
Snake River @ Hells Canyon Dam	Lyons Ferry	Fall	5/16/01	— —
Captain John's Rapid	Lyons Ferry	Fall	5/26/01	501,129 (1,998)
Pittsburgh Landing	Lyons Ferry	Fall	5/28/01	374,070 (1,974)
			<b>Fall Total</b>	<b>1,195,631 (13,993)</b>
			<b>Drainage Total</b>	<b>1,616,122</b>
			<b>Grand Total</b>	<b>6,213,382</b>

Table 3. Hatchery steelhead trout released into the Snake River system upriver from Lower Granite Dam contributing to the 2001 out-migration.

<b>Drainage Release Site</b>	<b>Hatchery</b>	<b>Stock</b>	<b>Release Date</b>	<b>No. Released (No. PIT Tagged)</b>
<b>Salmon River</b>				
Salmon River @ Sawtooth	Hagerman	A	3/30/01	141,447 (400)
Little Salmon River @ Stinky Springs	Hagerman	A	4/02/01	156,612 (300)
Hazard Creek	Hagerman	A	4/06/01	50,557 —
Little Salmon River @ Stinky Springs	Niagara Springs	Oxbow A	4/07/01	267,079 (149)
Little Salmon River @ Stinky Springs	Magic Valley	Dworshak B	4/09/01-4/16/01	58,346 (114)
Little Salmon River @ Stinky Springs	Magic Valley	Pahsimeroi A	4/09/01	430,210 —
Squaw Creek Ponds	Magic Valley	Dworshak B	4/09/01	75,912 —
Pahsimeroi Ponds	Niagara Springs	Pahsimeroi A	4/14/01	889,955 (203)
Salmon River @ Sawtooth Weir	Hagerman	A	4/14/01	566,387 (200)
Salmon River @ Hammer Creek	Magic Valley	Pahsimeroi A	4/16/01	175,385 (103)
Lemhi River/Salmon River	Magic Valley	Sawtooth A	4/17/01	100,374 —
Salmon River @ Colston Corner	Magic Valley	Pahsimeroi A	4/18/01	50,3000 —
Salmon River @ Shoup Bridge	Magic Valley	Sawtooth A	4/18/01	60,992 (301)
Sawtooth Hatchery	Magic Valley	Dworshak B	4/18/01	1,145 —
Salmon River @ Red Rock	Magic Valley	Sawtooth A	4/19/01	67,410 (101)
Salmon River @ Eye Hole	Magic Valley	Sawtooth A	4/23/01	45,270 —
Salmon River @ Lewis-Clark	Magic Valley	Sawtooth A	4/23/01	76,182 —
Salmon River @ Challis	Magic Valley	Sawtooth A	4/24/01	41,850 —
Salmon River @ Tunnel Rock	Magic Valley	Sawtooth A	4/24/01	65,280 (98)
Salmon River @ Cottonwood CG	Magic Valley	Sawtooth A	4/25/01	77,790 —
Salmon River @ McNabb Pt	Magic Valley	Sawtooth A	4/26/01	84,389 —
Salmon River @ Wagonhammer	Magic Valley	Sawtooth A	4/26/01	67,950 —
East Fork Salmon River @ Dumpster	Magic Valley	Dworshak B	4/27/01	51,810 —
Squaw Creek	Magic Valley	East Fork B	4/27/01-5/02/01	38,024 (143)
Squaw Creek	Magic Valley	Dworshak B	4/27/01-5/02/01	130,437 (146)
Yankee Fork @ 3 <sup>rd</sup> Bridge	Magic Valley	Sawtooth A	5/02/01	98,623 (300)
Lemhi River @ County Magic Valley Scale	Magic Valley	Pahsimeroi A	5/03/01	20,448 —

Table 3. Continued.

<b>Drainage Release Site</b>	<b>Hatchery</b>	<b>Stock</b>	<b>Release Date</b>	<b>No. Released (No. PIT Tagged)</b>
Lemhi River @ County Magic Valley Scale	Magic Valley	Sawtooth A	5/03/01	21,206
Hayden Creek @ Basin Creek	Magic Valley	Pahsimeroi A	5/04/01	39,819
Hayden Creek Hatchery	Magic Valley	Pahsimeroi A	5/04/01	40,044
Little Salmon River @ Stinky Springs	Niagara Springs	Pahsimeroi A	5/06/01	194,303
Lemhi River @ Hayden Creek	Magic Valley	Pahsimeroi A	5/07/01	34,052
Lemhi River @ L6 Site	Magic Valley	Pahsimeroi A	5/07/01	1,269
Lemhi River @ L6 Site	Magic Valley	Sawtooth A	5/07/01	67,500
Yankee Fork Salmon River	Hagerman	A	5/09/01	137,656
				(300)
			<b>Drainage Total</b>	<b>4,426,013</b>
				<b>(2,958)</b>
<b>Clearwater River</b>				
Mill Creek	Clearwater	B	4/12/01	24,549
Meadow Creek	Clearwater	B	4/13/01	23,459
Clear Creek	Dworshak	B	4/16/01	302,755
Lolo Creek	Clearwater	B	4/16/01	48,823
South Fork Clearwater River	Dworshak	B	4/16/01	645,863
South Fork Clearwater River	Clearwater	B	4/19/01	97,766
Red River	Clearwater	B	4/20/01	23,220
Clearwater River	Dworshak	B	4/23/01	1,247,550
Clear Creek	Clearwater	B	4/26/01	97,540
Crooked River	Clearwater	B	4/26/01	245,547
Red River	Clearwater	B	4/26/01	226,050
American River	Hagerman	B	4/27/01	90,188
Newsome Creek	Hagerman	B	5/02/01	86,441
				(300)
			<b>Drainage Total</b>	<b>3,159,751</b>
				<b>(8,105)</b>
<b>Snake River &amp; Non-Idaho Tributaries</b>				
Snake River @ Hells Canyon	Niagara Springs	Oxbow A	3/26/01	579,467
				(200)
Grand Ronde	Cottonwood Creek Pond	A	4/01/01	215,584
				(349)
Spring Creek	Wallowa		4/04/01	182,296
				—

Table 3. Continued.

<b>Drainage Release Site</b>	<b>Hatchery</b>	<b>Stock</b>	<b>Release Date</b>	<b>No. Released (No. PIT Tagged)</b>
Spring Creek	Wallowa		4/05/01	162,103
Deer Creek	Big Canyon	A	4/11/01	81,797
Sheep Creek Lake	Little Sheep	A	4/11/01	159,159
Deer Creek	Big Canyon	A	4/12/01	78,824
Big Sheep Creek	Irrigon	A	4/17/01	19,506
Big Sheep Creek	Irrigon	A	4/18/01	47,050
Big Sheep Creek	Irrigon	A	4/19/01	19,230
Big Sheep Creek	Irrigon	A	4/20/01	14,380
Spring Creek	Wallowa		5/02/01	105,637
Spring Creek	Wallowa		5/03/01	101,483
Deer Creek	Irrigon	A	5/04/01	835
Deer Creek	Big Canyon	A	5/09/01	65,716
Sheep Creek Lake	Little Sheep	A	5/09/01	83,297
Deer Creek	Big Canyon	A	5/10/01	64,498
Kinney Lake	Big Canyon		5/24/01	1,634
Spring Creek	Wallowa		5/24/01	4,959
			<b>Drainage Total</b>	<b>1,987,455 (549)</b>
			<b>Grand Total</b>	<b>9,573,219 (11,612)</b>

Table 4. Hatchery coho and sockeye salmon released into the Snake River system upstream from Lower Granite Dam contributing to the 2001 out-migration.

<b>Drainage Release Site</b>	<b>Hatchery</b>	<b>Stock</b>	<b>Release Date</b>	<b>No. Released (No. PIT Tagged)</b>
<b>Clearwater River</b>				
Lapwai Creek	Willard	Coho	3/14/01	286,504 (1,050)
Potlatch River	Willard	Coho	3/16/01	275,688 (1,050)
Clear Creek	Dworshak	Coho	5/10/01	30,191 (334)
			<b>Drainage Total</b>	<b>592,383 (2,434)</b>
<b>Salmon River</b>				
Redfish Lake Creek	Sawtooth	Sockeye	5/02/01	13,903 (1,000)
			<b>Drainage Total</b>	<b>13,903 (1,000)</b>

### **Smolt Monitoring Traps**

#### **Snake River Trap Operation**

The Snake River trap captured 636 hatchery and 66 wild age-1 chinook salmon, 28 age-0 chinook salmon of unknown rearing, 4,300 hatchery and 926 wild steelhead trout, zero sockeye/kokanee salmon, and six coho salmon of unknown rearing in 2001 (Table 5).

Hatchery chinook salmon first arrived at the trap on April 10 (two fish). Daily catch remained below 100 fish per day until April 27 when the catch reached 254. Then the daily catch was 42 or less until May 21 when it reached 158. Except for a daily catch of 32 on May 28 less than six were caught per day until the last fish was captured on June 11. No other fish were captured through the end of the trap season on June 29 (Figure 2). About 55% (351) of the total season catch was collected in April, 44% (278) in May, and 1% (7) in June.

Wild chinook salmon first arrived at the trap on March 28 (one fish). Daily catch remained below 100 fish per day throughout the trap season (Figure 2). Except for daily catches of 17 on April 27 and 15 on May 21, they remained less than six per day. The last fish was caught on June 28. The trap season ended on June 29. About 1% (1) of the total season catch was collected in March, 35% (23) in April, 50% (33) in May, and 14% (9) in June.

Physical characteristics were used to differentiate between age-0 chinook salmon and older salmon. This year 28 age-0 chinook salmon were captured. About 4% (1) of the season total was collected in March, 7% (2) in April, 75% (21) in May, and 14% (4) in June.

Hatchery steelhead trout first arrived at the trap on March 30 (two fish). The daily catch remained below 100 until April 29 when 323 fish were captured (Figure 3). The daily trap catch peaked at 885 on May 1. Then, except for a single fish that was captured on May 14, the catch

ranged from 86 to 301 through May 17. Except for 104 fish on June 5 and 126 on June 12, the daily catch remained less than 100 through the end of the trap season on June 29. Less than 1% (2) of the season total was collected in March, 13% (572) in April, 71% (3,072) in May, and 15% (654) in June.

Wild steelhead trout were first captured at the trap on March 26 (two fish). The daily catch remained less than ten until April 29 when 68 fish were captured. The daily catch peaked at 368 fish on May 1. Observations fluctuated from zero to 57 fish per day through May 17. Then daily catch remained less than ten through the end of the trapping season on June 29 (Figure 3). Less than 2% (14) of the season total was collected in March, 14% (132) in April, 81% (748) in May, and 3% (32) in June.

No sockeye salmon were captured in the Snake River trap.

Six coho salmon of unknown rearing were captured throughout the trapping period. About 33% (2) of the season total catch was collected in March, 50% in May (3), and 17% (1) in June.

Snake River discharge for March, measured at the Anatone gauge, averaged 20.4 kcfs in 2001 and was 18.0 kcfs less than in 2000, 43.8 kcfs less than in 1999, and 19.7 kcfs less than in 1998. April average discharge (23.7 kcfs) in 2001 was 32.5 kcfs less than in 2000, 43.7 kcfs less than in 1999, and 25.3 kcfs less than in 1998. May average discharge (39.4 kcfs) in 2001 was 14.2 kcfs less than in 2000, 37.5 kcfs less than in 1999, and 66.5 kcfs less than in 1998. June average discharge (22.4 kcfs) in 2001 was 20.2 kcfs less than in 2000, 77.2 kcfs less than in 1999, and 68.2 kcfs less than in 1998 (Table 6).

Water temperature at the Snake River trap was 4.5°C at the beginning of the trapping season in March. Water temperature gradually increased throughout the sampling season and reached a maximum of 21.0°C by the end of June (Figure 4). Secchi disk transparency measurements were taken daily at the Snake River trap. Transparencies fluctuated throughout the trapping season and ranged from 0.5 m to 2.7 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 1993 through 2001.

Year	Species / Run	Snake River Trap	Clearwater River Trap	Salmon River Trap
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
1994	HC	22,342	32,789	38,902
	WC	1,471	1,343	4,774
	HS	31,662	4,615	7,383
	WS	3,439	1,798	564
1993	HC	15,271	9,761	28,326
	WC	2,683	320	5,147
	HS	35,183	10,122	73
	WS	3,046	882	9

Table 6. Monthly Snake River discharge at Anatone, Washington, and 2001 comparison with previous three years. Comparison data is reported as 2001 discharge minus annual interval discharge.

		2001	1998	2001 Comparison	1999	2001 Comparison	2000	2001 Comparison
		Discharge (cfs)	Discharge (cfs)	(kcfs)	Discharge (cfs)	(kcfs)	Discharge (cfs)	(kcfs)
March	Min	13,485	32,300	-18.8	30,810	-17.3	31,766	-18.3
	Max	29,141	58,300	-29.2	93,638	-64.5	44,764	-15.6
	Average	20,368	40,042	-19.7	64,168	-43.8	38,320	-18.0
April	Min	18,146	44,900	-26.8	53,945	-35.8	41,174	-23.0
	Max	32,714	61,900	-29.2	86,674	-54.0	68,200	-35.5
	Average	23,726	49,043	-25.3	67,448	-43.7	56,211	-32.5
May	Min	27,589	67,700	-40.1	53,422	-25.8	41,561	-14.0
	Max	58,021	166,000	-108.0	131,604	-73.6	62,436	-4.4
	Average	39,361	105,887	-66.5	76,835	-37.5	53,603	-14.2
June	Min	16,517	65,000	-48.5	68,389	-51.9	24,567	-8.1
	Max	35,923	129,000	-93.1	127,990	-92.1	59,996	-24.1
	Average	22,414	90,587	-68.2	99,610	-77.2	42,635	-20.2

Table 7. Monthly Salmon River discharge at White Bird, Idaho, and 2001 comparison with previous three years. Comparison data is reported as 2001 discharge minus annual interval discharge.

		2001	1998	2001 Comparison	1999	2001 Comparison	2000	2001 Comparison
		Discharge (cfs)	Discharge (cfs)	(kcfs)	Discharge (cfs)	(kcfs)	Discharge (cfs)	(kcfs)
March	Min	3,149	4,110	-1.0	4,938	-1.8	4,903	-1.8
	Max	6,855	14,400	-7.5	15,971	-9.1	7,594	-0.7
	Average	4,613	6,606	-2.0	8,260	-3.6	5,620	-1.0
April	Min	4,438	7,040	-2.6	7,690	-3.3	6,596	-2.2
	Max	16,427	21,600	-5.2	24,330	-7.9	23,301	-6.9
	Average	6,693	10,473	-3.8	13,483	-6.8	15,383	-8.7
May	Min	12,477	24,200	-11.7	16,319	-3.8	18,831	-6.4
	Max	31,168	48,700	-17.5	80,833	-49.7	41,604	-10.4
	Average	20,238	36,455	-16.2	34,363	-14.1	29,226	-9.0

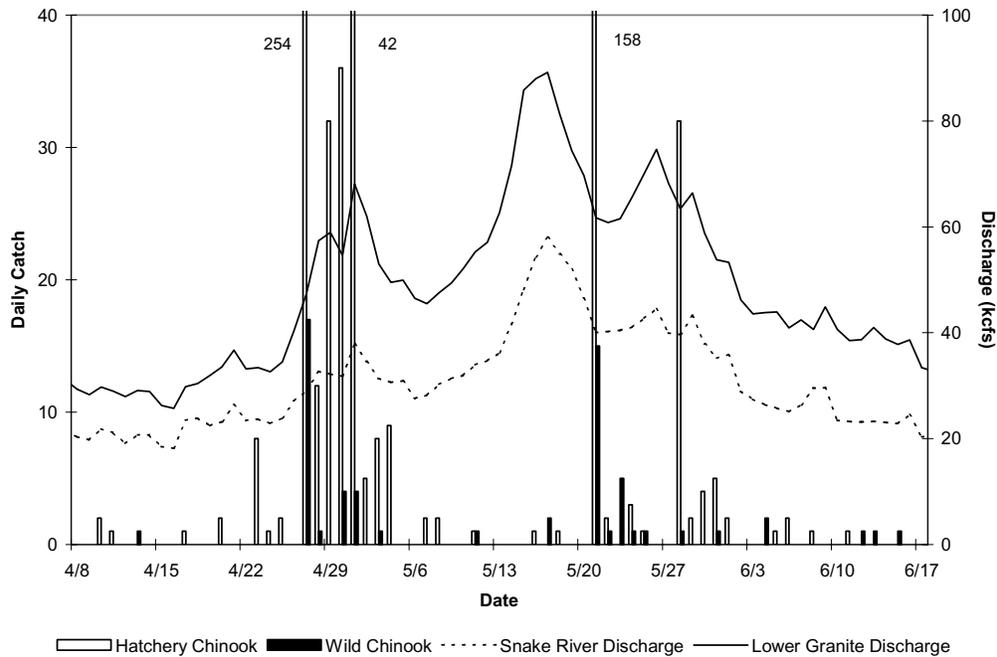


Figure 2. Snake River trap daily catch of hatchery chinook salmon and wild chinook salmon overlaid by Snake River and Lower Granite discharge, 2001.

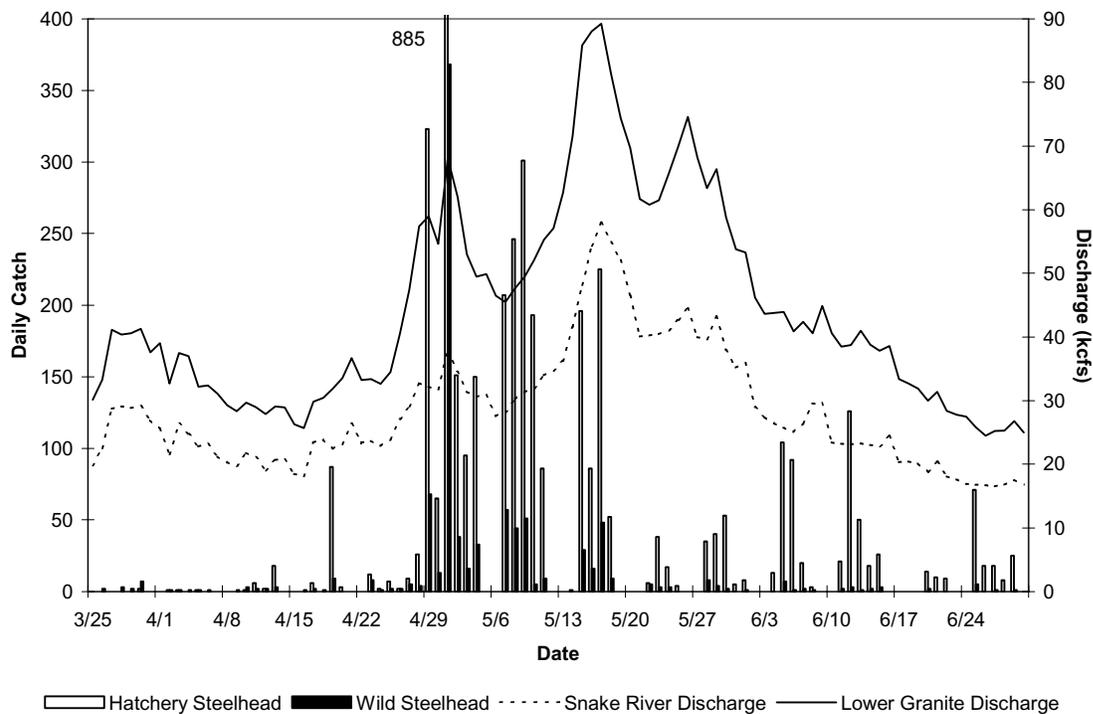


Figure 3. Snake River trap daily catch of hatchery steelhead trout and wild steelhead trout overlaid by Snake River and Lower Granite discharge, 2001.

## Salmon River Trap Operations

The Salmon River scoop trap captured 10,388 hatchery and 2,274 wild age-1 chinook salmon, 4,079 hatchery and 488 wild steelhead trout, 22 hatchery and 2 unknown rearing sockeye salmon in 2001 (Table 5).

Hatchery chinook salmon first appeared on March 19 (77 fish). Except for 69 fish on March 23, 70 on April 11, and 96 on April 17, daily catch ranged from 109 to 809 during the period of March 20 through May 4 (Figure 5). Daily catch fluctuated between 15 and 90 from May 7 through May 15. Except for 15 fish on May 17, the daily collection was less than eight through the end of the trapping season on June 8. About 20% (2,120) of the season total was captured in March, 64% (6,671) in April, 15% (1,595) in May, and less than 1% (2) in June.

Three wild chinook salmon were trapped on March 14. Daily catch remained less than 100 until April 23 when 128 fish were collected (Figure 5). Between 107 and 149 continued to be captured per day through May 1. Then except for 74 on May 2, 142 on May 3, and 67 on May 4, daily counts remained less than 30 through the end of the trapping season on June 8. About 10% (223) of the season total was captured in March, 61% (1,388) in April, 28% (642) in May, and 1% (20) in June.

One hatchery steelhead trout arrived at the trap on March 26. No others were captured until April 9 when five were collected. Catch rates remained below 100 fish per day until April 16 when the daily catch reached 140 (Figure 6). From April 17 through April 21, the daily catch fluctuated between 87 and 146. Then the daily catch ranged from 33 to 81 until April 26. Between 226 and 460 daily captures occurred through May 3. The daily catch declined to 85 on May 5 but remained between 100 and 156 from May 7 through May 11. Then daily collection fluctuated between 56 and 117 during the period of May 14 through May 23. Thirty-four or less were collected daily until the end of the trapping season on June 8. Less than 1% (1) of the season total was captured in March, 38% (1,563) in April, 61% (2,479) in May, and 1% (36) in June.

A wild steelhead trout first arrived on April 5. Except for 82 and 88 collected on April 27 and 30, respectively, fewer than 15 were collected each day through April 30 (Figure 6). Between 20 and 45 were collected between May 1 and May 5. Then 13 or less were counted each day until the end of the trapping season on June 8. About 44% (214) of the season total was captured in April, 53% (261) in May, and 3% (13) in June.

Two sockeye salmon of unknown rearing were captured in the Salmon River trap. One was collected on May 11 and the other was caught May 18. Two hatchery-reared sockeye were collected on May 11. Daily catch ranged from zero through three per day until June 4 when the last one was caught. About 86% (19) of the hatchery reared sockeye were caught in May, while 14% (3) were in June. One hundred percent (2) of the unknown reared sockeye was collected in May.

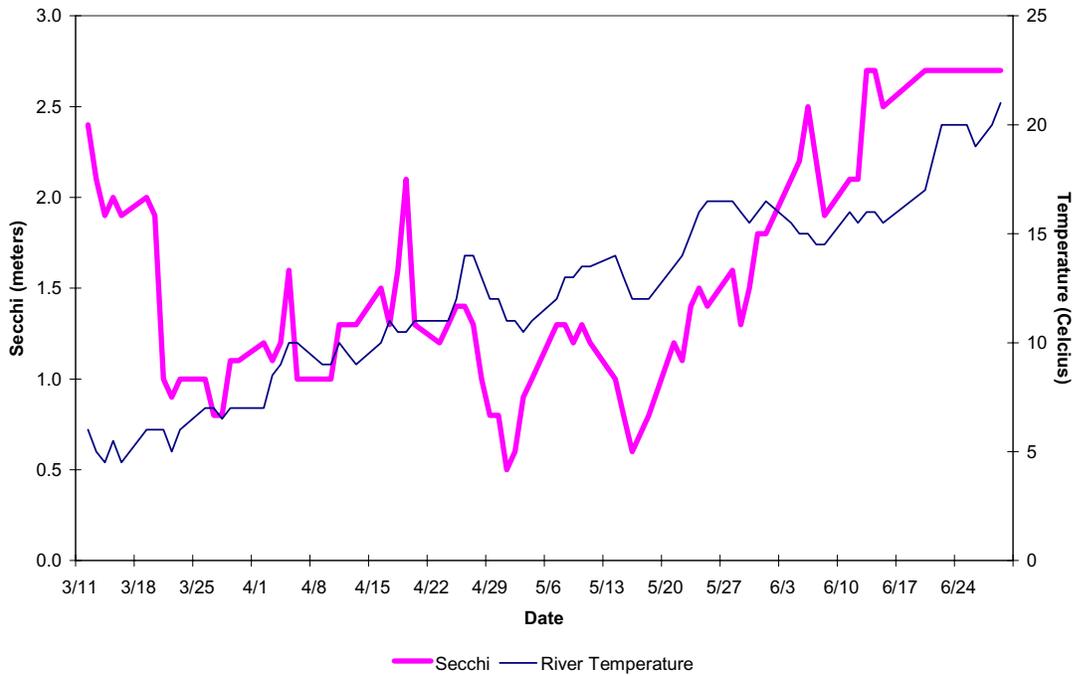


Figure 4. Daily water temperature and Secchi disk transparency for the Snake River at the trap, 2001.

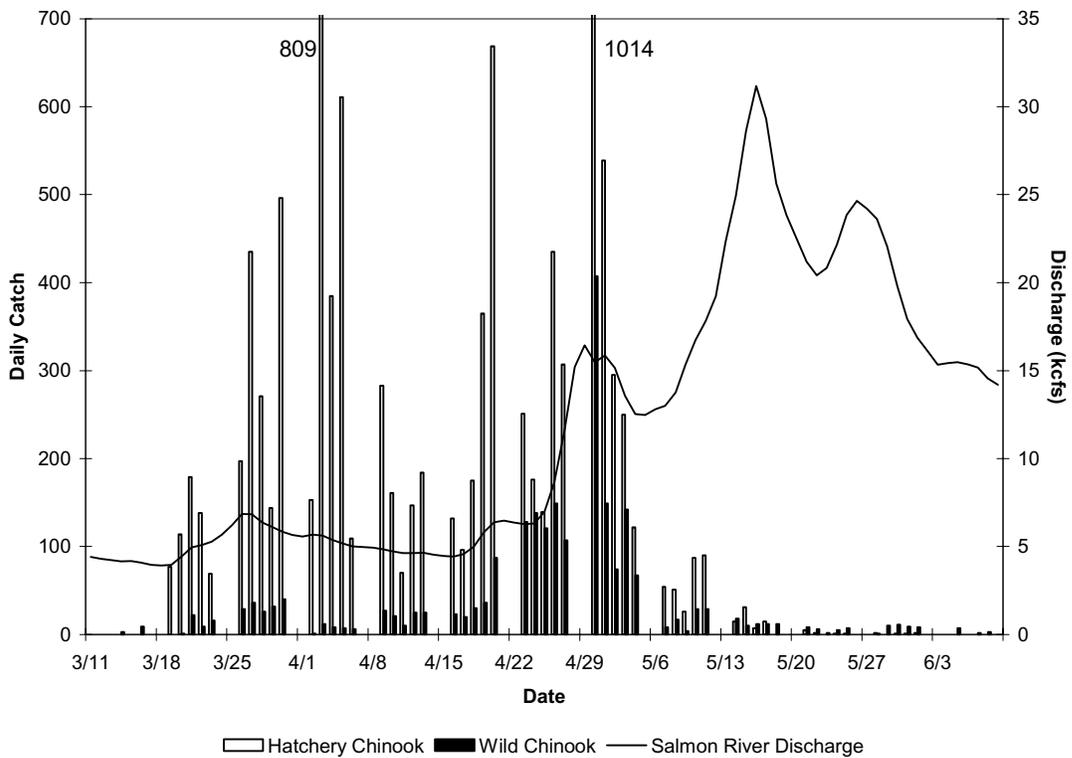


Figure 5. Salmon River trap daily catch of hatchery chinook salmon and wild chinook salmon overlaid by Salmon River discharge, 2001.

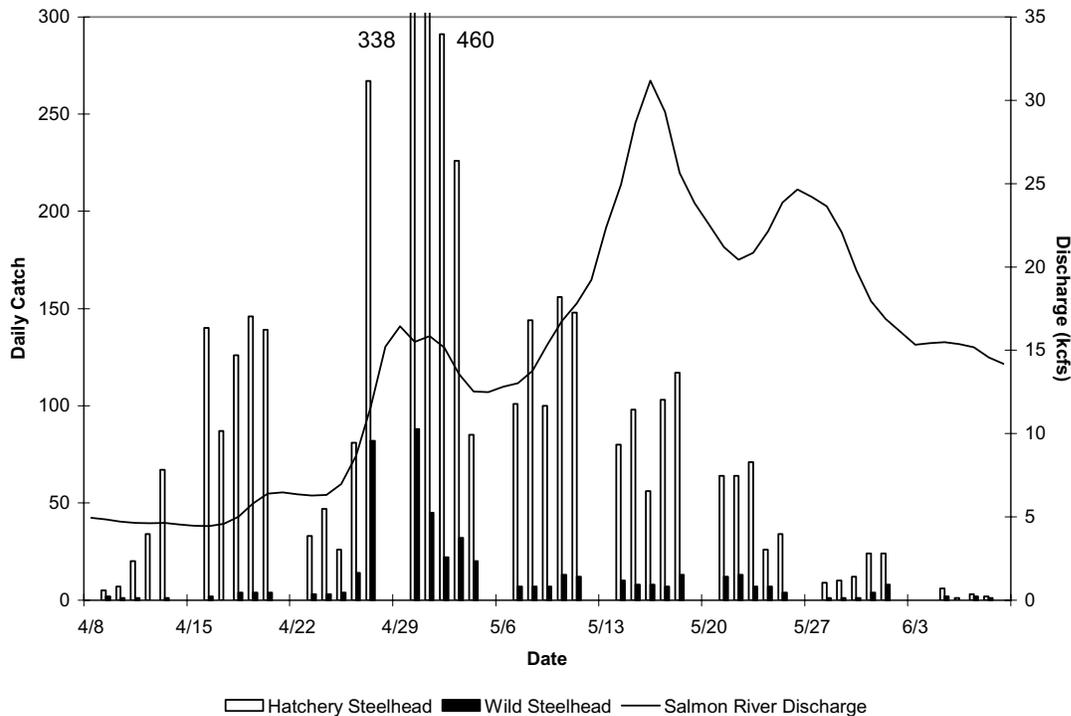


Figure 6. Salmon River trap daily catch of hatchery steelhead trout and wild steelhead trout overlaid by Salmon River discharge, 2001.

Salmon River discharge for March, measured at the White Bird gauge, averaged 4.6 kcf in 2001 and was 1.0 kcf less than in 2000, 3.6 kcf less than in 1999, and 2.0 kcf less than in 1998. April average discharge (6.7 kcf) in 2001 was 8.7 kcf less than in 2000, 6.8 kcf less than in 1999, and 3.8 kcf less than in 1998. May average discharge (20.2 kcf) in 2001 was 9.0 kcf less than in 2000, 14.1 kcf less than in 1999, and 16.2 less than in 1998 (Table 7).

Water temperature at the Salmon River trap was 3.0°C at the beginning of the trapping season in March (Figure 7). Water temperature gradually increased throughout the sampling season and reached a maximum of 13.5°C on June 1. Secchi disk transparency measurements were taken daily at the Salmon River trap. Transparencies fluctuated throughout the trapping season and ranged from 0.2 m to 2.3 m (Figure 7).

### Travel Time and Migration Rates

#### **Release Sites to Snake River Trap**

**Hatchery Spring Chinook Salmon**—In 2001, 14 PIT-tagged hatchery spring chinook salmon were interrogated at the Snake River trap. Two were from the Catherine Creek pond (median travel time 31.5 d), one from the Clearwater River (29.3 d), one from the Grande Ronde River (2.4 d), six from the Imnaha River weir (36.3 d), one from the Lostine River pond (31.2 d), and three from the Rapid River hatchery (42.5 d).

**Hatchery Summer Chinook Salmon**—In 2001, 11 PIT-tagged hatchery summer chinook salmon were interrogated at the Snake River trap. They were from the Knox Bridge, and their median travel time to the Snake River trap was 31.6 d.

**Unknown Run Hatchery Chinook Salmon**—In 2001, one PIT-tagged unknown run hatchery chinook salmon was interrogated at the Snake River trap. It was from the Salmon River trap and its travel time to the Snake River trap was 23.7 d.

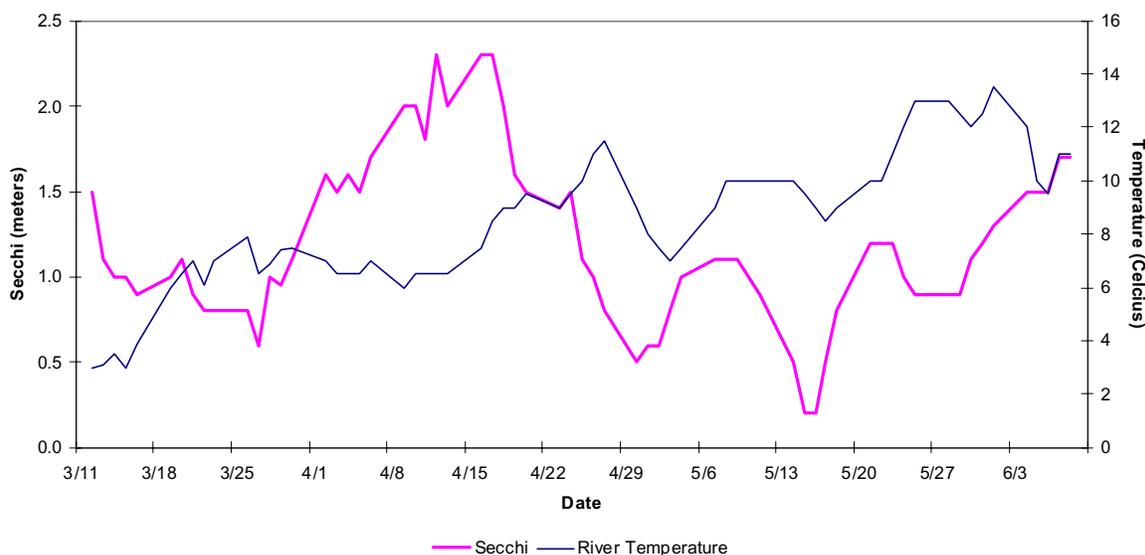


Figure 7. Daily water temperature and Secchi disk transparency for the Salmon River trap, 2001.

**Unknown Run Wild Chinook Salmon**—In 2001, one PIT-tagged unknown run wild chinook salmon was interrogated at the Snake River trap. It was from the Salmon River trap, and its travel time to the Snake River trap was 7.7 d.

**Hatchery Steelhead Trout**—In 2001, nine PIT-tagged hatchery steelhead trout were interrogated at the Snake River trap. Three were from the Big Canyon facility (median travel time 24.5 d), one from the Hells Canyon Dam (35.1 d), one from the Salmon River (34.3 d), one from the East Fork Salmon River trap (19.9 d), one from the Salmon River trap (2.3 d), one from the Squaw Creek acclimation pond (38.8 d), and one from the Wallowa hatchery (14.6 d).

**Wild Steelhead Trout**—In 2001, five PIT-tagged wild steelhead trout were interrogated at the Snake River trap. Two were from Catherine Creek (median travel time 184.9 d), one from the Grande Ronde River (0.7 d), one from the Imnaha trap (4.3 d), and one from Slate Creek (307.3 d).

## **Release Sites to Salmon River Trap**

**Hatchery Spring Chinook Salmon**—In 2001, 398 PIT-tagged hatchery spring chinook salmon were interrogated at the Salmon River trap. Three hundred ninety-six were from the Rapid River hatchery (median 19.8 d), and two were from the Sawtooth Hatchery (median travel time 10.1 d).

**Wild Spring Chinook Salmon**—In 2001, twelve PIT-tagged wild spring chinook salmon were interrogated at the Salmon River Trap. One was from Bear Valley Creek (travel time 264.0 d), one from the East Fork Salmon River (234.8 d), one from Herd Creek (250.0 d), seven from the Lemhi River weir (median 164.8 d), and two from the Sawtooth trap (106.1 d).

**Hatchery Summer Chinook Salmon**—In 2001, 246 PIT-tagged hatchery summer chinook salmon were interrogated at the Salmon River trap. Two hundred forty were from the Knox Bridge (median travel time 30.8 d), four from the Pahsimeroi pond (11.0 d), and two from the South Fork Salmon River (214.9 d).

**Wild Summer Chinook Salmon**—In 2001, 45 PIT-tagged wild summer chinook salmon were interrogated at the Salmon River trap. Twenty-three were from the Johnson Creek trap (median travel time 39.7 d), six from Lake Creek (197.0 d), five from the Pahsimeroi River trap (193.6 d), five from the Secesh River (199.7 d), one from the South Fork Salmon River (234.8 d), and five from the South Fork Salmon River trap (18.4 d).

**Hatchery Steelhead Trout**—In 2001, five PIT-tagged hatchery steelhead trout were interrogated at the Salmon River trap. One was from the Lemhi River (travel time 2.8 d), one from the Little Salmon River (8.8 d), one from the Pahsimeroi River trap (6.9 d), one from the Sawtooth hatchery (6.9 d), and one from the Squaw Creek acclimation pond (13.3 d).

**Wild Steelhead Trout**—In 2001, seven PIT-tagged wild steelhead trout were interrogated at the Salmon River trap. One was from Bargamin Creek (travel time 265.1 d), one from Big Creek (610.0 d), one from Horse Creek (266.8 d), one from the Johnson Creek trap (234.8 d), one from the Lower South Fork Salmon River trap (2.8 d), one from the Pahsimeroi River trap (5.5 d), and one from the South Fork Salmon River trap (295.1 d).

## **Head of Lower Granite Reservoir to Lower Granite Dam**

The PIT tag sample rate at the dams was significantly higher during the 2001 out-migration, mainly due to the lack of spill in 2001. Water conditions during 2001 were significantly below average in terms of volume runoff. Spring flows in the Snake River were predicted to be less than the average of 85 kcfs. Under these conditions, the ESA Section 7 Biological Opinion, issued in March 1995, called for the suspension of spill at the transport collector projects (Lower Granite, Little Goose, and Lower Monumental Dams) and for the maximization of transportation. Consequently, no spill occurred at these projects. In addition, due to the declared power system emergency, spill was suspended at Ice Harbor Dam as well.

**Hatchery Chinook Salmon PIT Tag Groups**—Sufficient numbers of hatchery chinook salmon were PIT tagged daily at the Snake River trap to provide six daily release groups (382 individual fish) for median migration rate calculations through Lower Granite Reservoir from April 27 through May 4 (Appendix A, Table 1). The six daily release groups represented only

two discharge intervals and, therefore, the migration rate discharge regression could not be run (Table 8).

Sufficient numbers of hatchery chinook salmon were PIT tagged daily at the Salmon River trap to provide 42 daily release groups (4,531 individual fish) for median migration rate calculations through Lower Granite Reservoir from March 19 through May 15 (Appendix A, Table 5). Median travel time ranged from 39.5 to 6.7 d (5.9 km/d to 34.7 km/d migration rate) and averaged 20.9 d (14.9 km/d).

Linear regression analysis detected a significant relation between migration rate from the Salmon River trap to Lower Granite Dam and average Lower Granite inflow (Table 9) for PIT-tagged hatchery chinook salmon groups (Table 10). The equation shows that as discharge increases, migration rate increases.

**Wild Chinook Salmon PIT-Tag Groups**—Sufficient numbers of wild chinook salmon were PIT tagged daily at the Snake River trap to provide one daily release group (17 individual fish) for median migration rate calculations through Lower Granite Reservoir (Appendix A, Table 2). Because of the lack of data, the migration rate discharge regression could not be run.

Sufficient numbers of wild chinook salmon were PIT tagged daily at the Salmon River trap to provide 39 daily release groups (1,804 individual fish) for median migration rate calculations through Lower Granite Reservoir from March 21 through May 30 (Appendix A, Table 7). Median travel time ranged from 37.8 to 6.3 d (6.2 km/d to 37.1 km/d migration rate) and averaged 16.5 d (18.1 km/d).

Linear regression analysis detected a significant relation between migration rate from the Salmon River trap to Lower Granite Dam and average Lower Granite inflow (Table 9) for PIT-tagged wild chinook salmon groups (Table 10). The equation shows that as discharge increases, migration rate increases.

**Hatchery Steelhead Trout PIT Tag Groups**—Sufficient numbers of hatchery steelhead trout were PIT tagged daily at the Snake River trap to provide 26 daily release groups (2,890 individual fish) for median migration rate calculations through Lower Granite Reservoir from April 19 through June 25 (Appendix A, Table 3). Median travel time ranged from 24.2 to 3.4 d (2.1 km/d to 15.1 km/d migration rate) and averaged 6.9 d (9.7 km/d).

Linear regression analysis detected a significant relation between migration rate in Lower Granite Reservoir and average Lower Granite inflow (Table 9) for PIT tagged hatchery steelhead trout groups (Table 8). The equation shows that as discharge increases, migration rate increases.

Table 8. Migration rates (km/day) stratified by 5 kcfs intervals from the Snake River trap to Lower Granite Dam, 2001.

Discharge Interval	Hatchery Chinook		Wild Chinook		Hatchery Steelhead		Wild Steelhead	
	Migration Rate (km/day)	Number Recaptured						
25 - 30					2.35	32		
30 - 35					10.82	67	10.53	9
35 - 40								
40 - 45					6.78	26		
45 - 50					8.55	186	11.39	84
50 - 55	4.89	63			8.44	304	11.90	67
55 - 60	7.39	210	13.00	12	11.71	630	13.93	431
60 - 65					9.64	103	11.60	10
65 - 70					10.04	239	12.29	13
70 - 75					11.30	62		
75 - 80					13.74	183	14.63	38
80 - 85					14.28	221	18.63	15
85 - 90							19.85	25

Table 9. Linear regression statistics for migration rate/discharge relations by species rearing type and trap using data stratified by 5-kcfs intervals, 2001.

Species	Trap	N	Intercept	Slope	r <sup>2</sup>	P
Hatchery	Snake	—	—	—	—	—
	Salmon	9	-4.574	1.874	0.904	<0.001
Wild Chinook	Snake	—	—	—	—	—
	Salmon	9	-2.328	1.335	0.855	<0.001
Hatchery Steelhead	Snake	11	-2.306	1.117	0.592	0.006
	Salmon	10	0.535	0.704	0.682	0.003
Wild Steelhead	Snake	9	0.015	0.625	0.690	0.006
	Salmon	8	-0.990	1.127	0.853	0.001

Table 10. Migration rates (km/day) stratified by 5 kcfs intervals from the Salmon River trap to Lower Granite Dam, 2001.

Discharge Interval	Hatchery Chinook		Wild Chinook		Hatchery Steelhead		Wild Steelhead	
	Migration Rate (km/day)	Number Recaptured						
30 - 35	7.50	779	9.98	157	21.42	226		
35 - 40	10.46	552	11.86	110	21.16	157		
40 - 45	16.92	316	20.50	119	25.04	206		
45 - 50	14.97	186	20.62	95	35.45	81	29.97	46
50 - 55	16.24	286	21.60	468	22.39	181	35.84	133
55 - 60	17.48	389	18.80	270	30.80	604	41.44	70
60 - 65	28.98	13	26.61	7	30.13	116	37.26	13
65 - 70	34.71	57	27.64	8	35.71	364	38.91	35
70 - 75	31.75	147	30.36	82	34.33	167	49.41	10
75 - 80					39.89	123	49.79	7
80 - 85							61.29	15

Sufficient numbers of hatchery steelhead trout were PIT tagged daily at the Salmon River trap to provide 34 daily release groups (3,061 individual fish) for median migration rate calculations through Lower Granite Reservoir from April 11 through May 29 (Appendix A, Table 7). Median travel time ranged from 16.8 to 5.0 d (13.9 km/d to 46.8 km/d migration rate) and averaged 9.0 d (29.4 km/d).

Data stratified by 5 kcfs groups were used in the regression analysis (Table 10). 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 9). The equation shows that as discharge increases, migration rate increases.

**Wild Steelhead Trout PIT-Tag Groups**—Sufficient numbers of wild steelhead trout were PIT tagged daily at the Snake River trap to provide 16 daily release groups (813 individual fish) for median migration rate calculations through Lower Granite Reservoir from April 19 through May 21 (Appendix A, Table 4). Median travel time ranged from 4.9 to 2.6 d (10.5 km/d to 19.9 km/d migration rate) and averaged 4.0 d (13.6 km/d).

Linear regression analysis detected a significant relation between migration rate in Lower Granite Reservoir and average Lower Granite inflow (Table 9) for PIT-tagged wild steelhead trout groups (Table 8). The equation shows that as discharge increases, migration rate increases.

Sufficient numbers of wild steelhead trout were PIT tagged daily at the Salmon River trap to provide 18 daily release groups (413 individual fish) for median migration rate calculations through Lower Granite Reservoir from April 26 through May 22 (Appendix A, Table 8). Median travel time ranged from 8.1 to 3.8 d (28.8 km/d to 62.1 km/d migration rate) and averaged 6.0 d (40.9 km/d).

Linear regression analysis detected a significant relation between migration rate from the Salmon River trap to Lower Granite Dam and average Lower Granite inflow (Table 9) for PIT-tagged wild steelhead trout groups (Table 10). The equation shows that as discharge increases, migration rate increases.

## **Interrogation of PIT-Tagged Fish**

Interrogation data in 2001 are not directly comparable with the earlier years. All species-run-rearing types will be underestimated due to a reduction in collection efficiency during spill at the dams. During other times of the season, the interrogation rate may vary sporadically due to fluctuations in turbine operations. As the fourth collection facility in the system, Lower Monumental Dam became operational in 1993, and total interrogations may be greater beginning in 1993 than in previous years. Therefore, any comparison in trends of cumulative detection at dams must be done cautiously, in a manner that incorporates these additional factors.

After combining to remove groups with small sample size, percent interrogation of Snake River trap hatchery chinook salmon and wild chinook salmon daily PIT tag release groups at Lower Granite Dam ranged from 62.5% to 88.9% for hatchery fish (Appendix B, Table 1). There was only one group of wild chinook, and its percent interrogation was 70.1% (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 75.0% and 90.6%, and averaged 85.7% (Table 11).

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 43.5% to 74.7% (Appendix B, Table 5). Wild chinook salmon ranged from 33.3% to 92.0%, (Appendix B, Table 7). Seasonal cumulative interrogation rate of PIT-tagged hatchery chinook salmon to Lower Granite, Little Goose, Lower Monumental, and McNary dams ranged between 53.6% and 89.7% and averaged 74.4% (Table 11). Wild chinook salmon cumulative interrogation rates ranged between 33.3% and 100% and averaged 83.3% (Table 11).

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 0% to 90.9% for hatchery fish (Appendix B, Table 3). Wild steelhead trout ranged from 0% to 87.7% (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 0% and 93.0% and averaged 70.6% (Table 11). Wild steelhead trout cumulative interrogation rates ranged between 8.3% and 90.8% and averaged 74.6% (Table 11).

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 0% to 100% (Appendix B, Table 7). Wild steelhead trout ranged from 12.5% to 100% (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 89.0% (Table 11). Wild steelhead trout cumulative interrogation rates ranged between 28.6% and 100% and averaged 81.2% (Table 11).

Table 11. Interrogations of PIT-tagged fish from the Snake River trap, 1987-2001; Clearwater River trap, 1989-1995; and Salmon River trap 1993-2001, at downstream collection facilities.

Site	Year	Species <sup>a</sup>	No. Tagged	Number Interrogated / Site								Grand Total Ints	Total % Obs.
				Ints at Lower Granite	% GRJ	Ints at Little Goose	% GOJ	Ints at Lower Monumental	% LMJ	Ints at McNary	% MCJ		
Snake	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	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 <sup>b</sup>	CU	3,275	1,067	32.6%	338	10.3%	—	0.0%	308	9.4%	1,713	52.3%	
Snake	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	2001	SW	884	716	81.0%	56	6.3%	14	1.6%	1	0.1%	787	89.0%
	2000	SW	1,312	5879	44.9%	214	16.3%	105	8.0%	28	2.1%	936	71.3%
	1999	SW	923	254	27.5%	304	32.9%	111	12.0%	19	2.1%	688	74.5%
	1998	SW	1,088	624	57.4%	154	14.2%	81	7.4%	8	0.7%	867	79.7%
	1997	SW	148	82	55.4%	38	25.7%	6	4.1%	1	0.7%	127	85.8%
	1996	SW	655	293	44.7%	137	20.9%	67	10.2	12	1.8%	509	77.7%
	1995	SW	1,537	967	62.9%	195	12.7%	122	7.9%	13	0.8%	1,297	84.4%
	1994	SW	2,840	1,546	54.4%	319	11.2%	158	5.6%	51	1.8%	2,074	73.0%
	1993	SW	2,867	1,982	69.1%	267	9.3%	133	4.6%	32	1.1%	2,414	84.2%
	1992	SW	2,538	1,511	59.5%	307	12.1%	—	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%

Table 11. Continued.

Site	Year	Species <sup>a</sup>	Number Interrogated / Site									Grand Total Ints	Total % Obs.
			No. Tagged	Ints at Lower Granite	% GRJ	Ints at Little Goose	% GOJ	Ints at Lower Monumental	% LMJ	Ints at McNary	% MCJ		
Clearwater	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	2001	CH	4,564	2,740	60.0%	519	11.4%	99	2.2%	37	0.8%	3,395	74.4%
	2000	CH	4,804	1,486	30.9%	708	14.7%	214	4.5%	230	4.8%	2,638	54.9%
	1999	CH	5,611	1,128	20.1%	1,551	27.6%	604	10.8%	240	4.3%	3,523	62.8%
	1998	CH	3,025	1,098	36.3%	565	18.7%	201	6.6%	87	2.9%	1,951	64.5%
	1997	CH	—	—	—	—	—	—	—	—	—	—	—
	1996	CH	2,554	618	24.2%	343	13.4%	258	10.1%	67	2.6%	1,286	50.4%
	1995	CH	5,074	1,777	35.0%	757	14.9%	531	10.5%	186	3.7%	3,251	64.1%
	1994	CH	3,633	870	23.9%	322	8.9%	258	7.1%	358	9.9%	1,808	49.8%
	1993	CH	3,138	1,144	36.5%	385	12.3%	233	7.4%	157	5.0%	1,919	61.2%
Salmon	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	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	SG	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	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 2001 were 60% of the previous year's release. Hatchery fall chinook salmon releases were 83% of the previous year. Hatchery steelhead trout releases were 98% of 2000 numbers. Hatchery sockeye releases were 106% of 2000 numbers. Hatchery coho releases were 72% of last year's. Hatchery production of spring/summer chinook salmon in the Clearwater River drainage was 49%, the Snake River and non-Idaho tributaries 188%, and the Salmon River drainage 39% of 2000 production. Hatchery production of steelhead trout in the Clearwater River drainage was 90%, the Snake River and non-Idaho tributaries was 95%, and the Salmon River was 106% of last year's total. Hatchery production of chinook salmon and steelhead trout released above Lower Granite Dam was 6,347,215 and 9,573,219 respectively, in 2001. Significant numbers of hatchery sockeye salmon (13,903) and hatchery coho salmon (592,383) were released in 2001.

The Snake River trap was operated on the east side of the river from March 11 through June 29 and was out of operation for two days during this period due to high flow, mechanical failures, or because quotas were reached. The Snake River trap captured 636 age-1 hatchery chinook salmon, 66 wild chinook salmon, 28 wild age-0 chinook salmon, 4,300 hatchery steelhead trout, 926 wild steelhead trout, zero hatchery sockeye, zero sockeye/kokanee of unknown rearing, and six hatchery coho. Trap catch was significantly lower in 2001 due to extreme low flow conditions and due to the reduction in hatchery chinook releases.

The Salmon River trap was operated on the east side of the river from March 11 through June 8 and was out of operation for zero days during this period due to high flow, mechanical failures, or because quotas were reached. The Salmon River trap captured 10,388 age-1 hatchery chinook salmon, 2,274 wild chinook salmon, 4,079 hatchery steelhead trout, 488 wild steelhead trout, 22 hatchery sockeye salmon, and two sockeye salmon of unknown rearing type. Trap catch of hatchery chinook salmon was significantly lower in 2001 due to the low numbers of hatchery chinook released in the Salmon River drainage (39% of 2000 releases) in 2001.

Significant migration rate/discharge relations were detected for hatchery and wild chinook salmon released from the Salmon River trap to Lower Granite Dam. Not enough data were available to run the migration rate/discharge regression analysis for both hatchery and wild chinook salmon from the Snake River trap to Lower Granite Dam. Significant migration rate/discharge relations were detected for hatchery steelhead trout and wild steelhead trout released from both traps to Lower Granite Dam. 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 2001 were only comparable to 1993-2000 because of the addition of a new collection facility at Lower Monumental Dam in 1993. The comparability between the eight years is questionable because of collection efficiency changes during the out-migration due to operational changes and spill at the dams. In 2001 there was no spill at Lower Granite Dam.

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## **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, 2001.

Release Date	Median Travel Time	Lower Confidence Interval <sup>a</sup>	Upper Confidence Level <sup>a</sup>	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
04/27/01	6.90	5.67	7.35	2.55	29.98	179	253	70.75%	56.375	7.5
04/28/01	11.75	5.38	39.48	5.38	39.48	8	11	72.73%	53.431	4.4
04/29/01	6.83	5.76	12.60	2.19	24.85	23	32	71.88%	55.325	7.6
04/30/01	11.00	8.68	14.49	3.87	16.52	24	35	68.57%	52.792	4.7
05/01/01	9.99	8.14	11.71	3.92	24.68	31	42	73.81%	52.627	5.2
05/02/01 <sup>b</sup>	9.37			7.17	14.46	4	5	80.00%	51.627	5.5
05/03/01 <sup>b</sup>	11.50			5.63	12.85	5	8	62.50%	55.846	4.5
05/04/01	10.45	5.17	18.07	5.17	18.07	8	9	88.89%	56.083	4.9
05/07/01 <sup>b</sup>	4.90			4.90	4.90	1	2	50.00%	51.167	10.5
05/08/01 <sup>b</sup>	4.91			4.20	5.61	2	2	100.00%	54.033	10.5
05/11/01 <sup>b</sup>	2.54			2.54	2.54	1	1	100.00%	61.675	20.3
05/16/01 <sup>b</sup>	3.27			3.27	3.27	1	1	100.00%	83.225	15.8
05/18/01 <sup>b</sup>	16.78			16.78	16.78	1	1	100.00%	62.067	3.1
05/22/01 <sup>b</sup>	28.92			28.92	28.92	1	2	50.00%	48.160	1.8
05/24/01 <sup>b</sup>				0.00	0.00	0	3	0.00%		
05/25/01 <sup>b</sup>	43.76			43.76	43.76	1	1	100.00%	38.469	1.2
06/05/01 <sup>b</sup>	37.70			37.70	37.70	1	1	100.00%	31.437	1.4
06/06/01 <sup>b</sup>				0.00	0.00	0	2	0.00%		
06/08/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
06/11/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
<b>Totals</b>				<b>2.19</b>	<b>39.48</b>	<b>273</b>	<b>382</b>	<b>71.47%</b>		

- 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, 2001.

Release Date	Median Travel Time	Lower Confidence Interval <sup>a</sup>	Upper Confidence Level <sup>a</sup>	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
04/27/01	3.97	2.75	4.34	2.55	6.44	12	17	70.59%	57.300	13.0
04/28/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
04/30/01 <sup>b</sup>	4.36			3.52	9.58	3	4	75.00%	57.440	11.8
05/01/01 <sup>b</sup>	8.86			3.80	10.99	4	4	100.00%	52.360	5.8
05/03/01 <sup>b</sup>	13.53			13.53	13.53	1	1	100.00%	60.213	3.8
05/11/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
05/17/01 <sup>b</sup>	3.25			2.73	3.77	2	2	100.00%	78.650	15.9
05/22/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
05/23/01 <sup>b</sup>	20.66			20.66	20.66	1	5	20.00%	51.855	2.5
05/24/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
05/25/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
06/04/01 <sup>b</sup>	19.52			9.84	29.21	2	2	100.00%	36.838	2.6
06/15/01 <sup>b</sup>	57.10			57.10	57.10	1	1	100.00%	27.345	0.9
06/27/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
06/28/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
<b>Totals</b>				<b>2.55</b>	<b>6.44</b>	<b>12</b>	<b>17</b>	<b>70.59%</b>		

- 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, 2001.

Release Date	Median Travel Time	Lower Confidence Interval <sup>a</sup>	Upper Confidence Level <sup>a</sup>	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
04/19/01	4.77	3.91	6.23	2.44	12.13	67	87	77.01%	33.550	10.8
04/27/01 <sup>b</sup>	3.19			2.49	5.02	5	8	62.50%	54.600	16.2
04/28/01	4.26	2.90	6.85	2.55	14.45	22	26	84.62%	60.220	12.1
04/29/01	3.78	3.50	4.31	2.11	27.62	251	300	83.67%	59.340	13.6
04/30/01	4.43	3.09	5.03	1.86	19.57	55	63	87.30%	57.440	11.6
05/01/01	4.07	3.81	4.71	2.02	24.05	122	137	89.05%	56.500	12.7
05/02/01	5.87	5.46	6.77	2.72	26.50	126	151	83.44%	50.571	8.8
05/03/01	5.70	5.43	6.86	2.47	16.69	80	95	84.21%	48.771	9.1
05/04/01	5.73	5.51	6.55	2.78	34.10	88	100	88.00%	48.643	9.0
05/07/01	6.31	5.65	6.80	2.57	31.17	178	207	85.99%	52.814	8.2
05/08/01	5.90	5.69	6.68	2.51	33.21	202	245	82.45%	56.543	8.7
05/09/01	5.75	5.52	6.49	2.60	34.52	81	100	81.00%	62.000	9.0
05/10/01	5.61	5.54	5.74	3.63	28.52	75	100	75.00%	67.514	9.2
05/11/01	4.56	3.80	4.74	2.74	8.33	62	76	81.58%	70.083	11.3
05/15/01	3.57	2.97	3.74	1.76	25.63	152	189	80.42%	83.740	14.4
05/16/01	3.71	3.14	4.62	1.85	23.76	69	80	86.25%	80.520	13.9
05/17/01	3.76	3.59	4.57	2.36	21.05	183	219	83.56%	75.260	13.7
05/18/01	4.64	3.68	5.80	2.55	51.99	34	44	77.27%	68.233	11.1
05/21/01	5.65	5.57	5.73	3.28	64.88	100	152	65.79%	66.071	9.1
05/23/01	3.84	3.62	4.23	2.79	81.05	20	32	62.50%	68.000	13.4
05/24/01	3.42	2.59	14.70	2.50	20.93	10	11	90.91%	69.625	15.1
05/29/01	15.39	3.90	45.67	3.90	45.67	8	31	25.81%	46.088	3.4
05/30/01	11.22	7.51	37.18	2.64	83.49	10	53	18.87%	46.067	4.6
06/01/01 <sup>b</sup>	6.19			6.19	6.19	1	8	12.50%	44.871	8.3
06/04/01 <sup>b</sup>	43.23			15.26	71.20	2	13	15.38%	31.240	1.2
06/05/01	8.09	2.77	11.44	2.62	21.78	9	104	8.65%	41.278	6.4
06/06/01	7.37	6.46	20.30	4.62	68.03	17	92	18.48%	40.950	7.0
06/07/01 <sup>b</sup>	40.35			20.59	60.11	2	20	10.00%	30.337	1.3
06/08/01 <sup>b</sup>				0.00	0.00	0	3	0.00%		
06/11/01 <sup>b</sup>	12.56			1.93	23.18	2	21	9.52%	34.036	4.1
06/12/01	24.23	4.35	30.60	1.68	62.32	23	126	18.25%	29.744	2.1
06/13/01 <sup>b</sup>	7.16			5.17	16.37	3	50	6.00%	35.525	7.2
06/14/01 <sup>b</sup>	13.81			7.61	20.01	2	16	12.50%	30.607	3.7
06/15/01 <sup>b</sup>	7.10			2.68	11.51	2	26	7.69%	33.025	7.3
06/20/01 <sup>b</sup>				0.00	0.00	0	14	0.00%		
06/21/01 <sup>b</sup>				0.00	0.00	0	9	0.00%		
06/22/01 <sup>b</sup>	50.76			23.53	51.99	3	9	33.33%	26.438	1.0
06/25/01	17.70	6.29	49.42	2.91	51.08	9	70	12.86%	25.847	2.9
06/26/01 <sup>b</sup>	5.27			5.27	5.27	1	18	5.56%	25.100	9.8
06/27/01 <sup>b</sup>	14.26			14.26	14.26	1	18	5.56%	25.840	3.6
06/28/01 <sup>b</sup>				0.00	0.00	0	8	0.00%		
06/29/01 <sup>b</sup>	16.34			7.18	43.90	5	25	20.00%	26.153	3.2
<b>Totals</b>				<b>1.68</b>	<b>83.49</b>	<b>2053</b>	<b>2890</b>	<b>71.04%</b>		

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, 2001.

Release Date	Median Travel Time	Lower Confidence Interval <sup>a</sup>	Upper Confidence Level <sup>a</sup>	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
04/19/01	4.90	3.83	7.48	2.76	9.72	9	9	100.00%	33.550	10.5
04/27/01 <sup>b</sup>	2.63			2.53	2.81	3	4	75.00%	54.600	19.7
04/28/01 <sup>b</sup>	15.75			5.54	25.97	2	4	50.00%	55.371	3.3
04/29/01	3.58	3.46	4.29	2.39	14.20	58	68	85.29%	59.340	14.4
04/30/01	3.44	2.62	5.43	2.45	146.11	11	13	84.62%	59.425	15.0
05/01/01	3.72	3.59	3.87	2.43	103.23	319	368	86.68%	56.500	13.9
05/02/01	4.15	3.62	4.69	3.10	7.79	31	38	81.58%	52.180	12.4
05/03/01	4.76	4.51	5.70	3.54	6.12	12	16	75.00%	48.667	10.8
05/04/01	4.59	3.73	5.25	2.96	10.59	26	32	81.25%	48.067	11.2
05/07/01	4.44	4.03	4.81	2.55	20.52	46	57	80.70%	49.980	11.6
05/08/01	4.51	3.61	5.51	2.67	8.95	36	44	81.82%	54.033	11.4
05/09/01	3.83	3.51	4.65	2.64	12.28	43	51	84.31%	55.320	13.5
05/10/01 <sup>b</sup>	5.54			3.66	10.08	4	5	80.00%	67.514	9.3
05/11/01	3.93	3.35	4.72	3.35	4.72	7	9	77.78%	66.500	13.1
05/15/01	2.60	2.47	2.69	2.29	4.84	25	29	86.21%	86.075	19.9
05/16/01	2.77	2.59	3.74	2.29	9.63	15	16	93.75%	83.225	18.6
05/17/01	3.53	2.83	4.50	2.38	9.72	38	48	79.17%	75.260	14.6
05/18/01	4.56	2.79	6.77	2.79	6.77	6	9	66.67%	68.233	11.3
05/21/01	4.45	3.27	5.56	2.54	6.58	10	15	66.67%	63.940	11.6
05/22/01 <sup>b</sup>	4.81			3.76	16.19	4	5	80.00%	66.800	10.7
05/23/01 <sup>b</sup>	3.52			2.64	4.54	3	3	100.00%	68.000	14.7
05/24/01 <sup>b</sup>	2.79			2.56	3.02	2	3	66.67%	69.625	18.5
05/29/01 <sup>b</sup>	3.92			3.88	3.96	2	4	50.00%	55.700	13.2
05/30/01 <sup>b</sup>				0.00	0.00	0	2	0.00%		
06/01/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
06/05/01 <sup>b</sup>				0.00	0.00	0	7	0.00%		
06/06/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
06/07/01 <sup>b</sup>				0.00	0.00	0	2	0.00%		
06/08/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
06/11/01 <sup>b</sup>				0.00	0.00	0	2	0.00%		
06/12/01 <sup>b</sup>				0.00	0.00	0	3	0.00%		
06/13/01 <sup>b</sup>	29.71			29.71	29.71	1	1	100.00%	28.723	1.7
06/14/01 <sup>b</sup>				0.00	0.00	0	2	0.00%		
06/15/01 <sup>b</sup>	20.62			20.62	20.62	1	3	33.33%	28.414	2.5
06/20/01 <sup>b</sup>	59.06			59.06	59.06	1	2	50.00%	26.388	0.9
06/25/01 <sup>b</sup>				0.00	0.00	0	5	0.00%		
06/27/01 <sup>b</sup>	17.63			17.63	17.63	1	1	100.00%	26.058	2.9
06/29/01 <sup>b</sup>				0.00	0.00	0	1	0.00%		
<b>Totals</b>				<b>2.29</b>	<b>146.11</b>	<b>683</b>	<b>813</b>	<b>84.01%</b>		

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 wild hatchery chinook salmon travel time with 95% confidence intervals from the Salmon River Trap to Lower Granite Dam, 2001.

Release Date	Median Travel Time	Lower Confidence Interval <sup>a</sup>	Upper Confidence Level <sup>a</sup>	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/19/01	39.52	37.42	41.27	30.44	44.40	34	77	44.16%	33.837	5.9
03/20/01	39.12	38.02	39.74	22.85	65.23	55	113	48.67%	34.095	6.0
03/21/01	38.06	37.41	38.46	17.50	55.56	100	179	55.87%	34.146	6.1
03/22/01	36.46	35.20	37.49	22.51	56.41	69	137	50.36%	33.486	6.4
03/23/01	36.77	33.70	37.71	26.80	44.31	30	69	43.48%	34.782	6.4
03/26/01	33.30	32.65	33.56	10.37	60.65	107	197	54.31%	34.465	7.0
03/27/01	32.68	31.99	33.65	15.33	50.18	81	153	52.94%	35.221	7.1
03/28/01	32.48	31.77	32.80	22.73	43.25	58	100	58.00%	35.042	7.2
03/29/01	31.26	30.59	31.62	20.54	44.20	55	100	55.00%	34.875	7.5
03/30/01	30.64	29.53	31.16	16.01	45.63	37	51	72.55%	35.313	7.6
04/02/01	27.71	26.80	28.04	18.83	47.32	93	153	60.78%	34.196	8.4
04/03/01	26.81	26.51	27.35	17.36	44.72	130	247	52.63%	34.979	8.7
04/04/01	25.63	24.61	26.00	19.75	44.82	44	75	58.67%	34.885	9.1
04/05/01	25.62	24.83	27.11	20.83	42.39	38	77	49.35%	31.909	9.1
04/06/01	23.61	22.74	27.48	14.61	40.71	24	48	50.00%	34.908	9.9
04/09/01	21.02	20.51	21.51	16.34	36.55	123	200	61.50%	35.450	11.1
04/10/01	20.02	19.42	20.80	14.81	35.77	77	138	55.80%	35.790	11.7
04/11/01	19.44	18.76	23.46	15.40	34.32	45	70	64.29%	36.095	12.0
04/12/01	18.39	17.58	18.79	14.08	35.09	106	142	74.65%	36.468	12.7
04/13/01	16.95	15.80	23.03	12.87	32.74	25	50	50.00%	36.944	13.8
04/16/01	14.77	14.01	15.78	10.47	30.72	96	132	72.73%	40.550	15.8
04/17/01	15.81	13.84	20.85	8.13	31.82	57	96	59.38%	43.418	14.8
04/18/01	12.90	12.38	14.49	9.74	31.73	104	175	59.43%	42.379	18.1
04/19/01	12.51	11.79	15.61	8.62	27.71	59	100	59.00%	44.636	18.7
04/20/01	14.45	12.37	15.33	8.03	25.76	55	97	56.70%	46.367	16.2
04/23/01	16.15	14.78	19.54	7.23	35.09	131	199	65.83%	48.882	14.5
04/24/01	11.98	10.88	15.25	6.77	33.65	68	101	67.33%	50.392	19.5
04/25/01	14.04	11.43	17.48	6.74	32.10	71	101	70.30%	51.000	16.6
04/26/01	14.93	13.16	17.33	5.78	20.91	71	99	71.72%	52.369	15.7
04/27/01	17.32	15.61	17.57	6.43	31.81	76	102	74.51%	54.928	13.5
04/30/01	14.55	14.29	15.28	7.00	27.05	79	120	65.83%	56.919	16.1
05/01/01	14.62	14.34	14.86	8.60	23.22	81	120	67.50%	59.006	16.0
05/02/01	13.37	13.11	13.86	8.77	24.46	76	120	63.33%	56.286	17.5
05/03/01	12.65	12.27	13.15	8.29	29.07	91	140	65.00%	58.143	18.5
05/04/01	11.78	11.50	12.29	7.25	22.56	62	100	62.00%	58.538	19.8
05/07/01	8.60	8.23	9.60	7.00	13.23	26	54	48.15%	61.510	27.2
05/08/01	7.66	7.55	8.27	6.52	17.14	31	50	62.00%	63.289	30.5
05/09/01	6.73	6.47	8.53	6.35	9.55	13	26	50.00%	65.250	34.7
05/10/01	6.69	5.86	7.38	4.47	18.11	59	87	67.82%	70.225	34.9
05/11/01	6.80	6.38	7.88	4.05	28.34	60	90	66.67%	73.875	34.4
05/14/01	12.71	5.00	14.62	4.74	26.27	11	15	73.33%	73.036	18.4
05/15/01	11.64	9.69	13.37	5.83	23.27	17	31	54.84%	73.146	20.1
05/16/01 <sup>b</sup>	8.96			5.09	22.22	4	7	57.14%	72.230	26.1
05/17/01 <sup>b</sup>	8.17			6.88	24.07	5	11	45.45%	70.478	28.6
05/21/01 <sup>b</sup>	11.92			5.02	18.82	2	5	40.00%	61.877	19.6
05/22/01 <sup>b</sup>						0	2	0.00%		
05/24/01 <sup>b</sup>						0	1	0.00%		
05/25/01 <sup>b</sup>	10.98			10.98	10.98	1	1	100.00%	57.167	21.3
05/28/01 <sup>b</sup>						0	2	0.00%		
05/30/01 <sup>b</sup>	10.51			10.51	10.51	1	1	100.00%	46.067	22.2
05/31/01 <sup>b</sup>						0	1	0.00%		
06/01/01 <sup>b</sup>	7.77			7.29	8.25	2	2	100.00%	44.400	30.1
<b>Totals</b>				<b>4.05</b>	<b>65.23</b>	<b>2725</b>	<b>4531</b>	<b>60.14%</b>		

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, 2001.

Release Date	Median Travel Time	Lower Confidence Interval <sup>a</sup>	Upper Confidence Level <sup>a</sup>	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/20/01 <sup>b</sup>	36.56			36.56	36.56	1	1	100.00%	33.132	6.4
03/21/01	36.60	34.718	38.439	15.66	39.90	17	22	77.27%	33.534	6.4
03/22/01	37.77	34.882	46.632	34.88	46.63	7	9	77.78%	34.754	6.2
03/23/01	34.10	28.741	36.424	16.85	36.51	14	16	87.50%	33.083	6.9
03/26/01	33.52	32.256	34.433	15.71	44.02	20	28	71.43%	35.166	7.0
03/27/01	31.79	30.483	35.447	24.62	72.91	20	36	55.56%	34.500	7.3
03/28/01	32.45	29.36	34.437	24.75	42.44	16	26	61.54%	35.042	7.2
03/29/01	30.20	28.395	36.934	20.19	48.51	22	32	68.75%	34.097	7.7
03/30/01	30.57	27.384	32.472	24.73	45.77	22	40	55.00%	35.313	7.6
04/02/01 <sup>b</sup>	32.49			32.49	32.49	1	1	100.00%	37.718	7.2
04/03/01	24.47	21.726	27.815	16.83	38.55	9	12	75.00%	32.336	9.5
04/04/01 <sup>b</sup>	23.98			17.54	26.45	5	8	62.50%	33.132	9.7
04/05/01 <sup>b</sup>	20.55			16.42	23.15	5	7	71.43%	31.205	11.4
04/06/01 <sup>b</sup>	23.30			16.82	28.58	4	6	66.67%	34.088	10.0
04/09/01	18.37	16.528	19.04	12.45	33.57	20	27	74.07%	32.047	12.7
04/10/01	18.41	17.521	20.92	14.98	29.98	17	21	80.95%	33.579	12.7
04/11/01	15.73	13.784	23.527	13.78	23.53	8	10	80.00%	32.406	14.9
04/12/01	16.44	15.691	17.166	12.68	28.76	23	25	92.00%	34.076	14.2
04/13/01	15.55	13.809	17.736	12.27	23.96	19	25	76.00%	35.906	15.0
04/16/01	13.64	11.622	24.035	10.05	30.65	16	23	69.57%	38.713	17.1
04/17/01	12.30	11.603	12.843	9.29	25.18	17	20	85.00%	38.492	19.0
04/18/01	11.61	10.532	12.704	8.92	56.99	24	30	80.00%	40.400	20.1
04/19/01	12.36	11.013	15.788	9.29	30.44	22	36	61.11%	43.300	18.9
04/20/01	10.81	9.939	11.864	8.25	27.55	66	87	75.86%	44.250	21.6
04/23/01	11.33	9.827	12.089	6.47	32.59	95	128	74.22%	49.342	20.6
04/24/01	10.63	9.908	11.013	6.13	26.04	105	138	76.09%	50.717	22.0
04/25/01	9.83	9.513	10.407	6.22	19.81	95	121	78.51%	52.364	23.8
04/26/01	10.39	9.261	12.865	5.53	28.81	96	113	84.96%	53.455	22.5
04/27/01	11.16	8.541	12.48	5.68	28.70	78	100	78.00%	53.375	20.9
04/30/01	12.54	12.02	13.772	5.42	38.50	94	120	78.33%	53.807	18.6
05/01/01	14.05	13.217	14.634	8.00	35.03	68	120	56.67%	57.073	16.6
05/02/01	12.87	12.548	13.748	7.03	47.03	55	74	74.32%	56.286	18.2
05/03/01	11.73	11.511	12.451	7.90	34.36	101	142	71.13%	55.846	19.9
05/04/01	11.49	10.671	12.91	7.25	46.31	46	67	68.66%	56.083	20.3
05/07/01	8.78	7.053	19.638	7.05	19.64	7	8	87.50%	61.510	26.6
05/08/01	7.58	6.522	33.794	6.52	33.79	8	17	47.06%	63.289	30.8
05/09/01 <sup>b</sup>	7.59			5.49	8.83	4	4	100.00%	67.911	30.8
05/10/01	6.30	5.862	6.683	5.13	18.35	23	29	79.31%	71.750	37.1
05/11/01	6.50	5.57	10.051	4.74	15.75	20	29	68.97%	73.875	35.9
05/14/01	9.60	4.367	13.067	3.79	23.33	14	18	77.78%	73.609	24.3
05/15/01	10.48	5.942	11.385	4.79	12.91	9	10	90.00%	73.464	22.3
05/16/01	10.15	6.698	11.441	3.59	17.84	10	12	83.33%	72.445	23.0
05/17/01	9.58	9.316	35.98	9.32	35.98	6	10	60.00%	70.645	24.4
05/18/01	8.45	6.331	9.99	6.33	9.99	8	12	66.67%	68.856	27.6
05/21/01 <sup>b</sup>	6.83			6.39	22.74	5	8	62.50%	65.738	34.2
05/22/01 <sup>b</sup>	5.18			4.67	16.05	5	6	83.33%	66.800	45.1
05/23/01 <sup>b</sup>	13.40			9.53	17.26	2	2	100.00%	58.086	17.4
05/24/01 <sup>b</sup>	7.46			5.09	8.13	4	5	80.00%	65.113	31.3
05/25/01 <sup>b</sup>	8.17			4.42	15.97	4	7	57.14%	61.633	28.6
05/28/01 <sup>b</sup>						0	1	0.00%		
05/29/01 <sup>b</sup>	10.09			6.48	38.10	5	10	50.00%	48.518	23.2
05/30/01	14.28	5.768	33.267	5.77	33.27	7	11	63.64%	44.733	16.4
05/31/01 <sup>b</sup>	9.91			9.19	14.29	3	9	33.33%	44.909	23.6
06/01/01 <sup>b</sup>	10.04			8.33	15.29	5	8	62.50%	43.518	23.3
06/05/01 <sup>b</sup>	8.36			8.14	33.46	4	7	57.14%	41.278	28.0
06/07/01 <sup>b</sup>	27.17			27.17	27.17	1	2	50.00%	32.000	8.6
06/08/01 <sup>b</sup>	8.55			6.15	32.46	3	3	100.00%	39.290	27.3
<b>Totals</b>				<b>3.59</b>	<b>72.91</b>	<b>1324</b>	<b>1804</b>	<b>73.39%</b>		

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, 2001.

Release Date	Median Travel Time	Lower Confidence Interval <sup>a</sup>	Upper Confidence Level <sup>a</sup>	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
03/26/01 <sup>b</sup>						0	1	0.00%		
04/09/01 <sup>b</sup>	16.96			15.87	27.75	3	5	60.00%	31.194	13.8
04/10/01 <sup>b</sup>	13.92			11.89	37.67	3	7	42.86%	30.540	16.8
04/11/01	16.76	11.099	18.538	8.14	29.71	17	20	85.00%	33.794	13.9
04/12/01	13.04	8.888	18.608	7.98	33.67	24	34	70.59%	30.993	17.9
04/13/01	16.35	13.595	18.647	6.96	34.53	50	67	74.63%	35.906	14.3
04/16/01	10.83	9.677	12.527	5.49	52.09	110	140	78.57%	34.142	21.6
04/17/01	9.74	8.717	10.756	4.58	33.78	75	87	86.21%	34.909	24.0
04/18/01	9.59	8.45	9.884	4.83	37.79	107	126	84.92%	37.418	24.4
04/19/01	9.51	8.73	9.905	4.78	30.64	125	146	85.62%	40.018	24.6
04/20/01	8.73	8.057	10.932	5.77	36.50	75	101	74.26%	40.830	26.8
04/23/01	7.84	6.401	11.824	4.80	43.15	25	33	75.76%	47.511	29.8
04/24/01	6.73	5.718	7.8	4.55	22.99	36	47	76.60%	49.275	34.7
04/25/01	5.33	4.768	6.604	3.71	24.63	20	26	76.92%	48.917	43.9
04/26/01	5.74	4.963	7.541	3.49	44.13	71	81	87.65%	55.586	40.7
04/27/01	5.79	5.208	6.769	3.66	29.66	219	267	82.02%	57.357	40.3
04/30/01	10.77	9.595	14.439	4.20	40.57	83	120	69.17%	52.792	21.7
05/01/01	9.96	8.915	13.618	4.41	26.20	91	121	75.21%	52.627	23.5
05/02/01	12.84	12.565	13.646	3.78	69.21	86	129	66.67%	56.286	18.2
05/03/01	11.79	11.484	12.65	5.80	49.50	91	130	70.00%	55.846	19.8
05/04/01	11.47	10.557	11.818	5.79	97.13	62	85	72.94%	56.083	20.4
05/07/01	7.78	7.511	8.637	3.92	31.11	75	101	74.26%	58.567	30.0
05/08/01	7.75	7.648	7.982	5.18	32.58	116	144	80.56%	63.289	30.1
05/09/01	6.80	6.659	7.619	4.47	19.73	71	100	71.00%	65.250	34.3
05/10/01	6.27	5.88	7.031	4.22	98.85	117	156	75.00%	67.514	37.3
05/11/01	6.77	5.884	7.752	4.02	27.38	71	99	71.72%	73.875	34.5
05/14/01	5.81	5.016	6.808	3.53	14.06	60	80	75.00%	80.000	40.2
05/15/01	5.90	4.946	7.701	2.67	48.58	63	98	64.29%	78.586	39.6
05/16/01	6.77	5.253	7.792	3.74	57.91	38	56	67.86%	73.325	34.5
05/17/01	6.87	5.748	8.862	3.91	47.36	58	89	65.17%	70.538	34.0
05/18/01	8.62	7.856	8.698	3.62	89.44	74	117	63.25%	68.790	27.1
05/21/01	6.56	5.811	7.224	5.55	87.91	29	62	46.77%	65.738	35.6
05/22/01	6.01	4.971	9.968	3.73	82.90	32	63	50.79%	66.314	38.9
05/23/01	4.99	3.875	7.895	3.58	84.99	31	71	43.66%	67.233	46.8
05/24/01	5.02	3.829	14.053	3.81	35.02	10	25	40.00%	68.050	46.5
05/25/01	13.95	7.642	27.782	7.64	27.78	7	31	22.58%	53.993	16.7
05/28/01 <sup>b</sup>	23.04			4.81	41.27	2	9	22.22%	43.500	10.1
05/29/01	17.78	7.641	35.526	7.64	35.53	6	9	66.67%	44.874	13.1
05/30/01 <sup>b</sup>						0	12	0.00%		
05/31/01 <sup>b</sup>	12.58			6.70	72.20	5	23	21.74%	43.729	18.6
06/01/01 <sup>b</sup>	27.26			16.53	42.96	4	24	16.67%	36.339	8.6
06/05/01 <sup>b</sup>	38.81			38.81	38.81	1	6	16.67%	31.278	6.0
06/07/01 <sup>b</sup>						0	2	0.00%		
06/08/01 <sup>b</sup>	21.17			21.17	21.17	1	2	50.00%	33.191	11.0
<b>Totals</b>				<b>2.67</b>	<b>98.85</b>	<b>2225</b>	<b>3061</b>	<b>72.69%</b>		

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, 2001.

Release Date	Median Travel Time	Lower Confidence Interval <sup>a</sup>	Upper Confidence Level <sup>a</sup>	Minimum Travel Time	Maximum Travel Time	Number Recaptured	Number Tagged	Percent Recaptured	Mean Discharge	Migration Rate (km/day)
04/05/01 <sup>b</sup>	28.72			28.72	28.72	1	1	100.00%	37.917	8.1
04/09/01 <sup>b</sup>	22.20			12.78	31.62	2	2	100.00%	36.870	10.5
04/10/01 <sup>b</sup>						0	1	0.00%		
04/11/01 <sup>b</sup>	9.40			9.40	9.40	1	1	100.00%	29.250	24.8
04/13/01 <sup>b</sup>	10.20			10.20	10.20	1	1	100.00%	30.809	22.9
04/16/01 <sup>b</sup>	9.16			8.45	9.86	2	2	100.00%	32.170	25.5
04/18/01 <sup>b</sup>	7.86			7.60	9.64	3	4	75.00%	34.089	29.7
04/19/01 <sup>b</sup>	14.36			7.49	21.24	2	4	50.00%	45.193	16.3
04/20/01 <sup>b</sup>	8.46			7.77	9.15	2	4	50.00%	38.811	27.6
04/23/01 <sup>b</sup>	6.54			6.49	6.65	3	3	100.00%	44.938	35.7
04/24/01 <sup>b</sup>	7.48			5.20	10.18	3	3	100.00%	49.275	31.3
04/25/01 <sup>b</sup>	7.28			6.58	15.96	3	4	75.00%	52.950	32.1
04/26/01	5.15	4.645	6.605	4.52	13.57	12	14	85.71%	54.517	45.4
04/27/01	5.55	5.163	5.671	4.02	18.56	64	82	78.05%	57.357	42.1
04/30/01	6.36	5.681	7.407	4.40	18.91	71	88	80.68%	54.800	36.8
05/01/01	7.34	6.171	8.283	4.99	27.54	38	45	84.44%	52.763	31.8
05/02/01	6.95	5.531	8.397	4.66	12.51	12	22	54.55%	50.425	33.6
05/03/01	8.12	6.978	11.463	4.71	14.71	29	32	90.63%	49.867	28.8
05/04/01	7.29	6.549	10.758	5.52	15.67	17	20	85.00%	49.475	32.0
05/07/01	6.77	4.7	9.599	4.70	9.60	6	7	85.71%	55.163	34.5
05/08/01	7.35	5.777	8.502	5.78	8.50	6	7	85.71%	60.200	31.8
05/09/01	5.57	4.244	6.699	4.24	6.70	7	7	100.00%	62.000	42.0
05/10/01	5.68	4.516	6.435	3.79	10.33	11	13	84.62%	67.514	41.1
05/11/01	4.73	4.242	5.745	3.96	5.84	10	12	83.33%	70.083	49.4
05/14/01	3.76	3.636	7.089	3.64	7.09	8	10	80.00%	83.180	62.1
05/15/01	3.87	3.654	15.05	3.65	15.05	7	8	87.50%	83.740	60.4
05/16/01	4.69	3.708	10.808	3.71	10.81	7	8	87.50%	77.383	49.8
05/17/01 <sup>b</sup>	4.75			4.57	10.89	3	4	75.00%	72.850	49.2
05/18/01	6.65	4.641	8.871	3.82	13.62	10	13	76.92%	68.138	35.1
05/21/01	5.64	4.614	11.737	4.61	11.74	7	12	58.33%	65.717	41.4
05/22/01	6.10	3.812	10.647	3.81	10.65	7	13	53.85%	66.314	38.3
05/23/01 <sup>b</sup>	3.56			3.27	3.76	3	7	42.86%	68.000	65.7
05/24/01 <sup>b</sup>	13.10			4.16	22.04	2	7	28.57%	56.614	17.8
05/25/01 <sup>b</sup>						0	4	0.00%		
05/28/01 <sup>b</sup>						0	1	0.00%		
05/29/01 <sup>b</sup>	3.67			3.67	3.67	1	1	100.00%	55.700	63.7
05/30/01 <sup>b</sup>	44.59			44.59	44.59	1	1	100.00%	33.709	5.2
05/31/01 <sup>b</sup>	82.42			76.46	88.38	2	4	50.00%	29.824	2.8
06/01/01 <sup>b</sup>	85.12			85.12	85.12	1	8	12.50%	29.227	2.7
06/05/01 <sup>b</sup>	71.75			71.75	71.75	1	2	50.00%	28.982	3.3
06/07/01 <sup>b</sup>						0	2	0.00%		
06/08/01 <sup>b</sup>						0	1	0.00%		
<b>Totals</b>				<b>3.64</b>	<b>27.54</b>	<b>329</b>	<b>413</b>	<b>79.66%</b>		

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, 2001.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
04/27/01	253	179	70.75%	35	13.83%	7	2.77%	2	0.79%	223	88.14%
04/28/01	11	8	72.73%	1	9.09%		0.00%		0.00%	9	81.82%
04/29/01	32	23	71.88%	6	18.75%		0.00%		0.00%	29	90.63%
04/30/01	35	24	68.57%	4	11.43%	1	2.86%		0.00%	29	82.86%
05/01/01	42	31	73.81%	3	7.14%		0.00%	1	2.38%	35	83.33%
05/02/01	5	4	80.00%		0.00%		0.00%		0.00%	4	80.00%
05/03/01	8	5	62.50%		0.00%		0.00%	1	12.50%	6	75.00%
05/04/01	9	8	88.89%		0.00%		0.00%		0.00%	8	88.89%
05/07/01	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
05/08/01	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/11/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/16/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/18/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/22/01	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
05/24/01	3		0.00%	2	66.67%		0.00%		0.00%	2	66.67%
05/25/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
06/05/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
06/06/01	2		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/08/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/11/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
<b>Totals</b>	<b>413</b>	<b>291</b>	<b>70.46%</b>	<b>51</b>	<b>12.35%</b>	<b>8</b>	<b>1.94%</b>	<b>4</b>	<b>0.97%</b>	<b>354</b>	<b>85.71%</b>

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, 2001.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
04/27/01	17	12	70.59%	2	11.76%		0.00%	1	5.88%	15	88.24%
04/28/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
04/30/01	4	3	75.00%	1	25.00%		0.00%		0.00%	4	100.00%
05/01/01	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
05/03/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/11/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
05/17/01	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/22/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
05/23/01	5	1	20.00%		0.00%		0.00%		0.00%	1	20.00%
05/24/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
05/25/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/04/01	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
06/15/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
06/27/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/28/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
<b>Totals</b>	<b>43</b>	<b>26</b>	<b>60.47%</b>	<b>3</b>	<b>6.98%</b>	<b>0</b>	<b>0.00%</b>	<b>1</b>	<b>2.33%</b>	<b>30</b>	<b>39.77%</b>

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, 2001.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
04/19/01	87	67	77.01%	7	8.05%	1	1.15%		0.00%	75	86.21%
04/27/01	8	5	62.50%		0.00%		0.00%		0.00%	5	62.50%
04/28/01	26	22	84.62%	1	3.85%		0.00%		0.00%	23	88.46%
04/29/01	300	251	83.67%	17	5.67%	6	2.00%		0.00%	274	91.33%
04/30/01	63	55	87.30%	2	3.17%		0.00%		0.00%	57	90.48%
05/01/01	137	122	89.05%	3	2.19%		0.00%		0.00%	125	91.24%
05/02/01	151	126	83.44%	4	2.65%	1	0.66%	1	0.66%	132	87.42%
05/03/01	95	80	84.21%	5	5.26%		0.00%		0.00%	85	89.47%
05/04/01	100	88	88.00%	4	4.00%	1	1.00%		0.00%	93	93.00%
05/07/01	207	178	85.99%	4	1.93%		0.00%		0.00%	182	87.92%
05/08/01	245	202	82.45%	6	2.45%	1	0.41%		0.00%	209	85.31%
05/09/01	100	81	81.00%	1	1.00%		0.00%		0.00%	82	82.00%
05/10/01	100	75	75.00%	5	5.00%	1	1.00%		0.00%	81	81.00%
05/11/01	76	62	81.58%	2	2.63%	1	1.32%	1	1.32%	66	86.84%
05/15/01	189	152	80.42%	4	2.12%	3	1.59%		0.00%	159	84.13%
05/16/01	80	69	86.25%	3	3.75%	1	1.25%		0.00%	73	91.25%
05/17/01	219	183	83.56%	5	2.28%	1	0.46%		0.00%	189	86.30%
05/18/01	44	34	77.27%	1	2.27%		0.00%		0.00%	35	79.55%
05/21/01	152	100	65.79%	5	3.29%		0.00%	1	0.66%	106	69.74%
05/23/01	32	20	62.50%	1	3.13%		0.00%	1	3.13%	22	68.75%
05/24/01	11	10	90.91%		0.00%		0.00%		0.00%	10	90.91%
05/29/01	31	8	25.81%	1	3.23%	2	6.45%		0.00%	11	35.48%
05/30/01	53	10	18.87%	5	9.43%		0.00%		0.00%	15	28.30%
06/01/01	8	1	12.50%		0.00%		0.00%	1	12.50%	2	25.00%
06/04/01	13	2	15.38%	1	7.69%		0.00%		0.00%	3	23.08%
06/05/01	104	9	8.65%	6	5.77%	1	0.96%	1	0.96%	17	16.35%
06/06/01	92	17	18.48%	4	4.35%		0.00%		0.00%	21	22.83%
06/07/01	20	2	10.00%	1	5.00%		0.00%		0.00%	3	15.00%
06/08/01	3		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/11/01	21	2	9.52%	1	4.76%	1	4.76%		0.00%	4	19.05%
06/12/01	126	23	18.25%	2	1.59%	2	1.59%		0.00%	27	21.43%
06/13/01	50	3	6.00%	6	12.00%	1	2.00%		0.00%	10	20.00%
06/14/01	16	2	12.50%		0.00%		0.00%		0.00%	2	12.50%
06/15/01	26	2	7.69%	3	11.54%		0.00%		0.00%	5	19.23%
06/20/01	14		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/21/01	9		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/22/01	9	3	33.33%		0.00%		0.00%		0.00%	3	33.33%
06/25/01	70	9	12.86%	3	4.29%		0.00%		0.00%	12	17.14%
06/26/01	18	1	5.56%		0.00%		0.00%		0.00%	1	5.56%
06/27/01	18	1	5.56%	2	11.11%		0.00%		0.00%	3	16.67%
06/28/01	8		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/29/01	25	5	20.00%		0.00%		0.00%		0.00%	5	20.00%
<b>Totals</b>	<b>3156</b>	<b>2082</b>	<b>65.97%</b>	<b>115</b>	<b>3.64%</b>	<b>24</b>	<b>0.76%</b>	<b>6</b>	<b>0.19%</b>	<b>2227</b>	<b>70.56%</b>

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, 2001.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
04/19/01	9	9	100.00%		0.00%		0.00%		0.00%	9	100.00%
04/27/01	4	3	75.00%	1	25.00%		0.00%		0.00%	4	100.00%
04/28/01	4	2	50.00%	2	50.00%		0.00%		0.00%	4	100.00%
04/29/01	68	58	85.29%	4	5.88%	4	5.88%	1	1.47%	67	98.53%
04/30/01	13	11	84.62%	1	7.69%		0.00%		0.00%	12	92.31%
05/01/01	368	319	86.68%	22	5.98%	4	1.09%		0.00%	345	93.75%
05/02/01	38	31	81.58%	3	7.89%		0.00%		0.00%	34	89.47%
05/03/01	16	12	75.00%	2	12.50%		0.00%		0.00%	14	87.50%
05/04/01	32	26	81.25%	5	15.63%		0.00%		0.00%	31	96.88%
05/07/01	57	46	80.70%	1	1.75%	2	3.51%		0.00%	49	85.96%
05/08/01	44	36	81.82%	4	9.09%		0.00%		0.00%	40	90.91%
05/09/01	51	43	84.31%	5	9.80%		0.00%		0.00%	48	94.12%
05/10/01	5	4	80.00%		0.00%	1	20.00%		0.00%	5	100.00%
05/11/01	9	7	77.78%	1	11.11%		0.00%		0.00%	8	88.89%
05/15/01	29	25	86.21%	2	6.90%		0.00%		0.00%	27	93.10%
05/16/01	16	15	93.75%		0.00%		0.00%		0.00%	15	93.75%
05/17/01	48	38	79.17%	1	2.08%	2	4.17%		0.00%	41	85.42%
05/18/01	9	6	66.67%		0.00%		0.00%		0.00%	6	66.67%
05/21/01	15	10	66.67%		0.00%	1	6.67%		0.00%	11	73.33%
05/22/01	5	4	80.00%		0.00%		0.00%		0.00%	4	80.00%
05/23/01	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
05/24/01	3	2	66.67%		0.00%		0.00%		0.00%	2	66.67%
05/29/01	4	2	50.00%		0.00%		0.00%		0.00%	2	50.00%
05/30/01	2		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/01/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/05/01	7		0.00%	1	14.29%		0.00%		0.00%	1	14.29%
06/06/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/07/01	2		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/08/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/11/01	2		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/12/01	3		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/13/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
06/14/01	2		0.00%	1	50.00%		0.00%		0.00%	1	50.00%
06/15/01	3	1	33.33%		0.00%		0.00%		0.00%	1	33.33%
06/20/01	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
06/25/01	5		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/27/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
06/29/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
<b>Totals</b>	<b>884</b>	<b>716</b>	<b>81.00%</b>	<b>56</b>	<b>6.33%</b>	<b>14</b>	<b>1.58%</b>	<b>1</b>	<b>0.11%</b>	<b>787</b>	<b>89.03%</b>

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, 2001.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/19/01	77	34	44.16%	11	14.29%	3	3.90%		0.00%	48	62.34%
03/20/01	113	55	48.67%	8	7.08%	3	2.65%	1	0.88%	67	59.29%
03/21/01	179	100	55.87%	8	4.47%	8	4.47%		0.00%	116	64.80%
03/22/01	137	69	50.36%	10	7.30%	2	1.46%	3	2.19%	84	61.31%
03/23/01	69	30	43.48%	5	7.25%		0.00%	2	2.90%	37	53.62%
03/26/01	197	107	54.31%	23	11.68%	4	2.03%	2	1.02%	136	69.04%
03/27/01	153	81	52.94%	17	11.11%	3	1.96%		0.00%	101	66.01%
03/28/01	100	58	58.00%	12	12.00%		0.00%		0.00%	70	70.00%
03/29/01	100	55	55.00%	13	13.00%	3	3.00%	1	1.00%	72	72.00%
03/30/01	51	37	72.55%	5	9.80%	2	3.92%	1	1.96%	45	88.24%
04/02/01	153	93	60.78%	14	9.15%	1	0.65%	1	0.65%	109	71.24%
04/03/01	247	130	52.63%	27	10.93%	5	2.02%	4	1.62%	166	67.21%
04/04/01	75	44	58.67%	2	2.67%	4	5.33%		0.00%	50	66.67%
04/05/01	77	38	49.35%	8	10.39%	4	5.19%		0.00%	50	64.94%
04/06/01	48	24	50.00%	1	2.08%	1	2.08%	1	2.08%	27	56.25%
04/09/01	200	123	61.50%	19	9.50%	6	3.00%	3	1.50%	151	75.50%
04/10/01	138	77	55.80%	27	19.57%	1	0.72%	1	0.72%	106	76.81%
04/11/01	70	45	64.29%	9	12.86%	1	1.43%	1	1.43%	56	80.00%
04/12/01	142	106	74.65%	13	9.15%	3	2.11%		0.00%	122	85.92%
04/13/01	50	25	50.00%	10	20.00%	2	4.00%		0.00%	37	74.00%
04/16/01	132	96	72.73%	12	9.09%	1	0.76%	2	1.52%	111	84.09%
04/17/01	96	57	59.38%	12	12.50%	3	3.13%		0.00%	72	75.00%
04/18/01	175	104	59.43%	24	13.71%	3	1.71%	1	0.57%	132	75.43%
04/19/01	100	59	59.00%	9	9.00%	1	1.00%		0.00%	69	69.00%
04/20/01	97	55	56.70%	13	13.40%	1	1.03%	2	2.06%	71	73.20%
04/23/01	199	131	65.83%	26	13.07%	3	1.51%		0.00%	160	80.40%
04/24/01	101	68	67.33%	14	13.86%	3	2.97%	2	1.98%	87	86.14%
04/25/01	101	71	70.30%	13	12.87%	2	1.98%	1	0.99%	87	86.14%
04/26/01	99	71	71.72%	14	14.14%		0.00%		0.00%	85	85.86%
04/27/01	102	76	74.51%	8	7.84%	2	1.96%		0.00%	86	84.31%
04/30/01	120	79	65.83%	11	9.17%		0.00%	2	1.67%	92	76.67%
05/01/01	120	81	67.50%	17	14.17%	2	1.67%		0.00%	100	83.33%
05/02/01	120	76	63.33%	13	10.83%		0.00%	1	0.83%	90	75.00%
05/03/01	140	91	65.00%	16	11.43%	4	2.86%	2	1.43%	113	80.71%
05/04/01	100	62	62.00%	20	20.00%	1	1.00%	1	1.00%	84	84.00%
05/07/01	54	26	48.15%	4	7.41%	2	3.70%	1	1.85%	33	61.11%
05/08/01	50	31	62.00%	7	14.00%	2	4.00%		0.00%	40	80.00%
05/09/01	26	13	50.00%	5	19.23%	1	3.85%		0.00%	19	73.08%
05/10/01	87	59	67.82%	15	17.24%	4	4.60%		0.00%	78	89.66%
05/11/01	90	60	66.67%	12	13.33%	2	2.22%	1	1.11%	75	83.33%
05/14/01	15	11	73.33%	1	6.67%	1	6.67%		0.00%	13	86.67%
05/15/01	31	17	54.84%	8	25.81%	2	6.45%		0.00%	27	87.10%
05/16/01	7	4	57.14%		0.00%		0.00%		0.00%	4	57.14%
05/17/01	11	5	45.45%	2	18.18%	1	9.09%		0.00%	8	72.73%
05/21/01	5	2	40.00%		0.00%		0.00%		0.00%	2	40.00%
05/22/01	2		0.00%		0.00%	2	100.00%		0.00%	2	100.00%
05/24/01	1		0.00%	1	100.00%		0.00%		0.00%	1	100.00%
05/25/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/28/01	2		0.00%		0.00%		0.00%		0.00%	0	0.00%
05/30/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/31/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/01/01	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
<b>Totals</b>	<b>4564</b>	<b>2740</b>	<b>60.04%</b>	<b>519</b>	<b>11.37%</b>	<b>99</b>	<b>2.17%</b>	<b>37</b>	<b>0.81%</b>	<b>3395</b>	<b>74.39%</b>

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, 2001.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/20/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
03/21/01	22	17	77.27%	2	9.09%		0.00%		0.00%	19	86.36%
03/22/01	9	7	77.78%		0.00%		0.00%		0.00%	7	77.78%
03/23/01	16	14	87.50%		0.00%		0.00%		0.00%	14	87.50%
03/26/01	28	20	71.43%	3	10.71%		0.00%		0.00%	23	82.14%
03/27/01	36	20	55.56%	4	11.11%	2	5.56%		0.00%	26	72.22%
03/28/01	26	16	61.54%	3	11.54%		0.00%		0.00%	19	73.08%
03/29/01	32	22	68.75%	3	9.38%	1	3.13%		0.00%	26	81.25%
03/30/01	40	22	55.00%	4	10.00%	1	2.50%		0.00%	27	67.50%
04/02/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/03/01	12	9	75.00%	3	25.00%		0.00%		0.00%	12	100.00%
04/04/01	8	5	62.50%	2	25.00%		0.00%		0.00%	7	87.50%
04/05/01	7	5	71.43%		0.00%		0.00%		0.00%	5	71.43%
04/06/01	6	4	66.67%		0.00%		0.00%		0.00%	4	66.67%
04/09/01	27	20	74.07%	2	7.41%		0.00%		0.00%	22	81.48%
04/10/01	21	17	80.95%	1	4.76%		0.00%		0.00%	18	85.71%
04/11/01	10	8	80.00%	1	10.00%		0.00%		0.00%	9	90.00%
04/12/01	25	23	92.00%	2	8.00%		0.00%		0.00%	25	100.00%
04/13/01	25	19	76.00%	1	4.00%	1	4.00%	1	4.00%	22	88.00%
04/16/01	23	16	69.57%	3	13.04%	1	4.35%		0.00%	20	86.96%
04/17/01	20	17	85.00%		0.00%		0.00%		0.00%	17	85.00%
04/18/01	30	24	80.00%	4	13.33%		0.00%		0.00%	28	93.33%
04/19/01	36	22	61.11%	5	13.89%		0.00%		0.00%	27	75.00%
04/20/01	87	66	75.86%	7	8.05%		0.00%		0.00%	73	83.91%
04/23/01	128	95	74.22%	13	10.16%		0.00%		0.00%	108	84.38%
04/24/01	138	105	76.09%	12	8.70%	2	1.45%		0.00%	119	86.23%
04/25/01	121	95	78.51%	9	7.44%	3	2.48%		0.00%	107	88.43%
04/26/01	113	96	84.96%	7	6.19%		0.00%		0.00%	103	91.15%
04/27/01	100	78	78.00%	7	7.00%		0.00%		0.00%	85	85.00%
04/30/01	120	94	78.33%	11	9.17%	2	1.67%		0.00%	107	89.17%
05/01/01	120	68	56.67%	18	15.00%	1	0.83%		0.00%	87	72.50%
05/02/01	74	55	74.32%	7	9.46%	1	1.35%	2	2.70%	65	87.84%
05/03/01	142	101	71.13%	16	11.27%	1	0.70%		0.00%	118	83.10%
05/04/01	67	46	68.66%	5	7.46%	1	1.49%		0.00%	52	77.61%
05/07/01	8	7	87.50%	1	12.50%		0.00%		0.00%	8	100.00%
05/08/01	17	8	47.06%	5	29.41%		0.00%		0.00%	13	76.47%
05/09/01	4	4	100.00%		0.00%		0.00%		0.00%	4	100.00%
05/10/01	29	23	79.31%	1	3.45%		0.00%	1	3.45%	25	86.21%
05/11/01	29	20	68.97%	3	10.34%	1	3.45%		0.00%	24	82.76%
05/14/01	18	14	77.78%	1	5.56%		0.00%		0.00%	15	83.33%
05/15/01	10	9	90.00%		0.00%		0.00%		0.00%	9	90.00%
05/16/01	12	10	83.33%	1	8.33%		0.00%		0.00%	11	91.67%
05/17/01	10	6	60.00%	3	30.00%		0.00%		0.00%	9	90.00%
05/18/01	12	8	66.67%	3	25.00%		0.00%		0.00%	11	91.67%
05/21/01	8	5	62.50%	1	12.50%		0.00%		0.00%	6	75.00%
05/22/01	6	5	83.33%		0.00%		0.00%		0.00%	5	83.33%
05/23/01	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
05/24/01	5	4	80.00%		0.00%		0.00%		0.00%	4	80.00%
05/25/01	7	4	57.14%		0.00%		0.00%		0.00%	4	57.14%
05/28/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
05/29/01	10	5	50.00%		0.00%		0.00%		0.00%	5	50.00%
05/30/01	11	7	63.64%		0.00%		0.00%		0.00%	7	63.64%
05/31/01	9	3	33.33%		0.00%		0.00%		0.00%	3	33.33%
06/01/01	8	5	62.50%		0.00%		0.00%		0.00%	5	62.50%
06/05/01	7	4	57.14%		0.00%		0.00%		0.00%	4	57.14%
06/07/01	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
06/08/01	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
<b>Totals</b>	<b>1899</b>	<b>1385</b>	<b>72.93%</b>	<b>174</b>	<b>9.16%</b>	<b>18</b>	<b>0.95%</b>	<b>4</b>	<b>0.21%</b>	<b>1581</b>	<b>83.25%</b>

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, 2001.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
03/26/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
04/09/01	5	3	60.00%		0.00%		0.00%		0.00%	3	60.00%
04/10/01	7	3	42.86%	1	14.29%		0.00%		0.00%	4	57.14%
04/11/01	20	17	85.00%	1	5.00%		0.00%		0.00%	18	90.00%
04/12/01	34	24	70.59%	1	2.94%		0.00%		0.00%	25	73.53%
04/13/01	67	50	74.63%	5	7.46%		0.00%		0.00%	55	82.09%
04/16/01	140	110	78.57%	5	3.57%		0.00%		0.00%	115	82.14%
04/17/01	87	75	86.21%	4	4.60%		0.00%		0.00%	79	90.80%
04/18/01	126	107	84.92%	4	3.17%		0.00%		0.00%	111	88.10%
04/19/01	146	125	85.62%	5	3.42%	1	0.68%		0.00%	131	89.73%
04/20/01	101	75	74.26%	2	1.98%		0.00%		0.00%	77	76.24%
04/23/01	33	25	75.76%		0.00%		0.00%		0.00%	25	75.76%
04/24/01	47	36	76.60%	2	4.26%		0.00%		0.00%	38	80.85%
04/25/01	26	20	76.92%		0.00%	1	3.85%		0.00%	21	80.77%
04/26/01	81	71	87.65%		0.00%	1	1.23%		0.00%	72	88.89%
04/27/01	267	219	82.02%	9	3.37%	2	0.75%		0.00%	230	86.14%
04/30/01	120	83	69.17%	2	1.67%	2	1.67%		0.00%	87	72.50%
05/01/01	121	91	75.21%	1	0.83%	3	2.48%		0.00%	95	78.51%
05/02/01	129	86	66.67%	4	3.10%	1	0.78%		0.00%	91	70.54%
05/03/01	130	91	70.00%	4	3.08%		0.00%		0.00%	95	73.08%
05/04/01	85	62	72.94%	3	3.53%		0.00%		0.00%	65	76.47%
05/07/01	101	75	74.26%	1	0.99%		0.00%		0.00%	76	75.25%
05/08/01	144	116	80.56%	3	2.08%	1	0.69%		0.00%	120	83.33%
05/09/01	100	71	71.00%	3	3.00%	1	1.00%		0.00%	75	75.00%
05/10/01	156	117	75.00%	2	1.28%	1	0.64%		0.00%	120	76.92%
05/11/01	99	71	71.72%	2	2.02%		0.00%		0.00%	73	73.74%
05/14/01	80	60	75.00%	1	1.25%	1	1.25%	1	1.25%	63	78.75%
05/15/01	98	63	64.29%	2	2.04%	1	1.02%		0.00%	66	67.35%
05/16/01	56	38	67.86%	2	3.57%		0.00%		0.00%	40	71.43%
05/17/01	89	58	65.17%		0.00%	1	1.12%		0.00%	59	66.29%
05/18/01	117	74	63.25%	2	1.71%	2	1.71%		0.00%	78	66.67%
05/21/01	62	29	46.77%		0.00%		0.00%		0.00%	29	46.77%
05/22/01	63	32	50.79%	4	6.35%	1	1.59%		0.00%	37	58.73%
05/23/01	71	31	43.66%	2	2.82%	2	2.82%	1	1.41%	36	50.70%
05/24/01	25	10	40.00%		0.00%	1	4.00%		0.00%	11	44.00%
05/25/01	31	7	22.58%	1	3.23%		0.00%		0.00%	8	25.81%
05/28/01	9	2	22.22%		0.00%	1	11.11%		0.00%	3	33.33%
05/29/01	9	6	66.67%		0.00%		0.00%		0.00%	6	66.67%
05/30/01	12		0.00%	1	8.33%		0.00%		0.00%	1	8.33%
05/31/01	23	5	21.74%	1	4.35%		0.00%		0.00%	6	26.09%
06/01/01	24	4	16.67%	1	4.17%		0.00%		0.00%	5	20.83%
06/05/01	6	1	16.67%		0.00%		0.00%		0.00%	1	16.67%
06/07/01	2		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/08/01	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
<b>Totals</b>	<b>3152</b>	<b>2244</b>	<b>71.19%</b>	<b>81</b>	<b>2.57%</b>	<b>24</b>	<b>0.76%</b>	<b>2</b>	<b>0.06%</b>	<b>2351</b>	<b>74.59%</b>

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, 2001.

Date	Number Tagged	Ints GRJ	% GRJ	Ints GOJ	% GOJ	Ints LMJ	% LMJ	Ints MCJ	% MCJ	Grand Total Ints	Total % Obs.
04/05/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/09/01	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
04/10/01	1		0.00%	1	100.00%		0.00%		0.00%	1	100.00%
04/11/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/13/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
04/16/01	2	2	100.00%		0.00%		0.00%		0.00%	2	100.00%
04/18/01	4	3	75.00%		0.00%		0.00%		0.00%	3	75.00%
04/19/01	4	2	50.00%		0.00%		0.00%		0.00%	2	50.00%
04/20/01	4	2	50.00%		0.00%		0.00%		0.00%	2	50.00%
04/23/01	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
04/24/01	3	3	100.00%		0.00%		0.00%		0.00%	3	100.00%
04/25/01	4	3	75.00%		0.00%		0.00%		0.00%	3	75.00%
04/26/01	14	12	85.71%	1	7.14%		0.00%		0.00%	13	92.86%
04/27/01	82	64	78.05%	3	3.66%		0.00%	2	2.44%	69	84.15%
04/30/01	88	71	80.68%	2	2.27%	1	1.14%	1	1.14%	75	85.23%
05/01/01	45	38	84.44%	1	2.22%	1	2.22%		0.00%	40	88.89%
05/02/01	22	12	54.55%	2	9.09%	2	9.09%	1	4.55%	17	77.27%
05/03/01	32	29	90.63%		0.00%		0.00%		0.00%	29	90.63%
05/04/01	20	17	85.00%		0.00%		0.00%		0.00%	17	85.00%
05/07/01	7	6	85.71%		0.00%		0.00%	1	14.29%	7	100.00%
05/08/01	7	6	85.71%	1	14.29%		0.00%		0.00%	7	100.00%
05/09/01	7	7	100.00%		0.00%		0.00%		0.00%	7	100.00%
05/10/01	13	11	84.62%	1	7.69%		0.00%		0.00%	12	92.31%
05/11/01	12	10	83.33%		0.00%		0.00%		0.00%	10	83.33%
05/14/01	10	8	80.00%	2	20.00%		0.00%		0.00%	10	100.00%
05/15/01	8	7	87.50%		0.00%		0.00%		0.00%	7	87.50%
05/16/01	8	7	87.50%	1	12.50%		0.00%		0.00%	8	100.00%
05/17/01	4	3	75.00%		0.00%		0.00%		0.00%	3	75.00%
05/18/01	13	10	76.92%		0.00%		0.00%		0.00%	10	76.92%
05/21/01	12	7	58.33%	1	8.33%		0.00%		0.00%	8	66.67%
05/22/01	13	7	53.85%		0.00%		0.00%		0.00%	7	53.85%
05/23/01	7	3	42.86%		0.00%		0.00%		0.00%	3	42.86%
05/24/01	7	2	28.57%		0.00%		0.00%		0.00%	2	28.57%
05/25/01	4		0.00%	2	50.00%		0.00%		0.00%	2	50.00%
05/28/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
05/29/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/30/01	1	1	100.00%		0.00%		0.00%		0.00%	1	100.00%
05/31/01	4	2	50.00%		0.00%		0.00%		0.00%	2	50.00%
06/01/01	8	1	12.50%	1	12.50%		0.00%		0.00%	2	25.00%
06/05/01	2	1	50.00%		0.00%		0.00%		0.00%	1	50.00%
06/07/01	2		0.00%		0.00%		0.00%		0.00%	0	0.00%
06/08/01	1		0.00%		0.00%		0.00%		0.00%	0	0.00%
<b>Totals</b>	<b>485</b>	<b>366</b>	<b>75.46%</b>	<b>19</b>	<b>3.92%</b>	<b>4</b>	<b>0.82%</b>	<b>5</b>	<b>1.03%</b>	<b>394</b>	<b>81.24%</b>

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