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Lower Granite Dam Smolt Monitoring Program

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LOWER GRANITE DAM
SMOLT MONITORING PROGRAM

ANNUAL REPORT

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Abstract

The 2005 fish collection season at Lower Granite Dam (LGR) was characterized by average water temperatures, below average flows, above average spill, low levels of debris and the record number of smolts collected compared to the previous five years. With the continued release of unclipped supplementation chinook and steelhead above LGR, we cannot accurately distinguish wild chinook, steelhead, and sockeye/kokanee in the sample. For the purposes of this report we will designate fish as clipped and unclipped. This season a total of 13,030,967 juvenile salmonids were collected at LGR. Of these, 12,099,019 were transported to release sites below Bonneville Dam, 12,032,623 by barge and 66,396 by truck. An additional 898,235 fish were bypassed to the river due to over-capacity of the raceways, barges or trucks and for research purposes.

This was the first season of summer spill at LGR. Spill was initiated at 12:01am June 20 as directed by the ruling set forth by Judge James Redden of the United States District Court (Order CV 01-640-RE). In addition, the Lower Granite project also conducted a summer spill test alternating spill and spill patterns between spill to the gas cap without the removable spillway weir (RSW) and spill with up to 20 kcfs utilizing the RSW.

Because of the forecast low flow this year, most hatchery reared subyearling fall chinook were released up to three weeks early. With the unexpected high flows in late May and early June, more than 90 % of the subyearling chinook were collected prior to the initiation of the court ordered summer spill program.

Collection number fluctuations reflect river flow and project operations for any given year. For example, low flow years (2001, 2004 and 2005) result in higher collection numbers. Court ordered spill throughout the summer migration will directly affect collection of fall subyearling chinook collection numbers. The editors of this report urge the reader to use caution when comparing fish collection numbers between years, considering both annual river flows and annual project operations, because both affect fish migration and collection.

Introduction

The Smolt Monitoring Program (SMP) is designed to provide a consistent, real-time database on fish passage and document the migration characteristics of the stocks of salmon and steelhead in the Columbia Basin. Each SMP site collects daily data on fish passage, river conditions (total river flow, spill and flow through the powerhouse) and other site-specific data required by Fish Passage Center (FPC) during the migration season. The FPC staff oversees and guides the SMP sampling program. The Fish Passage Center uses the SMP data collected at the SMP sites to work with fishery managers to seek appropriate flow and spill measures to enhance smolt passage and survival as identified in the hydro system's operations requirements set forth in NMFS Biological Opinion and in the Northwest Power Planning Council's Fish and Wildlife Program (NMFS, 2004).

Lower Granite Dam is located on the Snake River approximately 173 kilometers upstream of its confluence with the Columbia River. Lower Granite Dam is the first of eight dams and the first of four juvenile fish collection facilities on the Snake River that migratory juvenile salmonids from the upper Snake River and its tributaries encounter on their way to the ocean. All four collection and transportation sites on the Snake River are operated by the Corps of Engineers. Most of the fish collected are transported in barges and trucks to release locations below Bonneville Dam on the Columbia River. They then complete the remaining 225 kilometer journey to the ocean on their own. Some smolts are bypassed back to the river at LGR to continue their downstream migration through the hydro system. Some smolts migrate past LGR, avoiding the juvenile collection system or may be collected at facilities below LGR and transported or migrate past the remaining dams, 694 kilometers to the Pacific Ocean.

At LGR, SMP staff collected and recorded data by inspecting a sample of each day's total smolt collection. Staff technicians and biologists identified and recorded the following information for each fish sampled; species, descaling, diseases and hatchery marks (fin clips, coded-wire tags, and elastomer tags, fin erosion on unclipped steelhead and freeze brands). Lengths, weights, injuries, and external signs of disease and/or stress were taken on a sub-sample of up to one hundred fish of each species, daily. The staff also collected daily river flow and river temperature data, river turbidity, monitored and assisted on-site research activities, conducted daily juvenile fishway inspections, monitored dam operations as they pertain to fish passage conditions, maintained records of sample and collection data, transmited daily reports to the FPC and the Corp of Engineers and prepareed weekly and annual reports. The SMP has been active at LGR since 1984 and operated by the Washington State Department of Fish and Wildlife (WDFW) since 1988.

River Conditions

Flow

Flows in the Snake River were the fifth lowest since 1997 (Table 1). The flow and spill monthly averages in Table 1 reflect changes to previous years flow data. River flows for the last few days of March ranged between 18.30 kcfs and 47.15 kcfs. Flows in April averaged 41.88 kcfs and ranged between 36.33 kcfs and 54.85 kcfs. In May, river flows averaged 90.11 kcfs and ranged between 45.82 kcfs and 139.47 kcfs. Peak flow of 139.47 kcfs occurred May 21 (Table 2).

River flows averaged 58.66 kcfs in June, compared to 74.16 kcfs in June of 2004 and 92.96 for the 1997 to 2004 average. Flows decreased during July, averaged 38.02 kcfs and ranged between 54.87 kcfs July 1 and 35.13 kcfs July 31. August, September and October flows averaged 24.12 kcfs, 17.90 kcfs and 16.82 kcfs respectively (Table 1).

Table 1. Comparison of average monthly river flow and spill at LGR, 1997-2005.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	'97-04 Avg.
Flow (kcfs)										
April[1]	122.5	65.0	97.5	83.51	35.65	70.92	67.17	49.34	40.49	73.81
May	169.2	139.3	110.8	84.15	63.15	80.11	91.27	77.83	90.11	101.99
June	162.8	115.4	135.8	64.43	36.52	95.44	93.47	74.16	58.66	97.25
July	69.8	62.4	55.5	37.97	26.64	39.47	32.93	35.44	38.02	45.03
August	46.9	33.7	38.2	26.30	24.01	29.49	26.24	26.82	24.12	31.45
September	35.2	26.4	23.0	22.01	14.48	21.76	21.06	26.46	17.90	23.80
October	35.5	24.3	23.4	22.64	15.25	16.93	15.62	18.09	16.82	21.47
Spill (kcfs)										
April[1]	26.4	11.4	30.2	16.87	0.00	18.95	15.44	10.11	0.04	16.16
May	58.7	45.1	41.9	21.56	0.00	28.69	29.56	3.97	12.88	28.69
June	62.1	29.0	46.4	20.74	0.00	34.71	24.02	5.70	11.50	27.83
July	3.3	3.3	0.5	0.00	0.00	6.46	0.19	0.00	22.96	1.72
August	0.6	0.0	0.3	0.00	0.48	0.08	0.34	0.01	12.80	0.22
September	1.0	0.0	0.0	0.00	0.01	0.08	0.00	0.86	0.42	0.24
October	0.0	0.0	0.0	0.57	0.02	0.00	0.29	0.00	0.00	0.11

1 Includes March 26-31

Table 2. Annual peak flows (kcfs) and corresponding dates at LGR, 1997-2005.

Peak Flows	1997	1998	1999	2000	2001	2002	2003	2004	2005
	225.82	214.66	192.63	115.03	90.51	136.81	210.77	130.79	139.47
Date	(May 18)	(May 28)	(May 27)	(April 24)	(May 17)	(June 1)	(June 1)	(May 30)	(May 21)

Flows in 2005 exceeded 80 kcfs on 27 days, 90 kcfs on 14 days, 100 kcfs on nine days, 110 kcfs on seven days, 120 kcfs on six days and 130 kcfs on three days. Flows in 2004 exceeded 100 kcfs for 13 consecutive days, from May 28 to June 9 and peaked at 130.79 kcfs May 30. Flows in 2003 exceeded 100 kcfs on 20 consecutive days from May 25 through June 13, 2002 flows exceeded 100 kcfs on 20 days but not consecutively. Flows did not exceed 100 kcfs on any day in 2001.

Spill

The COE spilled water during the spring and summer migration periods this season. Powerhouse capacity has been reduced to about 85 Kcfs because Unit #1 has been off line since 2003. The COE utilized the RSW intermittently to spill inflow in excess of powerhouse capacity and/or when fish collection numbers exceeded the capacity of the Juvenile Fish Facility. Due to high fish mortality at the Juvenile Fish Facility June 2, Fish Managers directed the project to spill water from 0700 hours June 2 to 2400 hours June 3. Spill was initiated at 1201 hours June 20 and ended at 2000 hours September 2 as directed by the ruling set forth by Judge Redden.

Several spill events occurred in September. The COE spilled water from 0700 hours September 1 to 1900 hours September 2 while digital exciters were installed on the powerhouse units. There was spill from 1200 to 1500 hours on September 9 for line testing. Intermittent spill occurred from 1800 hours September 21 to 1800 hours September 23 to accommodate Doble testing (Figure 1).

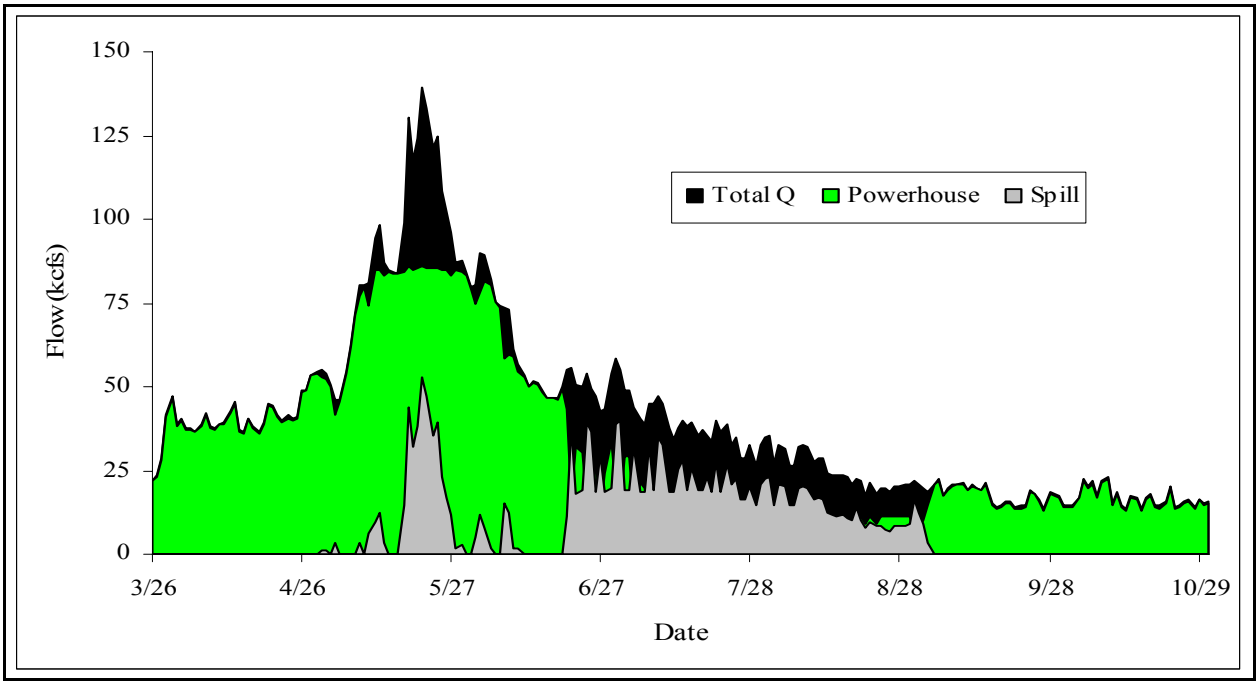

Figure 1. Average total flow, spill and powerhouse flow at LGR, 2005.

The Snake River projects were drafted to minimum operation pool (MOP) April 13. Lower Granite pool was drafted to 733-734 feet above mean sea level (MSL) and the Little Goose pool to 633-634 feet above MSL. Little Goose pool was refilled to 636-637 feet above MSL September 18 and remained that way throughout the rest of the fish sampling season to aid adult fish passage operations at LGR. Lower Granite reservoir was refilled in September 18 to aid barge traffic in Lewiston and Clarkston.

Temperature

The juvenile fish facility water temperature is taken from the sample tank outside the fish lab, once daily at approximately 0700 hours. The 2005 facility water temperatures were below average (1996-2004) during the first week of the season and average for the summer and at the end of the season, October 31. The facility water temperature was 7.1°C (44.8°F) at the beginning of the fish collection season March 26 compared to 8.5°C (47.3°F) in 2004 and 7.2°C (44.9°F) in 2003. The 2005 facility water temperature remained below 15.6°C (60.1°F) until June 21, about the average date compared with years 1996-2004, which had a range from June 12 to June 27. The 2005 facility water temperature did not reach 20.5°C (69.0°F) at any time during the 2005 season, the only year in the last 14 years (Table 3). The peak water temperature of 20.2°C (68.4°F) July 22 is the lowest peak facility water temperature dating back to 1992. Facility water temperatures did not drop below 15.6°C until October 10 (October 21 in 2004) and then decreased to 13.7°C (56.7°F) on the last day of the sampling season, October 31.

The highest water temperatures recorded at LGR since 1992 was 23.0°C (73.4°F), occurring in 1992, 1994 and 1998. The greatest number of days in a season when the facility water temperature was equal to or exceeded 20.5°C occurred in 1998 (66). The greatest number of consecutive days exceeding 20.5°C was in 1994 (52). The earliest date for this temperature was in 2003 (Table 3).

Dworshak Dam on the Clearwater River in Idaho began increasing outflows to 12.0 kcfs for flow and temperature augmentation mid-July (July 9-15) until early September, when outflows began decreasing gradually to 1.5 kcfs September 18. Generally, the water temperature released at Dworshak Dam varies from 7.2°C-9.2°C (45.0°F-48.6°F).

Table 3. Annual temperature maximums at LGR, 1992-2005.

Year	Maximum Temp. ºC (ºF)	Maximum Temp. Date(s)	No. of days Temp. was above ≥20.5ºC (69.0ºF)	No. of consecutive days Temp. was above ≥20.5ºC (69.0ºF)	First date Temp. was above ≥20.5ºC (69.0ºF)
1992	23.0 (73.4)	8/27-8/28	34	34	7/30
1993	21.1 (70.0)	8/23	7	6	8/22
1994	23.0 (73.4)	8/17-8/24	56	52	7/6
1995	21.0 (69.8)	7/18-7/23; 7/25-7/26	19	12	7/18
1996	22.0 (71.6)	7/31	28	20	7/18
1997	22.0 (71.6)	9/4-9/14	30	29	8/6
1998	23.0 (73.4)	9/9-9/11; 9/17	66	27	7/10
1999	20.5 (69.0)	8/25; 8/28-8/29	3	2	8/1
2000	20.6 (69.1)	8/10	2	2	8/9
2001	21.5 (70.7)	7/8; 7/11	8	5	7/6
2002	21.5 (70.7)	7/25	6	5	7/18
2003	22.6 (72.7)	7/31	40	8	6/29
2004	22.1 (71.8)	7/24	32	17	7/22
2005	20.2 (68.4)	7/12	0	0	***

Temperature units (TU), the number of degrees Fahrenheit above 32°F, are one measure of the relative temperature over a period of time. The 1,680 TUs recorded for the spring migration, April 1 through June 20, 2005 is identical to the 1992-2003 average and is 3.3% less than the 2004 total (Figure 2). Temperature Unit totals range from 1,475 to 1,839 from 1992 to 2005. The 2005 spring migration TU total of 1,680 is 8.6% and 8.4% less than the 1992 and 1994 totals, respectively, the years with the highest totals. The 2005 summer/fall total of 4,287 TUs from June 21-October 31 is 2.3% less than the 1992-2003 TU average of 4,390 and 4.0% less for the same time frame in 2004 (Figure 3). Temperature Unit totals from 1992 to 2005 range from 4,160 to 4,647. From April 1 through October 31, 2005, the season total of 5,968 TUs is 3.8% less than the 2004 total of 6,202 TUs and is 1.7% less than the 1992-2003 average of 6,070 TUs (Figure 4).

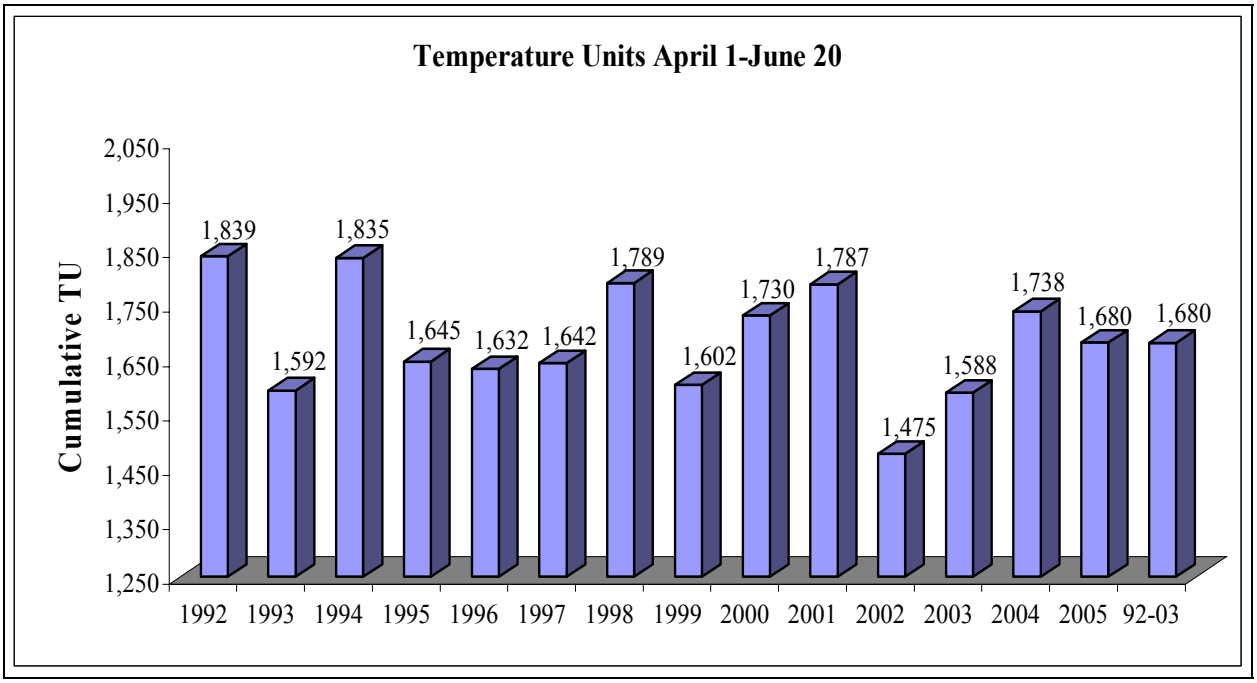

Figure 2. Cumulative temperature units at LGR April 1 to June 20, 1992-2005.

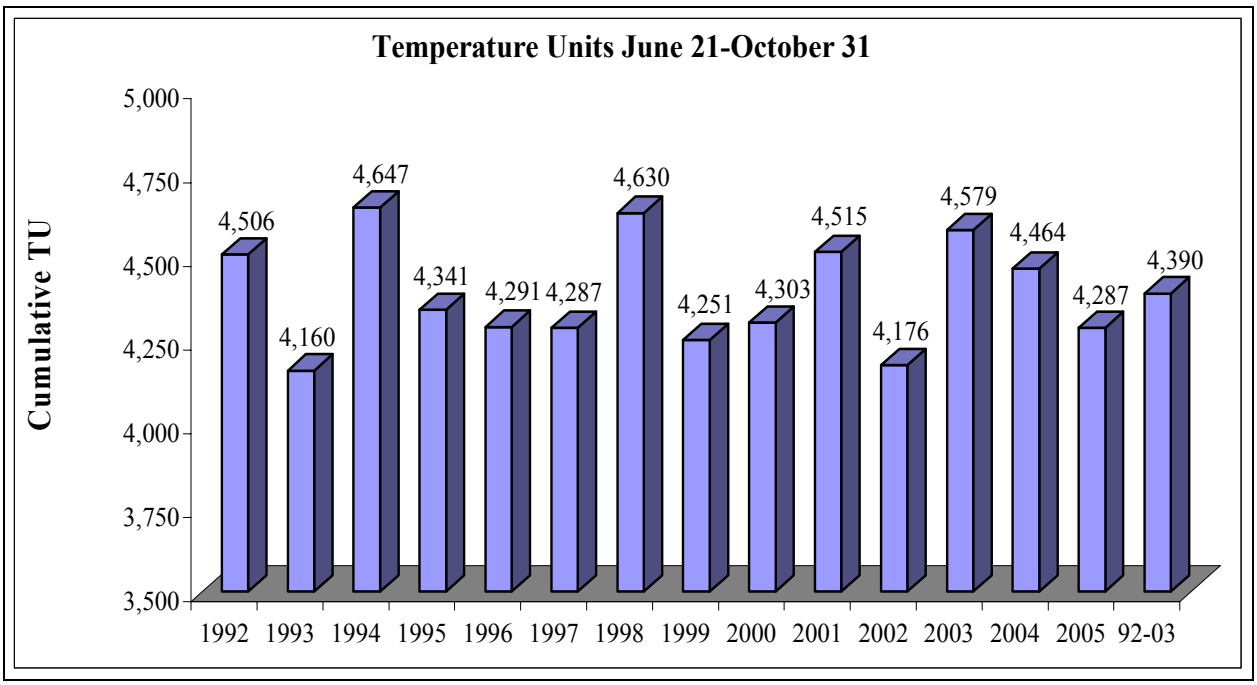

Figure 3. Cumulative temperature units at LGR June 21 to October 31, 1992-2005.

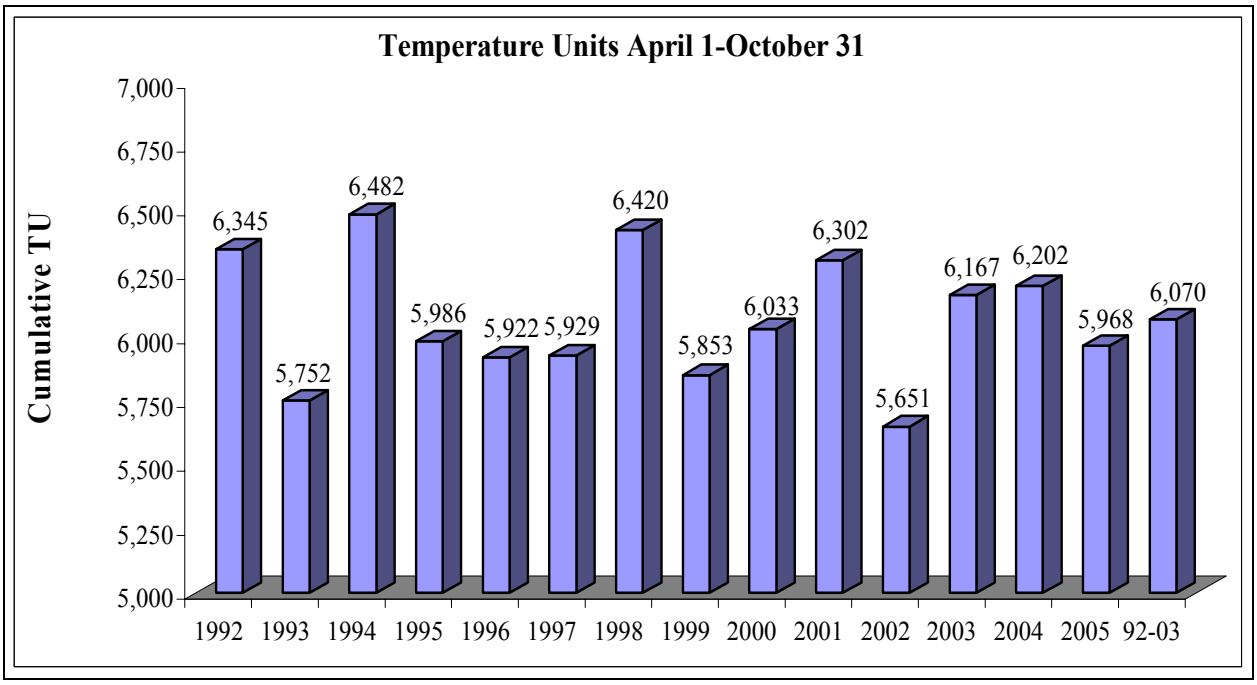

Figure 4. Cumulative temperature units at LGR from April 1 to October 31, 1992-2005.

Debris

We have measured the volume of small woody debris collected in the sample tank daily since 1998. Additionally, we made daily estimates of floating debris in the forebay and recorded forebay debris removal events, trash rack raking events and de-watering screen-cleaning events. Daily facility debris loads were estimated based on daily sample tank accumulations and sample rates. The volume of woody debris too large to pass through the separator bars was not estimated.

A total of 223.4 cubic feet of small woody debris passed through the fish facility in 2005. This is a 5.9% decrease from the 2004 total of 237.4 cubic feet of small woody debris. Daily debris accumulation averaged 1.02 cubic feet per day (Table 4).

Table 4. Debris levels at LGR, 1998-2005.

	Peak Flows in	Cubic Feet of Debris in the Sample		Cubic Feet of Debris in the Collection	
Year	Cubic Feet/Sec.	Daily Ave.	Season Total	Daily Ave.	Season Total
1998	214	0.68	150.1	4.27	939.3
1999	193	0.47	107.7	3.17	728.9
2000	115	0.16	34.7	0.96	211.8
2001	90	0.13	29.6	0.79	173.8
2002	137	0.03	6.6	0.41	90.2
2003	210	0.16	35.6	4.80	1,056.8
2004	131	0.19	41.9	1.08	237.4
98-04 ave.	156	0.26	60.7	2.23	533.4
2005	139	0.17	36.4	1.02	223.4

Debris peaks at the juvenile fish facility typically occur when the facility is first watered up, after reservoir fluctuations, turbulent weather events and correspond to high flows during the spring runoff. This year debris accumulation at the juvenile fish facility followed this trend with peaks shortly after startup on April 2, on May 9 as flows increased and May 14 as flow increased to the season's peak flows seven days later on May 21. Late season debris is the result of leaves rather than woody debris accumulating at the juvenile fish facility (Figure 5).

Towing debris away from the powerhouse with the use of log booms has not been done since 1999 when the floating woody debris in the forebay reached a maximum estimated area of four acres between June 17 and early July. Floating debris reached a maximum of two acres this year. When the Removable Spillway Weir (RSW) attached to spillbay one is in operation, floating debris was flushed down river and towing debris using the log booms is not needed.

The volume of debris measured at the Juvenile Fish Facility shows a correlation to the amount of descaling observed in the daily samples (Figure 5).

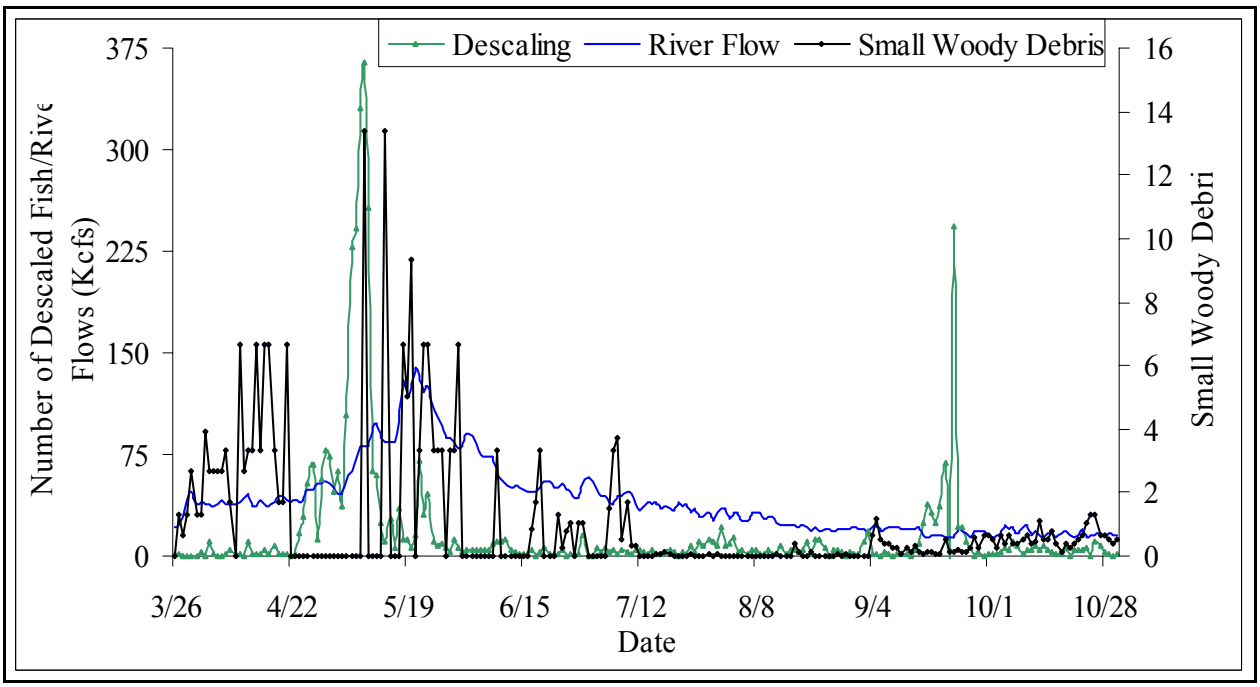

Figure 5. Estimated daily small woody debris accumulation in the juvenile fish collection system, river flows and descaling in the sample at LGR, 2005.

The LGR Juvenile Fish Facility primary dewatering structure consists of an inclined screen of stainless steel mesh supported by heavy bar screen just upstream from the porosity control perforated plate for the separator. There is no mechanical cleaning device on this screen. Corp of Engineers staff clean this screen with a long handled brush or scraper at periods ranging from every hour to once or twice per day depending on amount of debris accumulation. When the incline screen on the separator system becomes severely clogged with debris, it is necessary to go into temporary bypass mode by closing the dewatering valve below the screen and opening the 72-inch bypass valve. This takes pressure off of the incline screen and allows debris to either float off or be brushed off easily. Typically, it takes 20 minutes to complete this procedure during which time fish are bypassed back to the river. Fish were bypassed during 36 cleaning events in 1999, none in 2000, once in 2002 ten in 2003, none in 2004 and five in 2005.

Turbidity

Turbidity (water clarity or visibility) was measured daily using a secchi disk, a six-inch black and white disk attached to the end of a two-meter rod with graduations in tenths of feet. Measurements were taken between 10 A.M. and noon from the surface of the fish ladder adjacent to the adult fish viewing windows. Visibility and flow relationships were similar to those observed in previous years when peak flows carrying suspended solid particle materials resulted in reduced visibility (Figure 6). Visibility and fish collection also followed the pattern of increased fish collection during periods of increased turbidity (Figure 7).

This season we recorded six distinctive increases in turbidity. Four of these increases correspond to increased river flows. As flows increased on March 30 to 45.15, visibility decreased to 2.0 feet on April 4. As flow increased from 45.82 on May 4 to 80.62 on May 10, visibility decreased to 0.5 feet on May 9. Flows continued to increase and peaked at 130.25 on May 18 as visibility dropped to 1.5 feet on May 19. Flows decreased from May 21 until May 31

and then increased slightly to 89.43 kcfs on June 3 with a corresponding decrease in visibility. Rains in early July and September also resulted in a decrease in visibility (Figures 6).

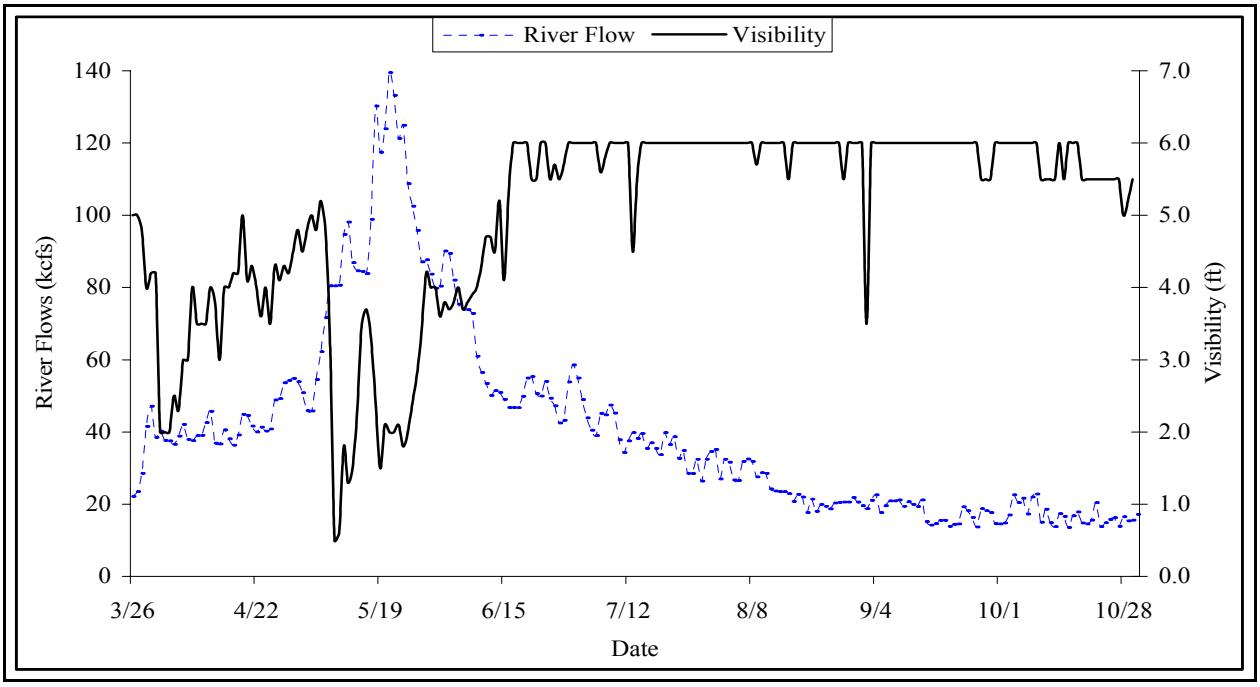

Figure 6. Fish ladder visibility and river flows at LGR, 2005.

Fish collection generally increases with the increase in turbidity. This season, as visibility decreased to 0.5 feet on May 9, fish collection increased to 965,600 (peak collection day) on May 10 (Figure 7).

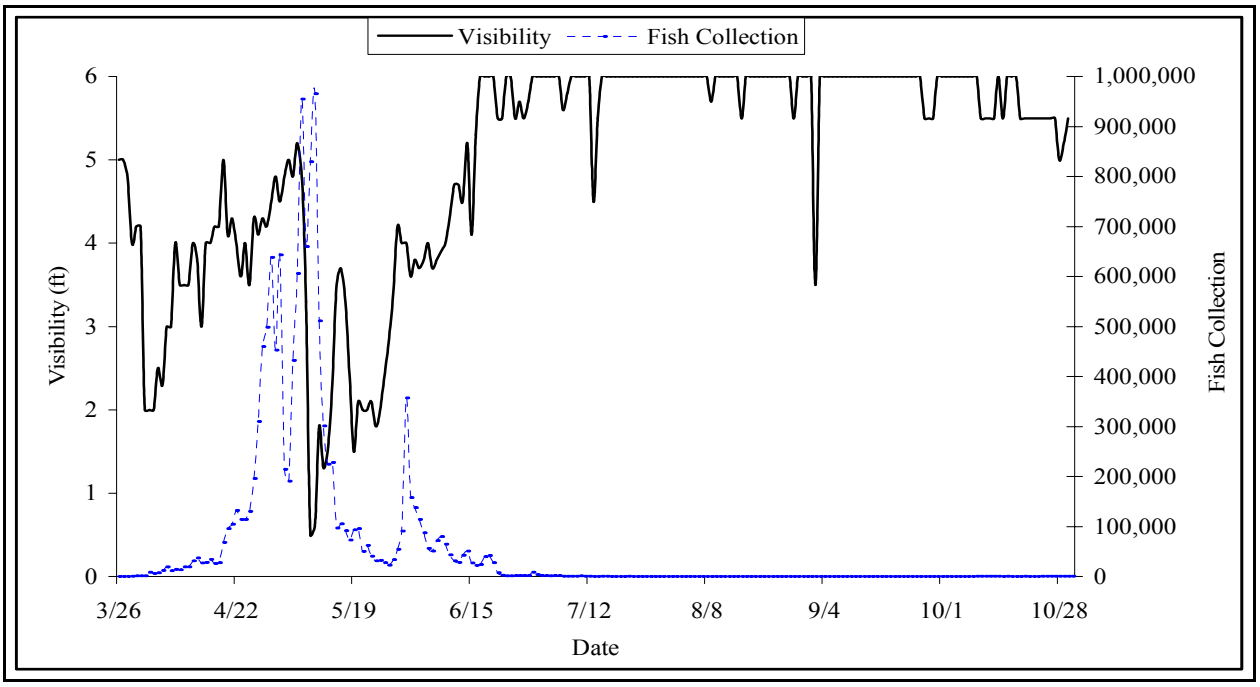

Figure 7. Fish ladder visibility and smolt collection at LGR, 2005.

Sample Program and Summary

Overview

Daily samples of fish from the general collection were counted by hand and examined throughout the season. Sample data included counts by species, weights, lengths and descaling data and were recorded and summarized daily to provide real-time information for the Smolt Monitoring Program and for the Corps of Engineers transportation program. Daily samples were collected over a 24-hour period starting and ending at 0700 and processed between 0730 and 1000 each day. In the latter part of the season when collection numbers declined and the sample rate was increased to 100%, daily samples were processed every-other-day. At different times during the season researchers utilized anesthetized fish from the sample for marking and study purposes. We sampled a total of 129,907 smolts, 1.0% of the total collection this season (Table 6 and 7). Daily sample size averaged 588 smolts compared to 600 in 2004, 484 in 2003 and 470 in 2002. Sample size ranged between three and 4,828 compare to 14 and 5,512 smolts in 2004, 14 and 1963 smolts in 2003 and 35 and 3,314 in 2002.

Daily sample procedure

Fish diverted to the sample tank were held for up to 24 hours prior to examination. The 24-hour sample period started at 0700. At the end of each 24-hour sampling period the entire sample was processed. Screens in the sample holding tank were moved forward to crowd fish to the front of the tank. Once the fish were crowded, small groups of fish were guided into pre-anesthetic chambers through knife gates. Batch sizes typically ranged between 30 and 60 fish per chamber. The fish anesthetic, ethyl m-aminobenzoate methanosulfonate (MS-222®) was added to the chamber to obtain a concentration of about 62 mg/l. At this concentration, about 95 percent of the fish were sedated within three minutes. Once anesthetized, these fish were flushed through the exit valve sending them to the sorting trough inside the lab. As water temperatures increased the volume of MS-222 stock solution used, decreased (Figure 18)..

The sorting trough is part of a re-circulating water system with temperature control and aeration. The anesthetic levels in the system are set to keep fish sedated and easy to handle during the sample. Typically, the MS-222 levels averaged between 55-60 mg/L. Sample fish remained in the sorting tank for as little as five seconds and up to five minutes. We strive to process fish within three minutes of entering the tank to minimize the effects of sedation and handling.

All fish handled in the sorting trough were enumerated by species, examined for marks, and descaling. We strive to select clipped and unclipped chinook and steelhead at random for the detailed sub-sample throughout the season. However, as numbers of these species groups decline or are present in very low numbers, it becomes difficult to ensure the detailed sub-sample is random. Once we switch to a 100 % sample in mid-summer, we sample all or nearly all fish collected for the sample. For sockeye/kokanee and coho, we seldom have sufficient numbers in the sample for a random detailed sub-sample. Typically any sockeye/kokanee or coho that are present are sampled and thus represent 100 % of these groups in the sample. A detailed sub-sample of up to 100 fish of each species was conducted during each daily sample. In the detailed sub-sample fish were held in a water-filled tray on an electronic balance as we recorded species, individual fish length and weight, unique hatchery marks, descaling, injuries and external symptoms of disease. This detailed sub-sample provides the Corps with fish per pound and species composition data which is used to calculate raceway, barge and truck loading densities.

Immediately after sampling, fish were routed in fresh water to the recovery tank on non-transport days or routed directly onto a waiting truck or barge on transport days. The maximum time that any fish was held at the fish facility was 48 hours.

Sample rates

The sample system at LGR includes two primary slide gates located in the bottom of the flumes a few feet downstream of the separator. These slide gates are controlled by a timer calibrated in tenths of a minute. When the slide gates are closed fish are sent to a sample holding tank at the separator. The primary gates can be set to override the sample if a pit tagged fish is detected. The sample holding tank at the separator has four 4-inch counter tunnel exits connected to a 12 inch pipe leading to the primary sample tank which is divided into two equal halves, each with two pre-anesthetization chambers. Corp of Engineer staff set the slide gates to open and close six times per hour. The length of time the gates are closed depends upon the sample rate. For example, if the sample rate is 10%, the gate closes for sixty seconds, six times per hour for a total of six minutes, or one tenth of an hour. The sample rate is determined by the number of fish entering the system with the attempt to sample between 250 and 750 fish (Table 5).

Table 5. Lower Granite Dam Juvenile Fish Facility sample rate guidelines.

Estimated Daily Collection	Sample Rate (%)	Equivalent Multiplier 1/sample rate	Estimated Number of Fish in Sample
Emergency	0.50%	200	
> 75,000	0.70%	143	>525
50,000 - 75,000	1.00%	100	500 - 750
35,000 - 50,000	1.50%	66.6	525 - 750
25,000 - 35,000	2.00%	50	500 - 750
16,500 - 25,000	3.00%	33.3	495 - 750
12,500 - 16,500	4.00%	25	500 - 660
10,000 - 12,500	5.00%	20	500 - 625
7,500 - 10,000	7.00%	14.3	525 - 700
5,000 - 7,500	10.00%	10	500 - 750
4,000 - 5,000	12.50%	8	500 - 625
3,000 - 4,000	15.00%	6.66	450 - 600
2,500 - 3,000	20.00%	5	500 - 600
1,500 - 2,500	25.00%	4	375 - 625
500 - 1,500	50.00%	2	250 - 750
< 500	100.00%	1	< 500

The PIT tag diversion system was operated in the standard diversion mode (NON-DIVERT during the sample), between March 25 at 0700 hours and July 26 at 1200 hours. During this time, the sample diversion gate overrode the PIT-tag diversion gate and any fish present during a sample diversion gate operation went to the sample holding tank. From July 26 at 1200 hours until the end of the season, the PIT-tag diversion system was set to divert all PIT-tagged fish, overriding the sample diversion gate.

Season sample summary

Sampling began at LGR Juvenile Fish Facility at 0700 hours March 26 and continued daily through October 31. The sample rate was set at 10% March 26 and fluctuated throughout the season based on daily fish collection numbers and Fish Passage Center (FPC) guidelines (Table 5). On July 15 the sample rate was set at 100% when collection numbers declined. The sample rate was lowered to 25% between October 11 and October 15 due to increased fish collection, returned to 100% October 16 when fish collection declined and remained unchanged through the end of the season October 31. This season, 220 daily samples were processed.

A total of 129,907 fish, 1.00% of the total collection, was sampled in 2005 compared to 132,011 fish (1.1%) in 2004, 106,503 fish (1.7%) in 2003, 103,396 fish (2.6%) in 2002 and 149,291 fish (1.8%) in 2001 (Table 6). The total number of fish sampled by species included: 29,204 clipped yearling chinook, 14,240 unclipped yearling chinook, 8,757 clipped subyearling fall chinook, 32,260 unclipped subyearling fall chinook, 32,249 clipped steelhead, 10,801 unclipped steelhead, 217 clipped sockeye/kokanee, 267 unclipped sockeye/kokanee and 1,912 coho (clipped and unclipped combined) (Table 6).

To reduce loading densities when the fish facility goes to 100% in early fall, steelhead juveniles are normally bypassed to the river. However, in 2005 when sampling at 100%, most of the steelhead had already passed the project, and with so few steelhead left, bypassing them to the river was not necessary. In 2004, 381 steelhead (clipped and unclipped) were bypassed to the river beginning September 2, during the late trucking season. In 2003, 405 steelhead were bypassed to the river beginning September 2.

Sample size exceeded 1,000 fish on 35 days, exceeded 2000 fish on 17 days, 3000 fish on nine days, 4000 fish on three days and did not exceed 5000 fish.

Table 6. The annual percentage of smolts by species that were sampled at LGR, 1999-2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
1999	0.9	2.0	54.2	19.8	1.2	1.4	4.2	6.1	2.1	2.0
2000	0.8	2.2	---	10.3	1.0	1.4	2.5	11.6	1.9	1.8
2001	1.1	1.5	4.3	8.0	11.4	12.8	2.1	17.1	3.7	1.8
2002	1.5	1.8	5.3	7.8	1.6	1.8	2.9	2.1	2.2	2.6
2003	0.9	1.3	2.1	5.3	0.9	1.1	1.0	1.5	1.4	1.7
2004	1.5	1.2	1.5	1.6	0.3	0.3	4.2	12.8	0.5	1.1
99-03	0.9	1.5	2.8	7.6	1.0	1.2	2.5	4.1	1.6	1.7
2005	0.7	1.0	1.3	3.6	0.8	0.8	1.5	1.6	0.7	1.0

A total of 104 fallbacks were examined in daily samples from July 15 to October 31, when the sample rate was 100%. The 104 fallbacks accounted for 91.2%% of the 114 total fallbacks recorded in daily samples during the season. Of the 104 fallbacks examined, there was one adult unclipped steelhead (0.96%), one adult clipped steelhead (0.96%), 52 unclipped jack chinook (50.00%), one unclipped mini-jack chinook (0.96%) and 49 clipped jack chinook (47.11%).

Table 7. Weekly sample rates in percent and weekly sample totals by species at LGR, 2005.

Week Ending	Sample Rate	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	Total
		Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	
3/31	10.00%	45	81	0	0	156	14	0	18	0	314
4/7	5.14%	172	435	0	35	2085	547	0	24	58	3,356
4/14	3.79%	1245	2360	0	35	1694	677	0	20	79	6,110
4/21	2.36%	3405	2924	0	22	1667	969	1	14	30	9,032
4/28	.005%	4144	2135	0	14	4211	694	0	5	66	11,269
5/5	.005%	7475	1639	0	5	4657	1402	0	2	168	15,348
5/12	.005%	8846	2097	76	144	9578	2560	1	16	819	24,137
5/19	0.74%	538	401	108	272	3427	1586	61	40	340	6,773
5/26	0.75%	424	663	234	346	2465	1295	87	46	162	5,722
6/2	1.06%	236	671	3505	2424	1438	640	42	29	83	9,068
6/9	0.75%	86	184	1101	2216	197	124	4	4	36	3,952
6/16	1.88%	44	126	1481	2591	212	85	7	6	23	4,575
6/23	3.37%	52	119	1487	3108	318	142	9	6	30	5,271
6/30	24.12%	15	70	497	4415	92	37	0	1	3	5,130
7/7	33.50%	2	213	135	2561	27	11	0	4	2	2,955
7/14	42.06%	0	3	52	1560	11	5	1	0	0	1,632
7/21	100%	0	1	36	2046	6	1	0	2	0	2,092
7/28	100%	0	0	5	1182	4	3	0	1	0	1,195
8/4	100%	1	0	5	890	1	2	0	1	0	900
8/11	100%	0	0	6	1123	1	0	0	3	2	1,135
8/18	100%	0	1	3	478	0	1	0	3	0	486
8/25	100%	0	1	5	507	0	1	0	0	0	514
9/1	100%	0	0	0	402	0	0	0	2	0	404
9/8	100%	0	0	1	202	1	0	0	0	1	205
9/15	100%	0	0	0	188	0	0	0	1	1	190
9/22	100%	0	1	0	45	0	1	0	0	2	49
9/29	100%	0	0	1	85	0	0	0	3	5	94
10/6	100%	26	2	0	132	0	2	0	2	0	164
10/13	1.78%	995	30	7	1,018	0	1	0	6	1	2,058
10/20	7.67%	271	19	2	1,353	1	0	0	3	0	1,649
10/27	100%	556	39	4	1,707	0	1	0	3	1	2,311
10/31	100%	626	25	6	1,154	0	0	4	2	0	1,817
Totals		29,204	14,240	8,757	32,260	32,249	10,801	217	267	1,912	129,907

Two agencies, the United States Geological Survey-Biological Research Division (USGS-BRD) and the National Marine Fisheries Service (NMFS Fisheries) conducted four research projects using fish from daily samples at the LGR Juvenile Fish Facility in 2005. Researchers utilized 8,579 smolts in 2005, compared to 2,724 in 2004, 6,780 in 2003, 6,774 in 2002, and 2,302 in 2001 and 8,452 smolts in 2000. Of the 8,579 smolts taken from the sample for research in 2005, 7,520 (88%) were tagged for research (97% in 2004) and 897 (10.5%) were handled and transported (2.9% in 2004) (Tables 8).

Table 8. Total number of fish taken from the sample for research at LGR, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tag, bypass	1,666	0	454	1,801	521	523	0	0	0	4,965
Tag, transport	4	0	2	2,549	0	0	0	0	0	2,555
Handle, bypass	0	0	0	0	0	0	0	0	0	0
Handle, transp	276	0	118	348	97	91	0	0	0	897
Sacrificed	50	0	9	41	0	0	0	0	0	100
Mortalities	16	0	10	33	1	2	0	0	0	62
Totals	2,012	0	593	4,772	619	616	0	0	0	8,579

The United States Geological Survey-Biological Research Division (USGS-BRD) conducted three research studies in 2005 utilizing 6,024 fish from the LGR Juvenile Fish Facility. They surgically implanted acoustic-tags in 4,965 smolts that were bypassed into the Snake River. In addition, 897 smolts were handled and transported without being tagged (Table 9).

Table 9. Number of subyearling fall chinook used from the LGR daily samples by USGS-BRD in 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tag, bypass	1,666	0	454	1,801	521	523	0	0	0	4,965
Tag, transport	0	0	0	0	0	0	0	0	0	0
Handle, bypass	0	0	0	0	0	0	0	0	0	0
Handle, transp	276	0	118	348	97	91	0	0	0	897
Sacrificed	50	0	9	41	0	0	0	0	0	100
Mortalities	16	0	10	33	1	2	0	0	0	62
Totals	2,008	0	591	2,223	619	616	0	0	0	6,024

The National Marine Fisheries Service (NMFS) collected and PIT-tagged a total of 2,555 unclipped subyearling fall chinook from daily samples at the LGR Juvenile Fish Facility from September 12 through October 27, 2005. These fish were PIT-tagged and transported to assess the survival and return rate of late-season transported fish (Table 10).

Table 10. Number of subyearling fall chinook used from the LGR daily samples by NMFS for the late-season transportation study in 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tag, bypass	0	0	0	0	0	0	0	0	0	0
Tag, transport	4	0	2	2,549	0	0	0	0	0	2,555
Handle, bypass	0	0	0	0	0	0	0	0	0	0
Handle, transp	0	0	0	0	0	0	0	0	0	0
Sacrificed	0	0	0	0	0	0	0	0	0	0
Mortalities	0	0	0	0	0	0	0	0	0	0
Totals	4	0	2	2,549	0	0	0	0	0	2,555

Mark Recapture

Staff recorded hatchery marks and tags from all smolts examined for the Smolt Monitoring Program (SMP). These marks included freeze brands, clipped fins, visual implanted elastomer tags (VIE) and coded-wire tags (CWT). Information recorded for each mark type included type of mark, location, orientation, color and fin clips. This information was reported daily to the Fish Passage Center throughout the season. We also recorded passive integrated transponder (PIT) tag codes from fish mortalities recovered from the sample, raceways and recovery tank. PIT-tag records were flagged with conditional codes "RE" for recaptured fish and "M" for mortalities where appropriate and were submitted to the Columbia River Basin PIT-Tag Information System (PTAGIS).

Because many groups of hatchery juveniles are not fin clipped we are unable to distinguish unclipped hatchery fish from naturally reared wild migrants. Therefore, we did not record juveniles as hatchery or wild but as clipped or unclipped. All unclipped yearling and subyearling chinook were scanned for coded-wire tags (CWT). We also recorded the number of steelhead with fin erosion/deformities, typical of hatchery rearing on unclipped steelhead. In 2005 we collected 40.0% of the marked hatchery fish released above LGR (10,219,658 of 25,528,283) (Table 11). Of the hatchery released marked fish (elastomer tags, coded-wire tags and eroded fins), the number and percent of each marked group collected and passage date for these marked groups is summarized in Tables 12 and 13.

Table 11. Number of hatchery fish released above LGR, number of hatchery fish collected at LGR and the percent of release collected at LGR, 2000-2005.

Year	Total Hatchery Fish Released Above LGR	Total Hatchery Mark Fish Collected	Percent Collected
2000	17,635,542	6,733,035	38.2%
2001	16,489,551	6,697,823	40.6%
2002	25,466,576	2,921,032	11.5%
2003	26,793,442	4,607,471	17.2%
2004	25,090,685	9,043,420	36.0%
2005	25,528,283	10,219,658	40.0%

Table 12. Number of marked hatchery fish released above LGR and the numbers and percent of each marked group collected at LGR, 2005.

[1]Mark Code	Rearing Type & Species	Race	Hatchery	Release Site	RKm To LGR	Total Released	Total Recapture	Percent Recovered
CWT, nc	H. Chinook	SP	Multiple Sites	Eight Sites above LGR	89 to 418	636,886	114,745	18.02%
CWT, nc	H. Chinook	FA	L. F./Cherry Ln	Clearwater & Snake Rivers	90 to 173	529,419	277,021	52.33%
CWT, nc	H. Coho		Dworshak NFH Eagle Creek NFH	Clearwater R. Clear Cr. Potlatch Cr.	24 to 124	375,935	95,467	25.39%
Fin Eroded, nc	H. Steelhead	SU	Multiple Sites	Fourteen Sites above LGR	739	933,827	557,772	59.73%
EL-LE-RD	H. Chinook	SP	Looking Glass	Lostine Acc. Pd	292	102,582	8,248	8.04%
EL-LE-RD	H. Chinook	SU	McCall	Johnson Creek	429	105,230	10,630	10.10%
EL-LE-GR	H. Chinook	SP	Lookingglass	Catherine Cr. Acc. Pond	378	120,753	4,523	3.75%
EL-RE-OR	H. Steelhead	SU	Clearwater	Meadow Cr. & Mill Cr. Br.	224	45,514	10,518	23.11%
EL-LE-BL	H. Steelhead	SU	Clearwater	Red River Acc. Pond	299	50,045	10,204	20.39%
EL-LE-OR	H. Steelhead	SU	Clearwater	Red River Acc. Pond	299	49,946	10,759	21.54%
Totals						4,192,300	1,023,721	24.42%

[1]Mark Codes: EL = elastomer tags (side-color); FE = fin erosion; CWT = coded wire tag; nc = no fin clip.

Table 13. Passage dates of unclipped and marked hatchery fish collected at LGR, 2005.

[1]Mark Code	Species, run & rear type	Release Date	First Observed	10%	50%	90%	Last Observed
CWT, nc	HCH1, SP	Oct 1, 04 –March 14, 05	March 27	April 16	April 26	May 13	Oct 29
CWT, nc	HCH0, FA	May 7 – 31, 05	May 10	May 23	June 1	June 12	Oct 30
CWT, nc	HCoho	March 7 – April 27, 05	April 2	May 4	May 11	May 19	June 21
Fin Eroded, nc	H ST, SU	March 28 – May 9, 05	April 2	April 27	May 9	May 21	July 17
EL-LE-RD	HCH1, SP	March 11 – April 14, 05	April 10	April 25	May 1	May 10	May 29
EL-LE-RD	HCH1, SU	March 14 – 16, 05	April 29	May 3	May 10	May 29	June 19
EL-LE-GR	HCH1, SP	March 11 – April 14, 05	April 10	April 27	May 2	May 10	May 13
EL-RE-OR	H. Steelhead	April 21 – 26, 05	April 28	April 30	May 5	May 13	May 21
EL-LE-BL	H. Steelhead	April 13 – 22, 05	April 26	April 30	May 11	May 20	June 16
EL-LE-OR	H. Steelhead	April 13 – 22, 05	April 28	April 30	May 6	May 17	June 6

[1]Mark Codes:; EL = elastomer tags (side, color). No fin clip, nc.

Unclipped Mark Recoveries

Unclipped Hatchery Coded-Wire Tagged Yearling Spring Chinook

We recorded 1,491 unclipped hatchery spring chinook collected at LGR that were marked with coded-wire tags (CWT) in the daily samples. The Nez Perce Tribe release Nez Perce Tribal Hatchery reared fish into Lolo Creek (146,962), Meadow Creek (309,555) and Newsome Creek (75,000). The Umatilla Tribe released 105,369 Lookingglass Hatchery fish into the Grande Ronde Acclimation Pond for a total release of 636,886 unclipped coded-wire tagged hatchery spring chinook above LGR. The 1,491 observed in daily samples represents a collection of 114,745 fish, 18.0% of the 636,886 tagged fish released. The Grande Ronde Acclimation Pond, Newsome Creek, Meadow Creek, Lolo Creek and the Grande Ronde Acclimation Pond are 418, 255, 242, 138 and 89 river kilometers above LGR respectively. These fish were released between October 1, 2004 and March 14, 2005 with the peak daily collection at LGR of 11,000 on April 21 (Figure 8, Tables 12 - 14).

Table 14. Number of unclipped CWT marked yearling spring/summer chinook released, collected at LGR and peak collection day, 2000-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2000	123,425	27,530	22.3%	5/5
2001	627,431	176,823	28.2%	5/1
2002	1,058,334	91,820	8.7%	5/6
2003	887,896	115,913	13.1%	4/27
2004	825,676	208,490	25.3%	5/6
2005	636,886	114,745	18.0%	4/21

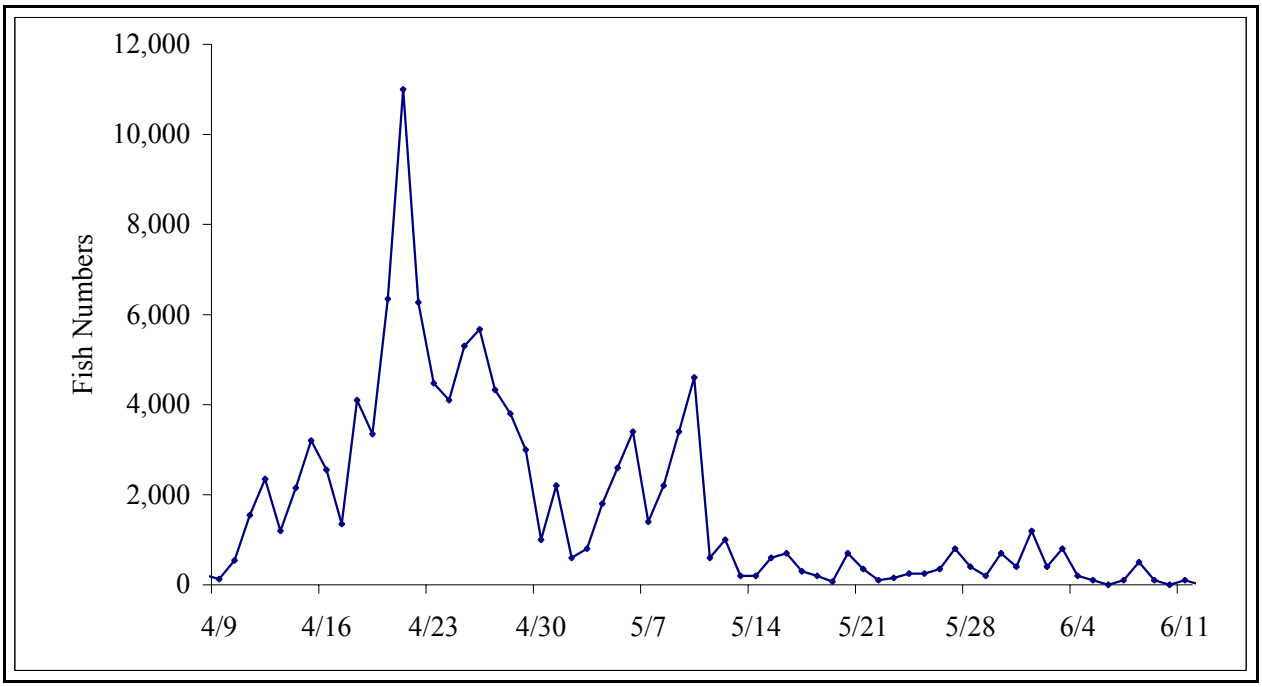

Figure 8. Daily collection of unclipped hatchery yearling chinook with coded-wire tags, 2005.

Unclipped Hatchery Coded-wire Tagged Subyearling Fall Chinook

SMP staff recorded 3,539 coded wire tagged (CWT) unclipped hatchery subyearling fall chinook in daily samples. This represents an expanded total of 277,021 CWT marked unclipped hatchery subyearling fall chinook collected at LGR. The Nez Perce tribe released 186,545 Lyons Ferrry Hatchery reared smolts from Big Canyon Acclimation Facility (98,657) and Captain John Acclimation Pond (87,888) between May 23 and May 27. The Nez Perce Tribe also released 342,874 Nez Perce Tribal Hatchery reared smolts into the main stem Clearwater River for a total release of 529,419 subyearling fall chinook tagged with coded wires. The 277,021 collected CWT marked unclipped hatchery subyearling fall chinook represents 52.8% of the 529,419 released. The peak collection of 57,700 was on May 31, earlier than previous years. Big Canyon Acclimation Facility, Captain John Acclimation Pond and the Nez Perce Trible Hatchery release sites are are 108, 90 and 173 river kilometers above LGR, respectively. (Figure 9, Tables 12, 13 and 15).

Table 15. Number of unclipped CWT marked subyearling fall chinook released, collected at LGR and peak collection day, 2000-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2000	397,503	87,450	22.0%	7/4
2001	393,689	111,158	28.2%	7/3
2002	765,167	141,214	18.5%	7/21
2003	1,271,953	367,097	28.9%	6/22
2004	560,435	200,855	35.8%	6/20
2005	529,419	277,021	52.3%	5/31

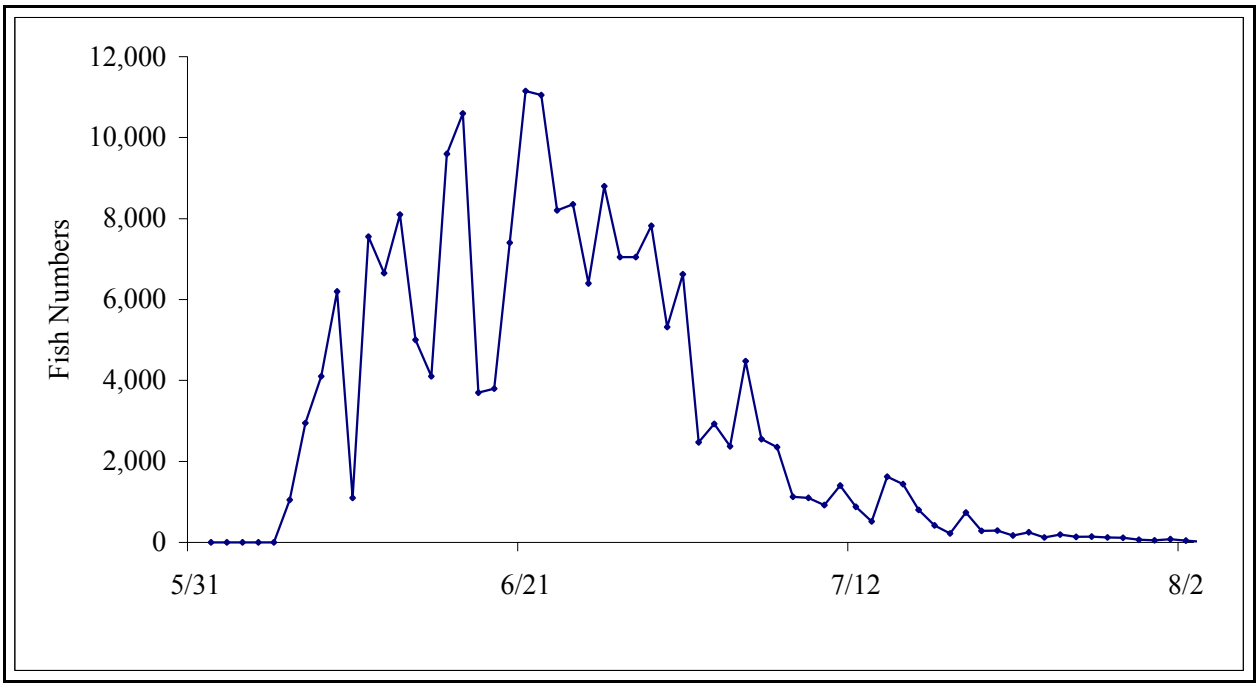

Figure 9. Daily collection of unclipped hatchery subyearling fall chinook with CWT at Lower Granite, 2005.

Unclipped Hatchery Coded-wire Tagged Coho

Between April 2 and June 26, 2005, SMP staff examined 646 unclipped coho with CWTs at LGR. When expanded, this represents a collection of 95,467 unclipped coho with CWTs. The Nez Pierce Tribe released unclipped coho marked with CWTs into Clear Creek (150,914) on April 25, Lapwai Creek (49,925) between March 10 and March 11, Potlatch River (50,035) on March 9 and Lolo Creek (125,061) between September 27 and September 8, 2004 for a total release of 375,935. The 95,467 collected CWT marked unclipped coho represents 25.4% of the 375,935 released. Lapwai Creek, Potlatch River Lolo Creek and Clear Creek are 63, 75, 87 and 175, river kilometers above LGR respectively. The peak collection day of 16,000 coded wire-tagged coho occurred on May 10 (Figure 10, Tables 12, 13 and16).

Table 16. Number of unclipped CWT marked coho released, collected at LGR and peak collection day, 2000-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2000	120,000	14,280	11.9%	5/26
2001	60,000	7,095	11.8%	5/20
2002	108,718	4,494	4.1%	5/22
2003	114,044	10,870	9.5%	5/27
2004	160,780	35,364	22.0%	5/24
2005	375,935	95,467	25.4%	5/10

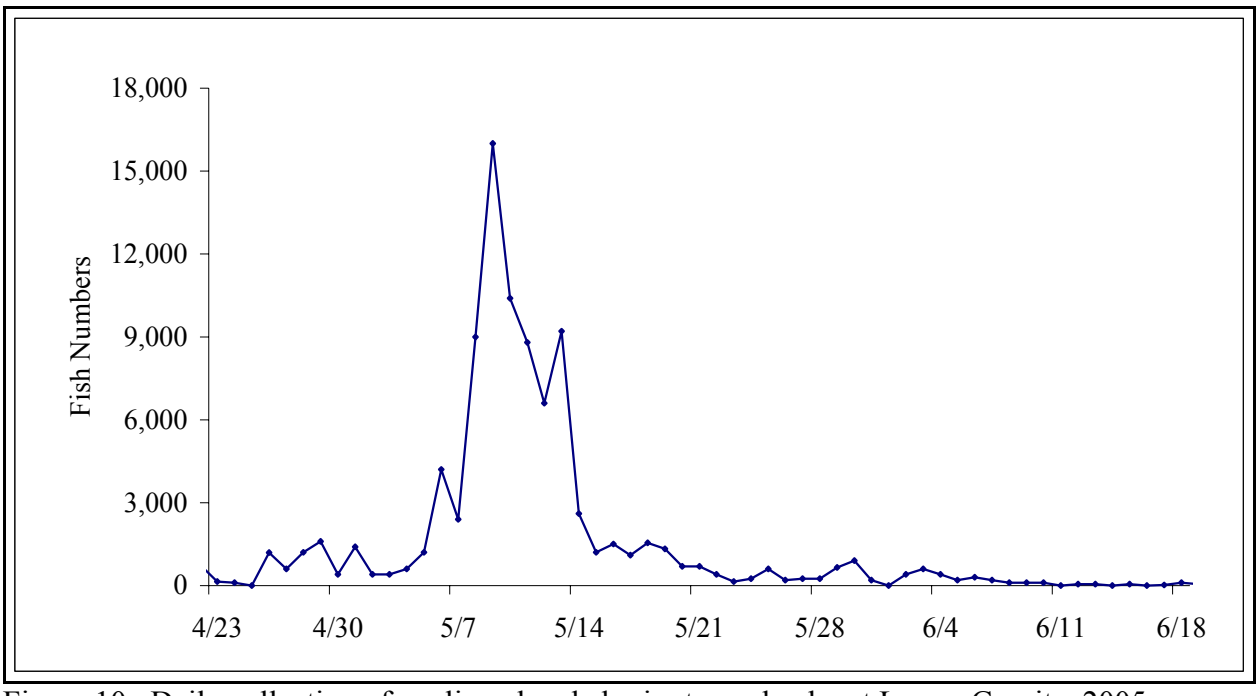

Figure 10. Daily collection of unclipped coded-wire tagged coho at Lower Granite, 2005.

Unclipped Steelhead of Hatchery Origin

A total of 10,801 unclipped steelhead were observed in daily samples. Of those, 4,473 (41.4%) showed fin erosion typical of hatchery rearing. The 4,473 unclipped fin eroded steelhead represent a collection of 557,772 unclipped steelhead of hatchery origin (based on fin erosion). The Nez Pierce Tribe, United States Fish and Wildlife Service, Idaho Department of Fish and Game and the Oregon Department of Fish and Wildlife made fifteen releases from twelve locations, releasing a total of 933,827 unclipped steelhead above LGR. The collection of 557,772 unclipped hatchery steelhead with fin erosion represents 59.7% of the 933,827 released. These releases were made between March 28 and May 9, 2005 from sites up to 739 river kilometers above LGR. Peak collection of 55,200 unclipped steelhead of hatchery origin was on May 10 (Figure 11, Tables 12, 13 and 17).

Table 17. Number of unclipped steelhead with fin erosion released, collected at LGR and peak collection day, 2000-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2000	596,700	307,284	51.5%	5/6
2001	852,195	430,694	50.5%	5/16
2002	1,420,838	182,870	12.9%	5/16
2003	1,186,853	215,944	18.2%	5/26
2004	937,727	537,445	57.3%	5/8
2005	933,827	557,772	59.7%	5/10

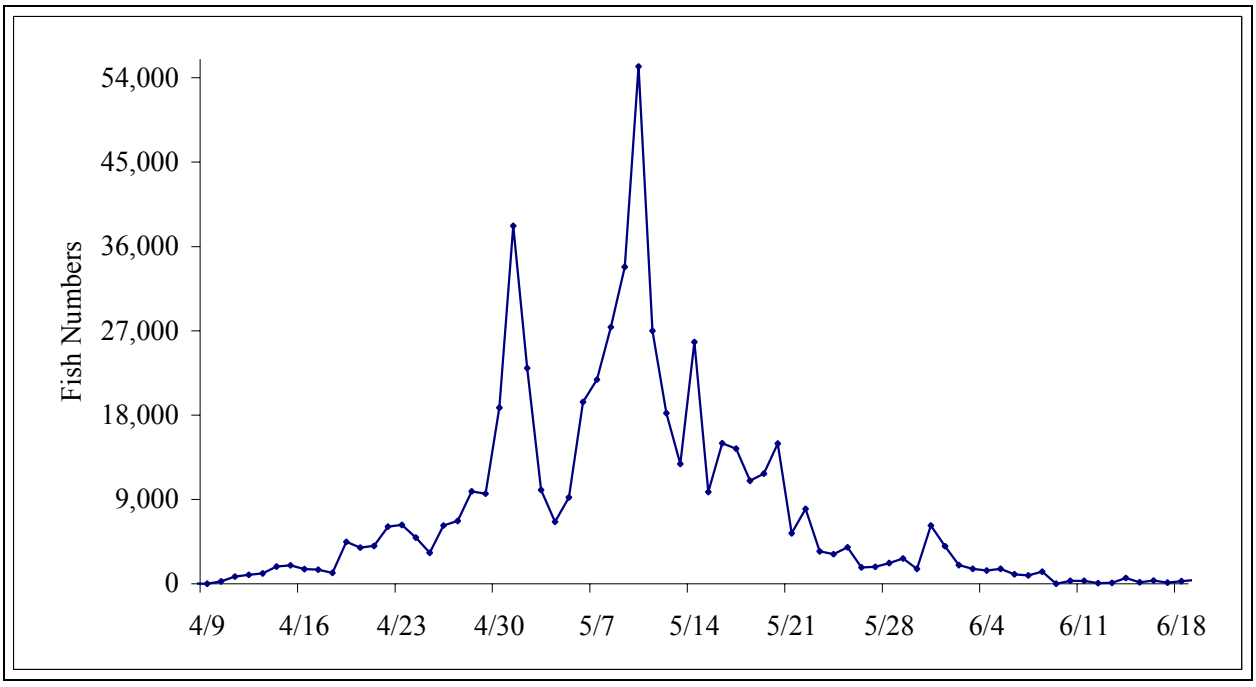

Figure 11. Daily collection of unclipped fin eroded steelhead at Lower Granite, 2005.

Elastomer Mark Recoveries

Visual elastomer marks (VIE) were reported for six different groups of fish released above LGR this season (Tables 12 and 13). With the exception of the Left Eye Red elastomer tags (LE-RD), all the VIE marks were unique for each group or specie. The LE-RD VIE was used to mark one group of yearling spring chinook and one group of yearling summer chinook. Based on the typical body morphology common to yearling spring chinook versus summer chinook, staff biologists assigned each LE-GR VIE as either a yearling spring or yearling summer chinook. We recognize that there is some risk of error with this approach, however we believe that the summary derived from this approach presents a valid assessment of the arrival timing and collection at LGR for each group.

Left Eye Green Elastomer Tagged Hatchery Yearling Spring Chinook

The Umatilla Tribe had two releases of Lookingglass Hatchery yearling spring chinook marked with LE-GR VIE tags into Catherine Creek Acclimation Pond, 378 kilometers above Lower Granite.

The first release of 61,717 smolts with LE-GR VIE tags was between March 14 and March 27, 2004 with the second release of 59,036 between April 4 and April 14, 2005 for a total release of 120,753. Staff examined 26 left eye green elastomer tagged hatchery yearling spring chinook in daily samples. This represents a total of 4,523 EL-GR marked fish collected at Lower Granite between April 9 and May 12. The peak day of collection of 800 EL-LGR marked fish occurred on April 29. The 4,523 collected fish represents 3.75% of the total release (Figure 12, Tables 12, 13 and 18).

The past two years this release had been marked with RE-GR VIE tags. Table 18 represents the Umatilla Tribe/Catherine Creek/yearling spring chinook releases rather than a specific mark.

Table 18. Number of Catherine Creek yearling spring chinook released, collected and peak collection day at LGR 2003-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2003	24,092	1,145	4.75%	5/7
2004	70,959	2,091	2.95%	4/29 & 5/6
2005	120,753	4,523	3.75%	4/29

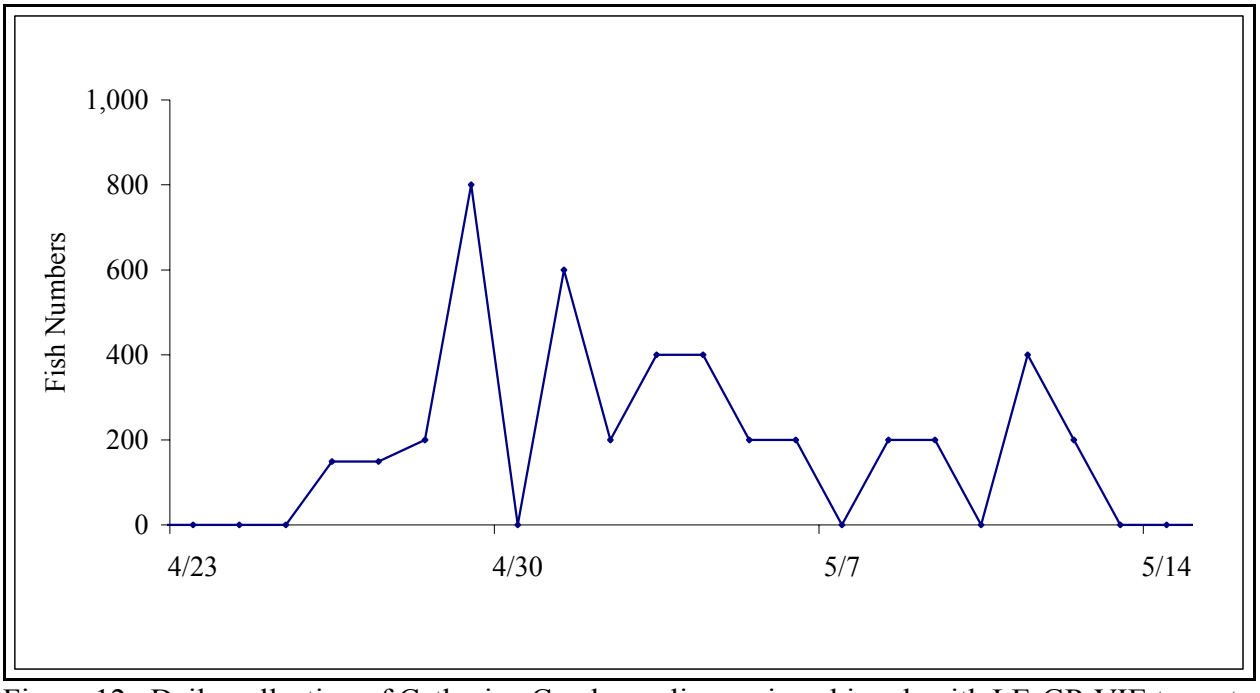

Figure 12. Daily collection of Catherine Creek yearling spring chinook with LE-GR VIE tags at LGR, 2005.

Left Eye Red Elastomer Tagged Hatchery Yearling Chinook

The Nez Perce Tribe had three releases of yearling chinook with left eye red elastomer tags (LE-RD VIE tags). Two releases were Lookingglass reared, adipose clipped yearling spring chinook, released from the Lostine Acclimation Pond, a tributary of the Grand Ronde River 292 kilometers above LGR. The third release was McCall Hatchery reared unclipped yearling summer chinook released into Johnson Creek, a tributary of the South Fork Salmon River, 327 kilometers above LGR.

The first release of Lookingglass reared, adipose clipped yearling spring chinook, from the Lostine Acclimation Pond of 51,793 fish was between March 11 and March 20, 2005. The second release of 50,789 fish was between March 28 and April 14, 2005 for a combined total of 102,582 fish. Between April 9 and May 29, 2005, a total of 57 clipped yearling spring chinook with LE-RD VIE tagd were examined in daily samples which represents a collection of 8,248 fish, 8.04% of the total released. Peak collection day was 1,600 smolts on April 29, 2005 (Figure 13, Tables 12, 13 and 19).

Table 19. Number of Lostine Acclimation Pond clipped yearling spring chinook with LE-RD VIE tags released, collected and peak collection day at LGR, 2002-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2002	31,464	2,367	7.5%	5/5 and 5/8
2003	101,979	15,023	14.9%	5/1
2004	116,652	16,559	14.2%	5/5
2005	102,582	8,248	8.04%	4/29

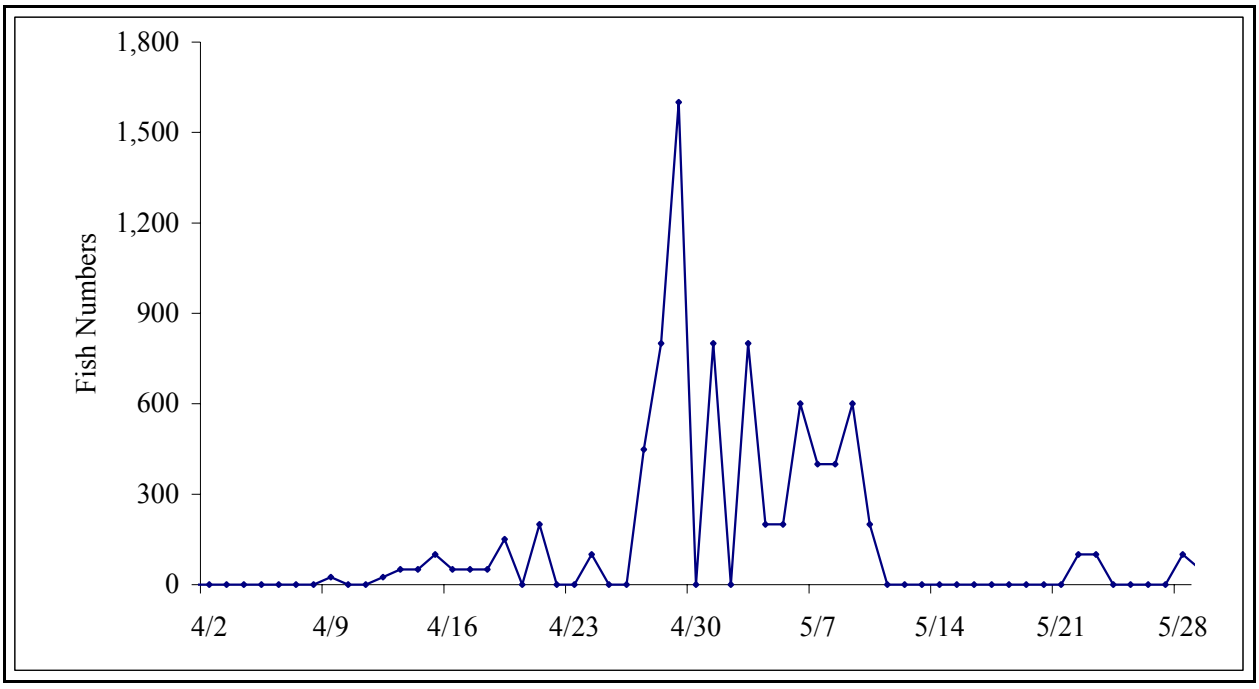

Figure 13. Daily collection of Lostine Acclimation Pond clipped hatchery yearling spring chinook with LE-RD VIE tags at LGR, 2005.

The third release of LE-RD VIE tagged yearling chinook by the Nez Perce Tribe of 105,230 McCall Hatchery reared unclipped summer yearling chinook was between March 14 and March 16, 2005, into Johnson Creek, a tributary of the South Fork Salmon River, 500 kilometers above LGR. Between April 28 and June 16, 2005, a total of 93 unclipped summer yearling chinook were examined in daily samples, which represents a collection of 10,630 fish, 10.10% of the total released. Peak collection day was 1,800 fish on May 8, 2005 (Figure 14, Tables 12, 13 and 20).

Last year, this release group was marked with RE-GR VIE tags, in 2003 with RE-OR VIE tags, in 2002 with RE-GR VIE tags.

Table 20. Number of Johnson Creek RE-GR VIE tagged unclipped yearling summer chinook released, collected at LGR and peak collection day, 2002-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2002	56,296	300	0.5%	6/2
2003	72,146	1,643	2.3%	5/21
2004	111,854	6,569	5.9%	5/5
2005	105,230	10,630	10.10%	5/8

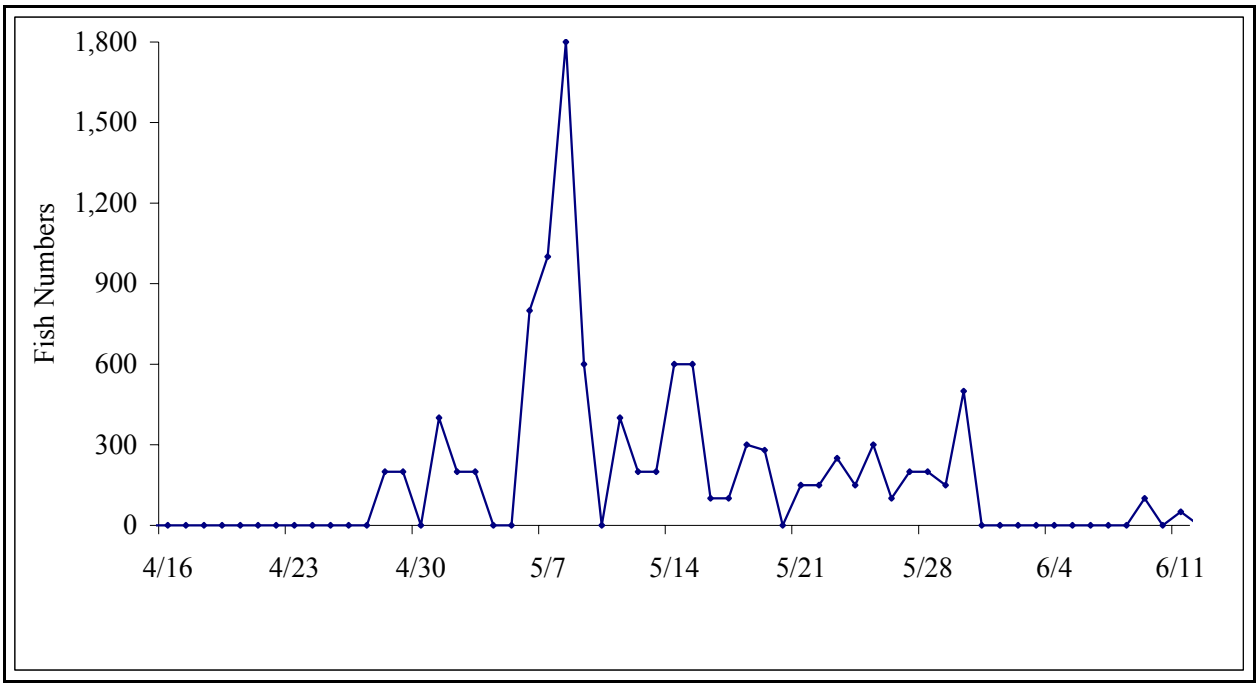

Figure 14. Daily collection of Johnson Creek unclipped hatchery yearling summer chinook with LE-RD VIE tags, at LGR, 2005.

Left Eye Blue Elastomer Tagged Unclipped Summer Steelhead

Between April 25 and June 15, 2005, a total of 72 unclipped hatchery summer steelhead tagged with left-eye blue elastomer tags (LE-BL) were recorded in daily samples. The Nez Perce Tribe released 50,045 Clearwater Hatchery reared LE-BL VIE tagged unclipped summer steelhead from the Red River Acclimation Pond between April 13 and April 22, 2005, 299 river kilometers above LGR. The 72 fish recorded represents a collection of 10,204 fish, 20.39% of the total released. Peak collection of 1,800 occurred on May 9 (Figure 15, Tables 12, 13 and 21).

Table 21. Number of Red River Acclimation Pond LE-BL VIE tagged unclipped summer steelhead released, collected at LGR and peak collection day, 2004-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2004	51,002	15,824	31.03%	5/17
2005	50,045	10,204	20.39%	5/9

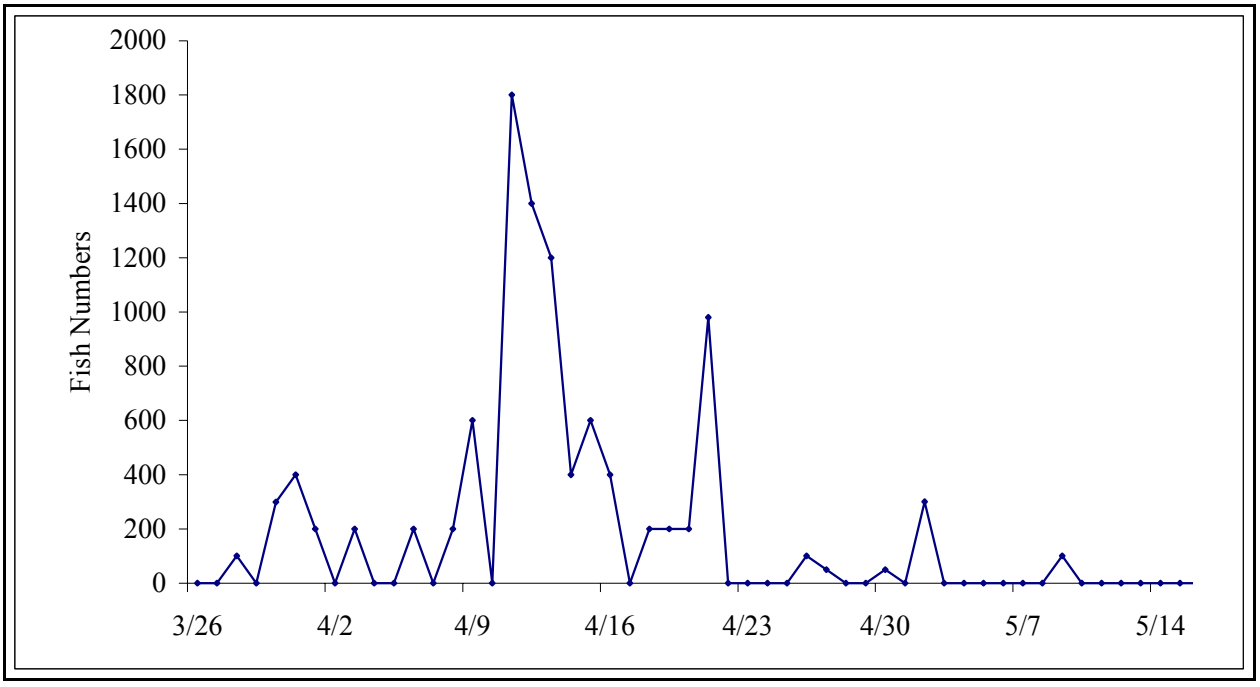

Figure 15. Daily collection of Red River Acclimation Pond unclipped summer steelhead with left eye blue elastomers at LGR, 2005.

Left Eye Orange Elastomer Tagged Unclipped Summer Steelhead

Between April 27 and June 5, 2005, 64 unclipped hatchery summer steelhead tagged with left-eye orange elastomer tags (LE-OR) were recorded in daily samples. The Nez Perce Tribe released 49,946 Clearwater Hatchery reared LE-OR tagged unclipped summer steelhead from the Red River Acclimation Pond between April 25 and April 26, 299 river kilometers above LGR. The 64 fish recorded represents a collection of 10,759 fish, 21.54% of the total released. Peak collection of 1,200 occurred on April 30 and May 2 (Figure 16, Tables 12, 13 and 22).

Table 22. Number of Red River Acclimation Pond LE-OR VIE tagged unclipped summer steelhead released, collected at LGR and peak collection day, 2004-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2004	50,253	20,749	41.28%	5/8
2005	49,946	10,759	21.54%	4/30 & 5/2

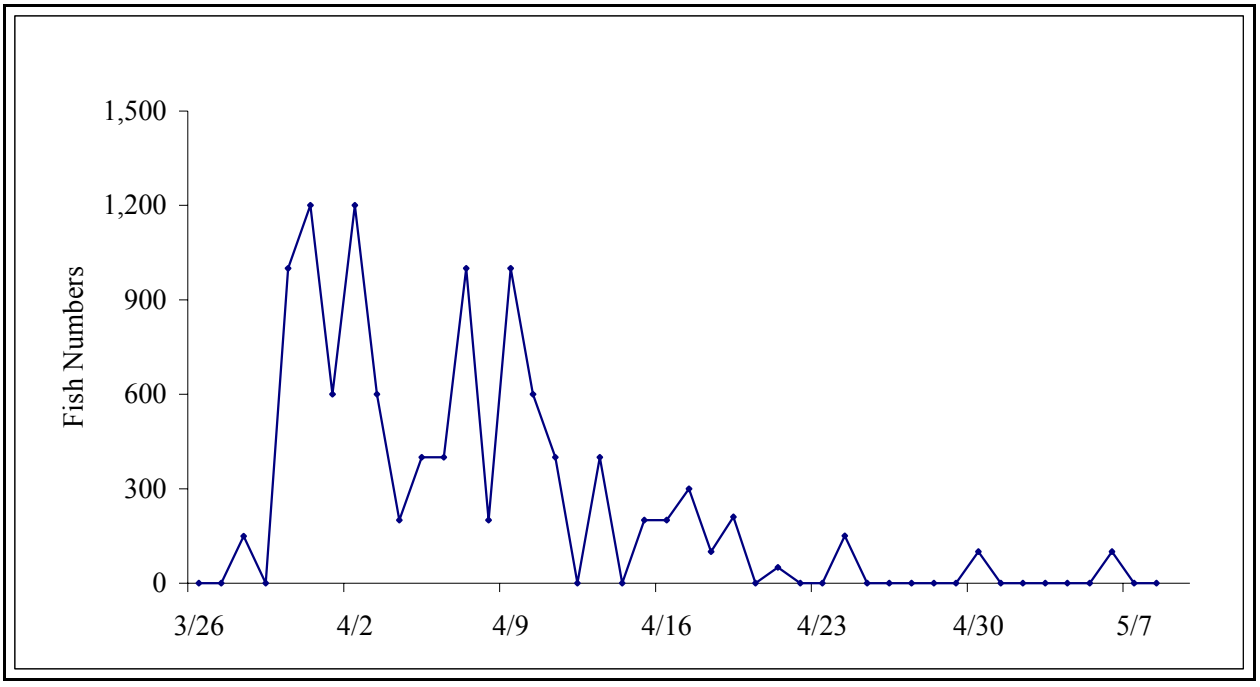

Figure 16. Daily collection of unclipped summer steelhead with left eye orange elastomer tags at LGR, 2005.

Right Eye Orange Elastomer Tagged Unclipped Summer Steelhead

Between April 27 and May 20, 55 unclipped hatchery summer steelhead tagged with right-eye orange elastomer tags (RE-OR) were recorded in daily samples. The Nez Perce Tribe released a total of 45,514 LE-OR tagged unclipped summer steelhead, 22,757 from Mill Creek Bridge on April 26, 172 river kilometers and 22,757 on April 21 into Meadow Creek approximately 223 river kilometers above LGR for a total release of 45,514 fish. The 55 fish recorded represents a collection of 10,518 fish, 23.11% of the total released. Peak collection of 2,000 was recorded April 30 and May 2 (Figure 17, Tables 12, 13 and 23).

Table 23. Number of Red River Acclimation Pond RE-OR VIE tagged unclipped summer steelhead released, collected at LGR and peak collection day, 2004-2005.

Year	Number released	Number collected	Percent of Release Collected	Peak Collection Day
2004	51,923	19,557	37.66%	5/7
2005	45,514	10,518	23.11%	4/30 & 5/2

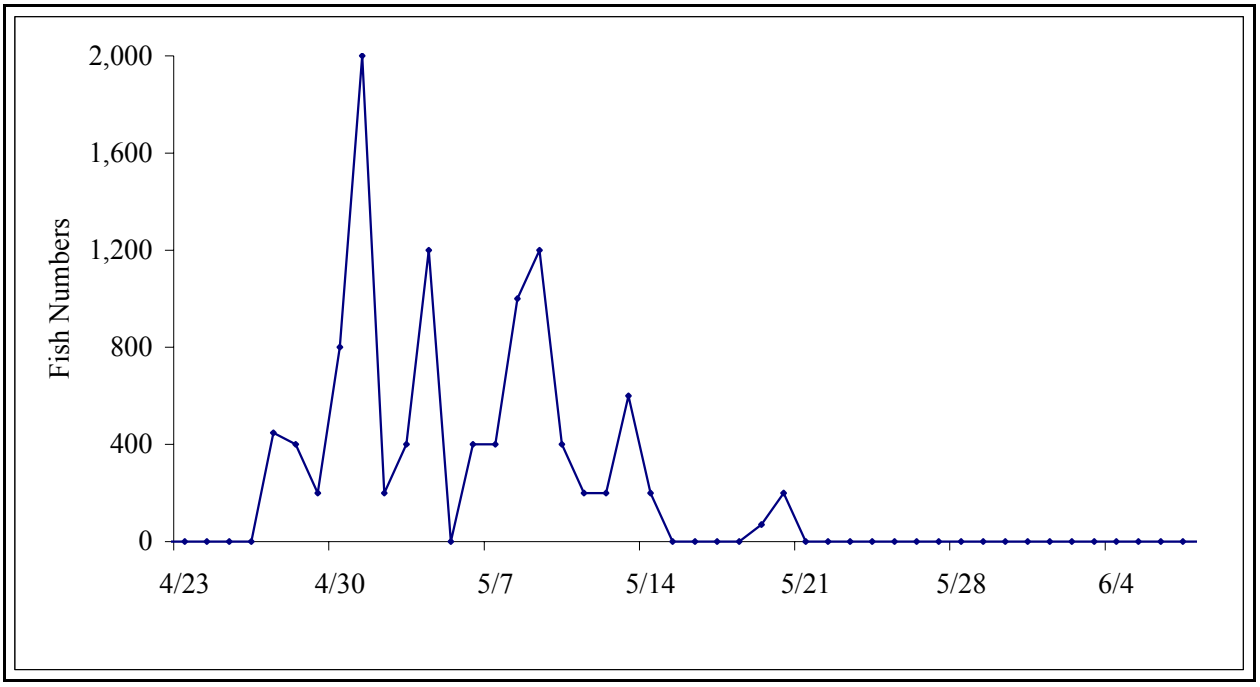

Figure 17. Daily collection of unclipped summer steelhead with right eye orange elastomer tags at LGR, 2005.

GBT Sample Program and Summary

Due to the low spring runoff, Gas Bubble Trauma exams were not conducted this year.

Sample Anesthesia

The use of MS-222® to safely sedate juvenile salmonids is an important component of the smolt monitoring program. Reviews of methods employed at different sites by FPC, USGS-BRD and SMP program staff in 1992 provided specific guidelines for standard stock solutions, minimal induction times and total exposure times for SMP sampling programs. At LGR Juvenile Fish Facility concentrations of approximately 60 mg/L of MS-222® from stock solutions of 100 g/L enable us to follow the general guidelines and handle the juvenile salmonids safely and efficiently. Over the course of each season, adjustments are made to account for changes in water temperature and the number of fish in the sample. Induction and recovery times for a given concentration tend to decrease as water temperatures increase.

Anesthesia Procedures

Anesthetic solutions are used in the pre-anesthetic chambers, the re-circulating sample system and for GBT sampling. The pre-anesthetic chambers are drained to about 95 liters before we add between 70 and 90 ml of MS-222® to achieve an initial concentration of about 63 mg/L. This typically sedates nearly all the fish within three minutes. However, the pre-anesthetic chambers are not watertight. Fresh water seepage reduces the effective concentration. Depending upon the amount of fresh water seepage, fish response, water temperature, the size and number of smolts in the chamber, we may add more MS-222®. Once sedated, these fish are flushed down to the sorting trough.

The re-circulation system holds 670 liters of water and includes the sorting trough, sump, chilling reservoir, a rotary chiller, a filter and two pumps. We add anesthetic to the sump and chilling reservoir to achieve an initial concentration of about 50 mg/L. This level maintains sedation in most fish and allows some fish to gradually recover. The effective concentration of anesthetic in this system diminishes over time because sampled fish absorb the anesthetic and are removed from the system. Also, some leakage and infusion of fresh water occurs throughout the sample. The longer we use the re-circulation system the more likely we are to add additional MS-222® in 50 to 100 ml increments to maintain effective concentrations. As a result, careful monitoring of fish response is a constant component of our sample procedures. To monitor anesthetic effectiveness and ensure the safety of the fish in the sample, we continuously watch and observe fish behavior and gilling rates.

Anesthetic Induction

We attempt to keep induction times between one minute but not longer than three minutes. For each batch of fish sedated in the pre-anesthetic chambers, we recorded induction times as well as the estimated number and relative size of smolts, water temperature and initial concentration of MS-222® used (Table 24). The induction time was that point when approximately 95% of the fish were belly-up or on their side and gilling evenly.

Table 24. Weekly average induction times of sample fish exposed to MS-222® at LGR, 2005.

Week Ending Date	Average Temp. (C.)	# of Batches	Average # Fish per Batch	Average # Small Fish/Batch	Percent Small Fish/Batch	Volume (mg/L) of MS-222® added to Anesthetic Chamber	Average Induction Time (seconds)
3/31	7.4	3	15	5	0.36	82	180
4/7	7.7	12	45	11	0.25	79	167
4/14	9.2	14	61	39	0.63	84	170
4/21	9.3	21	60	43	0.73	85	154
4/28	10.7	23	63	41	0.64	81	145
5/5	11.5	25	72	54	0.76	74	164
5/12	11.3	35	82	57	0.70	70	160
5/19	11.5	18	47	22	0.47	69	157
5/26	11.8	13	52	32	0.62	69	153
6/2	14.4	15	64	51	0.79	72	153
6/9	13.6	8	53	47	0.89	73	147
6/16	14.2	9	56	50	0.90	73	157
6/23	15.7	9	52	45	0.86	76	155
6/30	18.6	9	57	52	0.91	76	154
7/7	19.1	7	52	49	0.94	76	145
7/14	19.8	6	33	32	0.95	65	135
7/21	19.8	5	49	46	0.93	58	148
7/28	19.5	4	38	35	0.94	57	149
8/4	19.2	3	45	42	0.95	57	157
8/11	19.5	3	46	43	0.94	57	148
8/18	19.3	3	25	21	0.86	60	130
8/25	18.8	2	36	31	0.85	60	162
9/1	18.9	2	39	26	0.68	60	156
9/8	18.7	2	52	22	0.42	60	161
9/15	18.1	2	38	19	0.51	60	172
9/22	17.1	1	16	4	0.26	63	179
9/29	17.1	2	20	8	0.41	63	157
10/6	16.5	2	21	11	0.53	65	161
10/13	15.5	8	39	27	0.69	66	141
10/20	14.9	6	43	40	0.91	67	156
10/27	14.5	8	49	44	0.88	69	164
11/3	14.1	9	52	44	0.85	69	173

Beginning in 1999, daily records were kept by the pre-anesthetization technician. These records include temperature, number of fish per batch, number of small fish per batch, the volume of MS-222® concentration used per batch and the induction time per batch. For each degree Celsius recorded between 1999 and 2005, the daily volume of MS-222® concentration used per batch and the daily induction time per batch were averaged (Table 25). The seven year averages were graphed against the corresponding temperature. As water temperature increases, induction time decreases. The pre-anesthetization technician responds to the decline in induction time by reducing the volume of MS-222® used in each batch (Figure 18).

Table 25. Volume of MS-222® concentrate used per batch and average length of induction time per batch based on temperature, 1999-2005.

Average Temperature Celsius	Volume of MS-222® concentrate used per batch	Length of induction time (seconds)
5.0 – 5.9	87	165
6.0 – 6.9	87	161
7.0 – 7.9	78	169
8.0 – 8.9	79	163
9.0 – 9.9	80	159
10.0 – 10.9	76	152
11.0 – 11.9	76	153
12.0 – 12.9	79	153
13.0 – 13.9	77	152
14.0 – 14.9	76	151
15.0 – 15.9	77	150
16.0 – 16.9	75	157
17.0 – 17.9	69	156
18.0 – 18.9	72	149
19.0 – 19.9	73	146
20.0 – 20.9	73	144
21.0 – 21.9	69	140
22.0 – 22.9	66	121

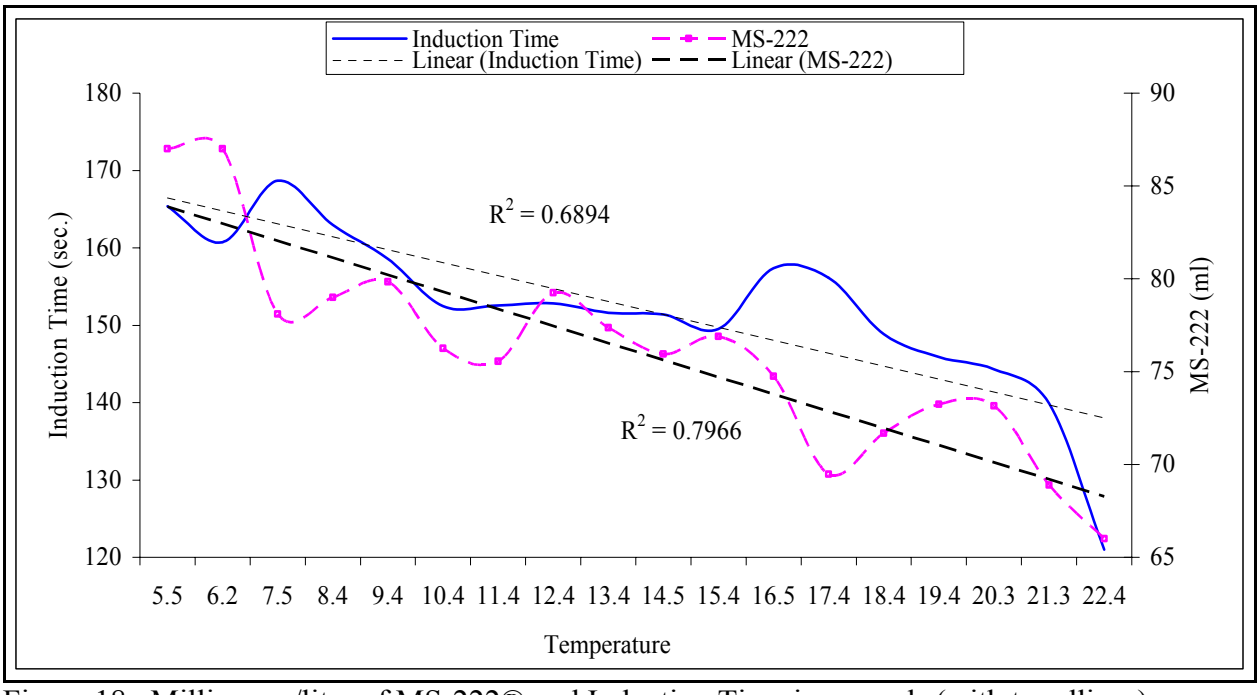

Figure 18. Milligrams/liter of MS-222® and Induction Time in seconds (with trendlines) compared to temperature at LGR, 1999-2005.

Audit of data entry

This season, a total of 220 daily sample batches were generated and sent to FPC. Seven batches (3.18%) were sent again because they were revised after the original posting. We categorized the errors that led to the revisions, as we have done in previous years, into six categories; setup errors, recording errors, omitted data, fish identification errors, facility errors and miscellaneous changes (Table 26). A setup error resulted in the revision of one batch. Our flows macro referred to last year's dataset and we did not recognized this until similar flows were created the following day. Recording errors resulted in revisions to the remaining six batches. These errors are "typos", or inaccurate transcription of hand log data into the FPC32 data entry program. These errors include batches reposted for; one incorrect entry for fish barged instead of fish trucked at the beginning of the late season trucking, one incorrect clip code entry in the transport detail, two incorrect powerhouse flow changes and two incorrectly recorded transport numbers. There were no batches categorized as omitted data, fish identification errors, facility errors or miscellaneous errors this season. Our 2005 error rate of 3.18% is less than half of the 6.4% we reported in 2004. The 2003 error rate was 5.0%.

Table 26. Number and percentages of sample batches revised and resent to FPC, 2005.

Error Type	Number of re-posted batches	Percent of total re-posted batches	Percent of total number of batches
Setup	1	14.3%	0.45%
Recording	6	85.7%	2.73%
Omitted data	0	0.0%	0.00%
Fish I.D.	0	0.0%	0.00%
Facility	0	0.0%	0.00%
Miscellaneous	0	0.0%	0.00%
Total	7		3.18%

Fish Collection

Migration and Collection

The juvenile fish bypass gallery was watered up March 23, 2005. Fish were bypassed through the 42-inch pipe (primary bypass) until 0700 hours March 25 when the separator was watered-up and collection of fish for transportation began. Collection ended at 0700 hours October 31. A total of 13,030,967 juvenile salmonids was collected at LGR during the 2005 operating season (Table 27). This is the largest number of smolts ever collected at LGR, surpassing the 2004 record of 11,787,539.

The species collection included: 4,142,584 clipped yearling chinook, 1,397,935 unclipped yearling chinook, 692,606 clipped subyearling fall chinook, 889,378 unclipped subyearling fall chinook, 4,291,171 clipped steelhead, 1,299,617 unclipped steelhead, 14,716 clipped sockeye/kokanee, 16,940 unclipped sockeye/kokanee and 286,020 coho (clipped and unclipped) (Table 27 and Appendix 1, Tables 1).

Total fish collection and transportation increased, 10.5% and 7.5%, respectively, over the 2004 totals (Table 27). Collection numbers for most species groups increased compared to 2004: clipped yearling chinook increased (12.3%), unclipped yearling chinook (20.8%), clipped subyearling fall chinook (1798.0%), unclipped steelhead (19.2%), clipped sockeye/kokanee (184.1%), unclipped sockeye/kokanee (569.0%), and coho (13.1%). Unclipped subyearling fall chinook collection decreased 4.8% and clipped steelhead 10.8%. The 2005 species that had increases in transportation over 2004 were: clipped yearling chinook (8.1%), unclipped yearling chinook (20.2%), clipped subyearling fall chinook (1947.0%), unclipped steelhead (14.9%), clipped sockeye/kokanee (199.4%), unclipped sockeye/kokanee (569.0%) and coho (7.1%). Species in 2005 that had decreased transportation compared to 2004 were unclipped subyearling fall chinook (4.8%) and clipped steelhead (10.8%).

Table 27. Annual collection, bypass and transport at LGR, 1996-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee[2]		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped[2]	No Clip	Clipped	No Clip	All	Total
Collection										
1996	462,995	126,895	---	17,346	4,264,688	321,821	5,137	9,762	19,029	5,227,672
1997	224,847	56,978	73,437	17,473	4,022,510	300,215	411	2,937	1,517	4,700,325
1998	1,315,536	286,744	520	81,286	4,524,490	557,431	48,623	1,025	155,546	6,971,201
1999	1,762,655	410,842	107	257,400	3,032,104	323,083	10,085	7,975	78,621	5,882,872
2000	2,007,545	442,635	---	681,803	4,281,834	757,786	2,688	4,152	122,103	8,300,546
2001	1,370,898	587,375	40,175	699,676	4,555,036	1,025,435	3,182	1,669	58,255	8,341,701
2002	1,196,249	341,050	25,813	606,471	1,268,841	430,092	3,835	47,897	80,777	4,001,025
2003	1,909,312	667,719	114,614	1,055,198	1,870,652	466,498	7,014	2,746	90,072	6,183,825
2004	3,690,180	1,156,925	36,491	965,861	4,587,116	1,090,363	5,180	2,532	252,891	11,787,539
2005	4,142,584	1,397,935	692,606	889,378	4,291,171	1,299,617	14,716	16,940	286,020	13,030,967
Bypass										
1996	49,978	19,332	---	358	30,883	977	107	30	765	102,430
1997	407	787	1,031	617	110,753	2,941	---	---	29	116,565
1998	88,312	20,074	---	1,033	107,561	17,990	---	---	1,474	236,414
1999	88,628	27,289	---	861	235,513	30,851	1,338	309	14,609	399,398
2000	53,561	61,883	----	46	143,732	82,869	0	16	400	342,507
2001	60,319	18,879	1	0	231,830	38,994	37	184	976	351,220
2002	2,908	35,244	36	174	21,490	44,410	0	7	5	104,274
2003	2,428	43,461	111	2,783	21,034	32,516	0	0	7	102,340
2004	110,065	41,267	2,849	43,589	232,510	57,478	255	30	13,352	501,395
2005	280,515	59,224	3,951	9,191	404,189	112,056	0	490	28,619	898,235
Truck										
1996	2,207	4,004	---	15,857	82,108	12,802	889	6,054	2,260	126,887
1997	2,659	3,100	70,793	15,221	134,154	20,533	399	799	420	248,078
1998	21,764	20,344	18	70,260	49,629	18,215	613	32	6,430	187,305
1999	9,235	23,261	106	162,540	26,133	9,158	315	1,640	1,564	233,952
2000	4,072	3,151	----	145,460	10,875	6,596	28	1,002	611	171,795
2001	3,035	3,860	268	84,719	28,611	8,522	12	451	1,845	131,323
2002	7,733	3,754	5	56,748	2,353	1,217	20	644	39	72,513
2003	22,629	31,638	72	25,936	7,016	8,711	21	68	191	96,282
2004	16,529	28,140	0	28,200	8,976	7,018	4	569	269	89,705
2005	5,563	6,423	43	9,937	34,182	8,842	4	518	884	66,396
Barge										
1996	407,960	102,368	---	885	4,149,222	307,805	4,120	3,184	16,004	4,990,798
1997	219,740	52,680	---	998	3,774,372	276,520	---	2,022	1,066	4,327,398
1998	1,203,805	245,809	489	8,043	4,366,903	521,297	47,921	990	147,145	6,542,402
1999	1,653,625	357,962	---	91,851	2,769,501	282,912	8,348	5,652	62,254	5,232,105
2000	1,947,270	376,939	----	533,095	4,126,649	668,158	2,658	3,039	121,045	7,778,853
2001	1,304,304	563,474	39,739	611,306	4,292,959	977,250	3,133	982	55,289	7,848,436
2002	1,182,415	301,383	25,405	542,145	1,244,007	384,201	3,753	45,748	80,608	3,809,665
2003	1,879,956	590,937	111,140	1,011,242	1,840,995	424,802	6,907	2,642	89,264	5,957,885
2004	3,545,729	1,082,182	33,392	888,872	4,342,892	1,025,358	4,902	1,843	238,962	11,164,132
2005	3,845,949	1,328,651	683,500	862,745	3,848,769	1,177,416	14,664	15,622	255,307	12,032,623
Total Transport										
1996	410,167	106,372	---	16,742	4,231,330	320,607	5,009	9,238	18,221	5,117,685
1997	222,342	55,779	70,793	16,219	3,908,523	297,053	399	2,821	1,486	4,575,415
1998	1,225,569	226,153	507	78,303	4,416,532	539,512	48,534	1,022	153,575	6,729,707
1999	1,662,860	381,223	106	254,391	2,795,634	292,070	8,663	7,292	63,818	5,466,057
2000	1,951,342	380,090	----	678,555	4,137,524	674,754	2,686	4,041	121,656	7,950,648
2001	1,307,339	567,334	40,007	696,025	4,321,570	985,772	3,145	1,433	57,134	7,979,759
2002	1,190,148	305,137	25,410	598,893	1,246,360	385,418	3,773	46,392	80,647	3,882,178
2003	1,902,585	622,575	111,212	1,037,178	1,848,011	433,513	6,928	2,710	89,455	6,054,167
2004	3,562,258	1,110,322	33,392	917,072	4,351,868	1,032,376	4,906	2,412	239,231	11,253,837
2005	3,851,512	1,335,074	683,543	872,682	3,882,951	1,186,258	14,668	16,140	256,191	12,099,019

[1]Wild chinook, wild steelhead and wild sockeye/kokanee designated in text as unclipped.

[2]Hatchery chinook, hatchery steelhead and hatchery sockeye/kokanee designated in text as clipped.

Peak Collection Days

In general, peak smolt collection days in 2005 followed the pattern of the previous seven years (Table 28). The peak collection day was May 10, (965,600), which was also the peak collection day for clipped (521,400) and unclipped (138,200) steelhead. Clipped subyearling chinook (193,700) and unclipped subyearling chinook (96,100) peaked May 31. This is the earliest peak collection date in the last 10 years for unclipped subyearling fall chinook. Many subyearling fall chinook were released up to three weeks early in anticipation of low flows. However, due to unusually heavy rain upriver of LGR in late May, flows increased well above flow forecasts. The combination of early releases and high flows resulted in the collection of 96.5 % of the subyearling fall chinook prior to June 20, the implementation date of the court ordered spill by Judge Redden. In contrast, only 42.4% of the subyearling fall chinook had been collected prior to June 20, 2004, 40.0% in 2003, 6.0% in 2002 and 25.7% in 2001. With the exception of subyearling fall chinook, peak collection day for all groups occurred before this years high flows.

There were 29 days in 2005 in which the total collection exceeded 100,000 fish, 18 days exceeding 200,000 fish, 15 days exceeding 300,000 fish, 12 days exceeding 400,000 fish, eight days exceeding over 500,000 fish, seven days over 600,000 fish, three days over 700,000 fish, three days over 800,000 fish and 2 days over 900,000 fish. Peak collection days and other aspects of the 2005 outmigration are presented in Table 28 and Figures 19-33.

Table 28. Peak collection days at LGR, 1996-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee[2]		Coho	
Year	Clipped	No Clip	Clipped	No Clip[2]	Clipped	No Clip	Clipped	No Clip	All	Total
1996	May 14	April 21	---	July 13	April 27	April 27	May 17	April 2	May 19	April 27
	(31,350)	(9,000)	---	(1,004)	(366,900)	(22,350)	(750)	(910)	(1,650)	(407,550)
1997	April 22	April 22	July 18	July 2	May 2	April 22	July 25	April 22	May 27	May 2
	(13,070)	(5,730)	(2,876)	(480)	(250,146)	(27,821)	(28)	(400)	(150)	(261,350)
1998	May 4	May 3	June 1	July 9	May 4	April 28	May 15	May 15	May 15	May 4
	(70,950)	(19,050)	(60)	(6,210)	(375,900)	(40,220)	(5,550)	(450)	(15,000)	(489,450)
1999	May 9	April 27	July 31	June 9	May 5	May 26	May 29	May 2	May 26	May 5
	(82,650)	(20,877)	(10)	(12,700)	(291,750)	(19,050)	(1,800)	(300)	(8,400)	(353,250)
2000	May 5	April 15	---	July 3	May 7	May 7	May 23	May 28	May 25	May 7
	(171,300)	(18,100)	---	(71,900)	(343,350)	(49,350)	(600)	(300)	(15,600)	(491,250)
2001	May 1	April 30	June 13	July 4	May 16	May 2	May 22	May 17	July 4	May 16
	(122,100)	(34,350)	(4,840)	(80,300)	(338,017)	(72,020)	(450)	(300)	(3,960)	(500,650)
2002	May 6	May 6	June 30	July 21	May 23	May 23	May 19	May 21	May 21	May 6
	(94,333)	(20,166)	(1,833)	(59,457)	(85,900)	(27,000)	(700)	(4,000)	(13,700)	(193,833)
2003	May 6	May 6	May 31	June 22	May 27	May 26	May 30	May 29	May 27	May 6
	(138,657)	(37,761)	(10,149)	(50,500)	(122,687)	(21,200)	(1,493)	(448)	(11,642)	(221,941)
2004	May 6	May 6	May 29	June 16	May 8	May 8	May 23	May 22	May 22	May 6
	(571,642)	(101,642)	(6,418)	(46,100)	(369,552)	(110,896)	(597)	(448)	(21,791)	(822,687)
2005	May 7	May 7	May 31	May 31	May 10	May 10	May 19	May 16	May 10	May 10
	(493,600)	(97,600)	(193,700)	(96,100)	(521,400)	(138,200)	(2,100)	(1,200)	(44,200)	(965,600)

1Wild chinook, wild steelhead and wild sockeye/kokanee designated in text as unclipped beginning in 2000.
2Hatchery chinook, hatchery steelhead and hatchery sockeye/kokanee designated in text as clipped for 2000-2004.

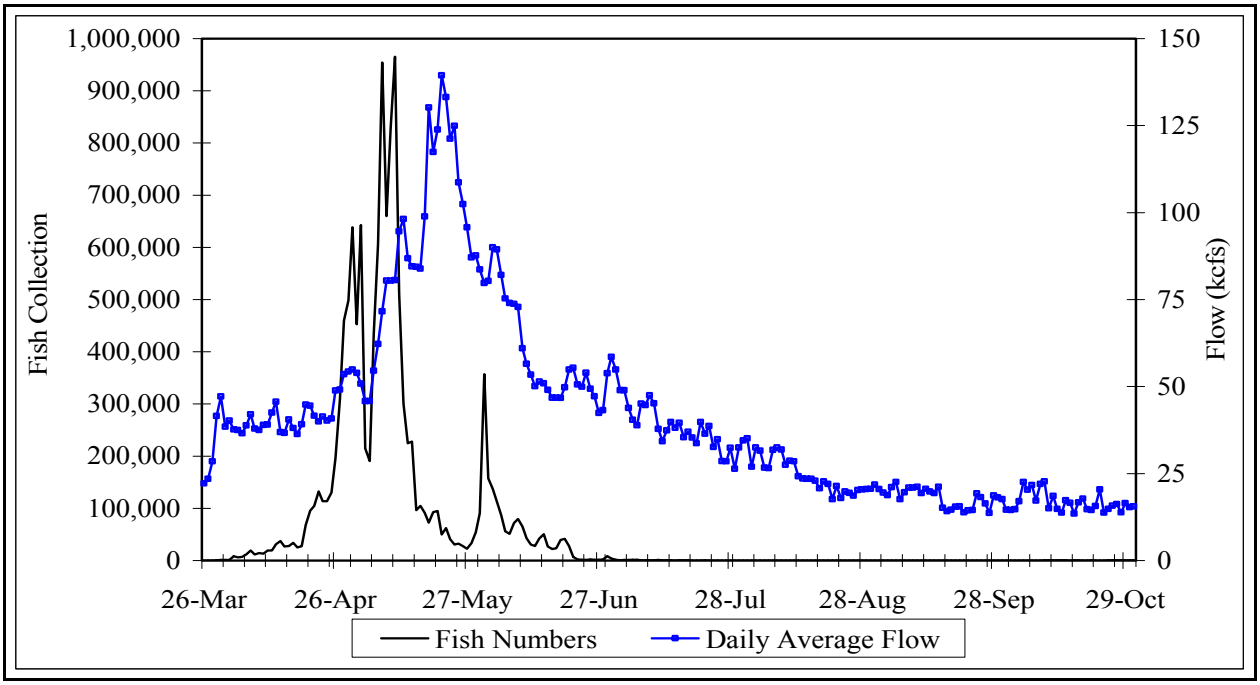

Figure 19. Daily juvenile salmonid collection and river flow at LGR from March 26 through October 31, 2005.

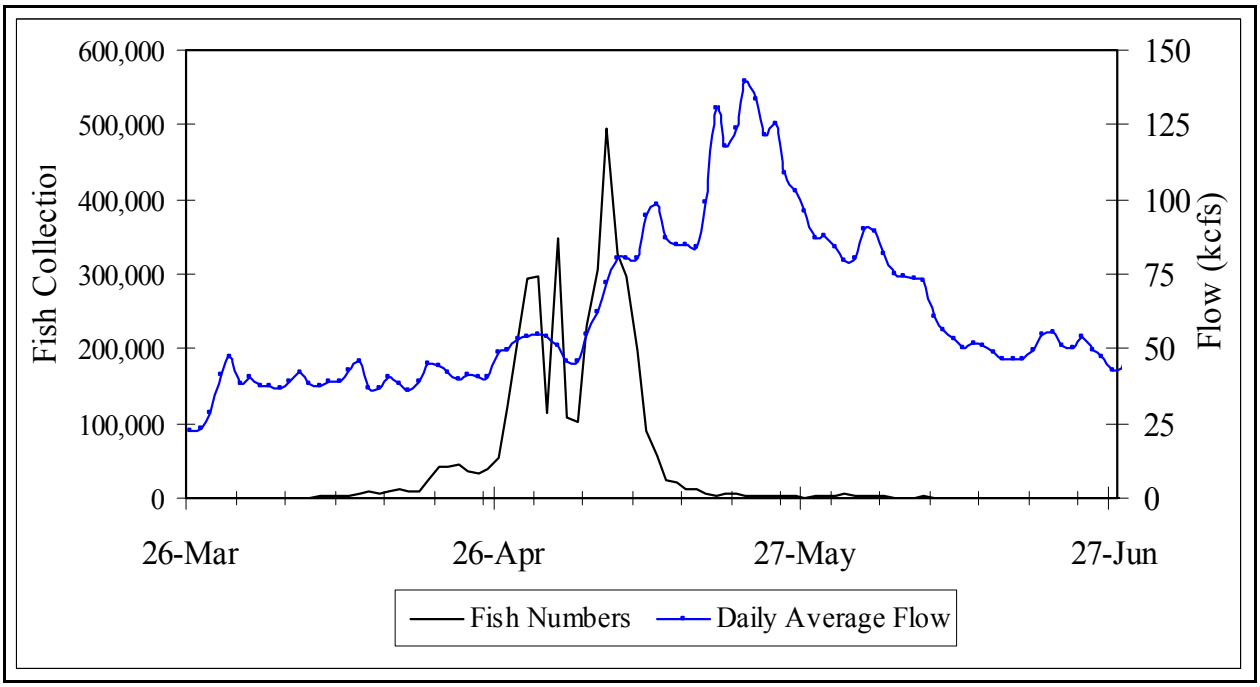

Figure 20. Daily collection of clipped yearling chinook and river flow at LGR from March 26 through June 27, 2005.

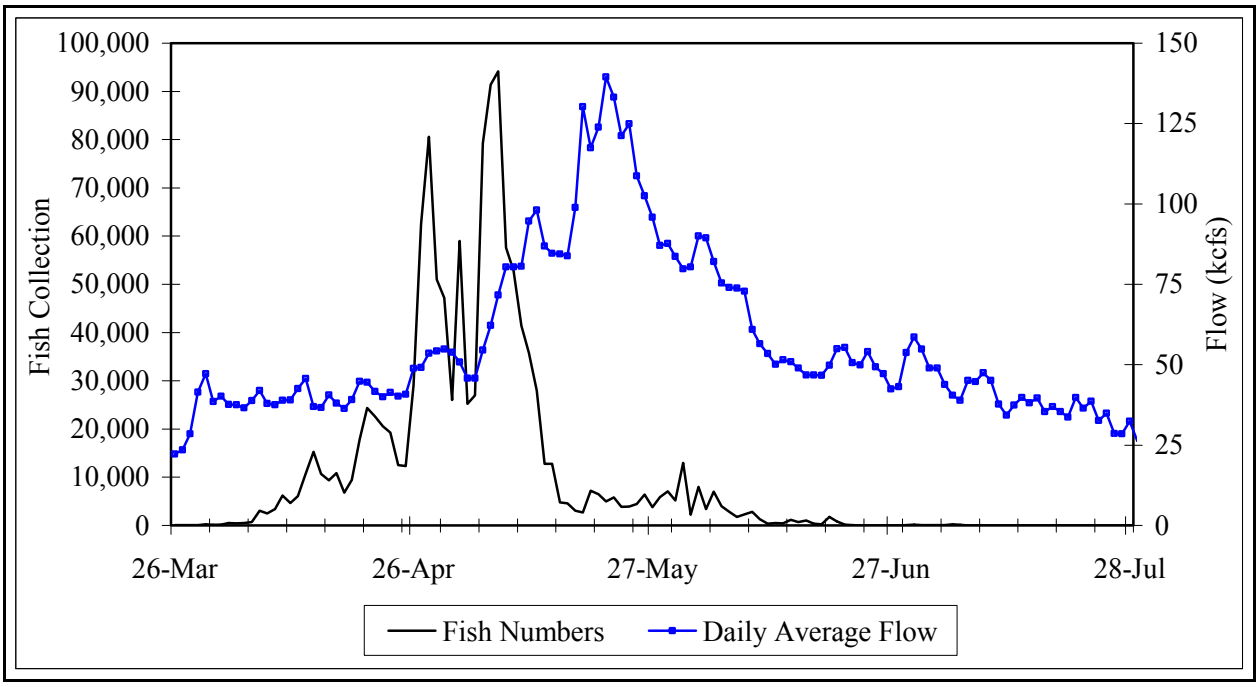

Figure 21. Daily collection of unclipped yearling chinook without CWT and river flow at LGR from March 26 through July 28, 2005.

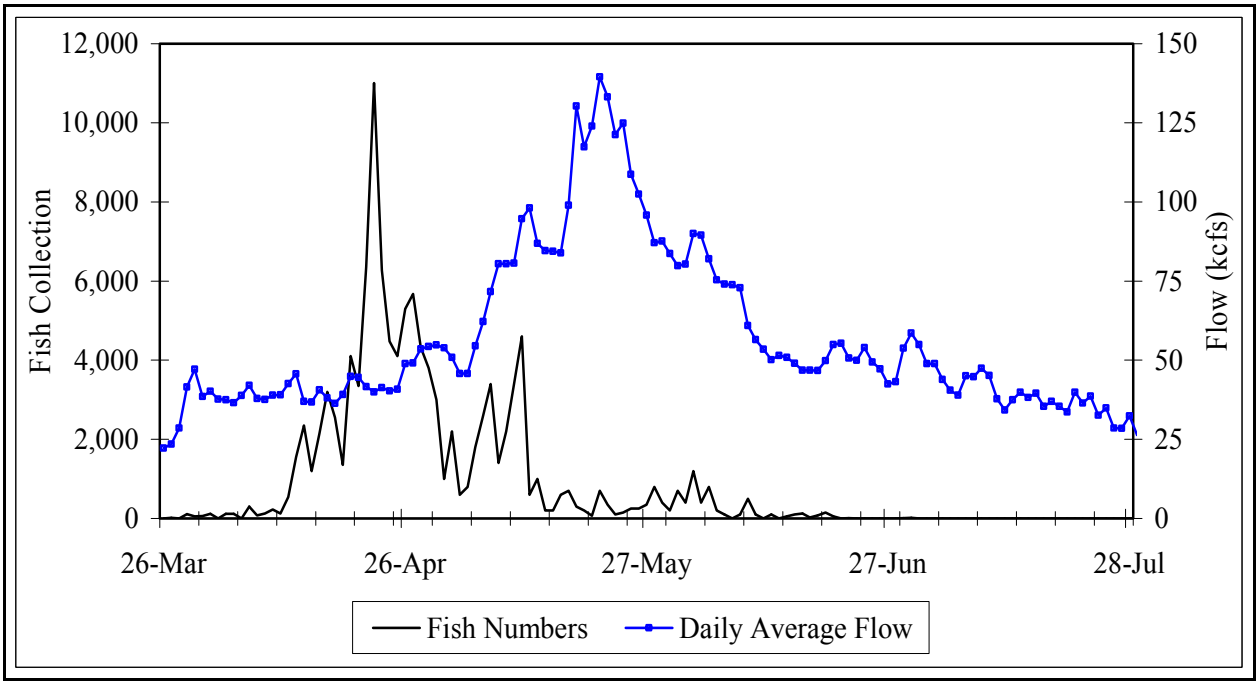

Figure 22. Daily collection of unclipped yearling chinook with CWT and river flow at LGR from March 26 through July 28, 2005.

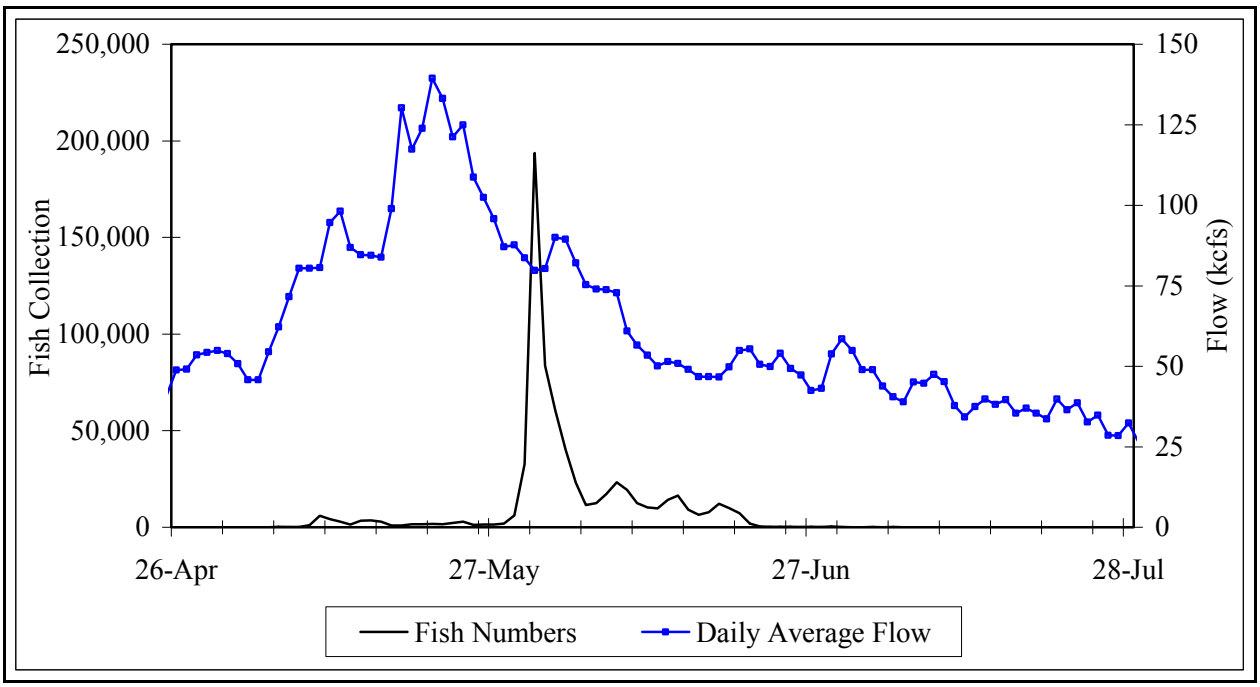

Figure 23. Daily collection of clipped subyearling chinook and river flow at LGR from April 26 through July 28, 2005.

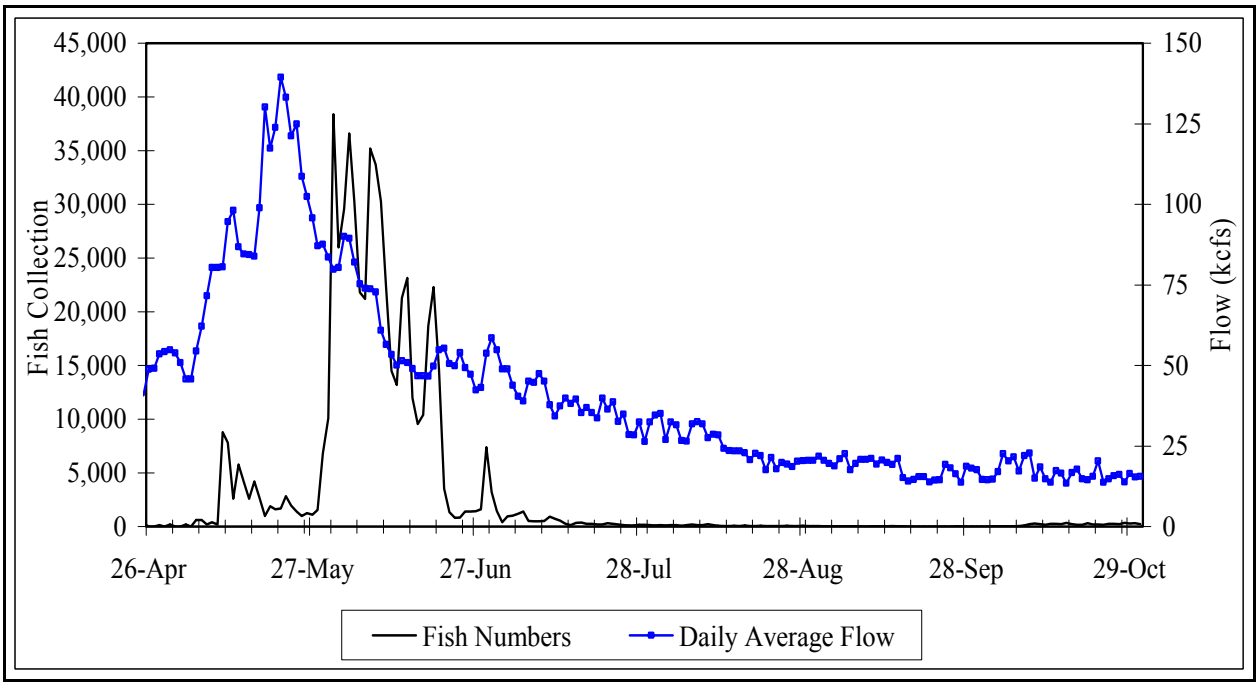

Figure 24. Daily collection of unclipped subyearling chinook without CWT and river flow at LGR from April 26 through October 31, 2005.

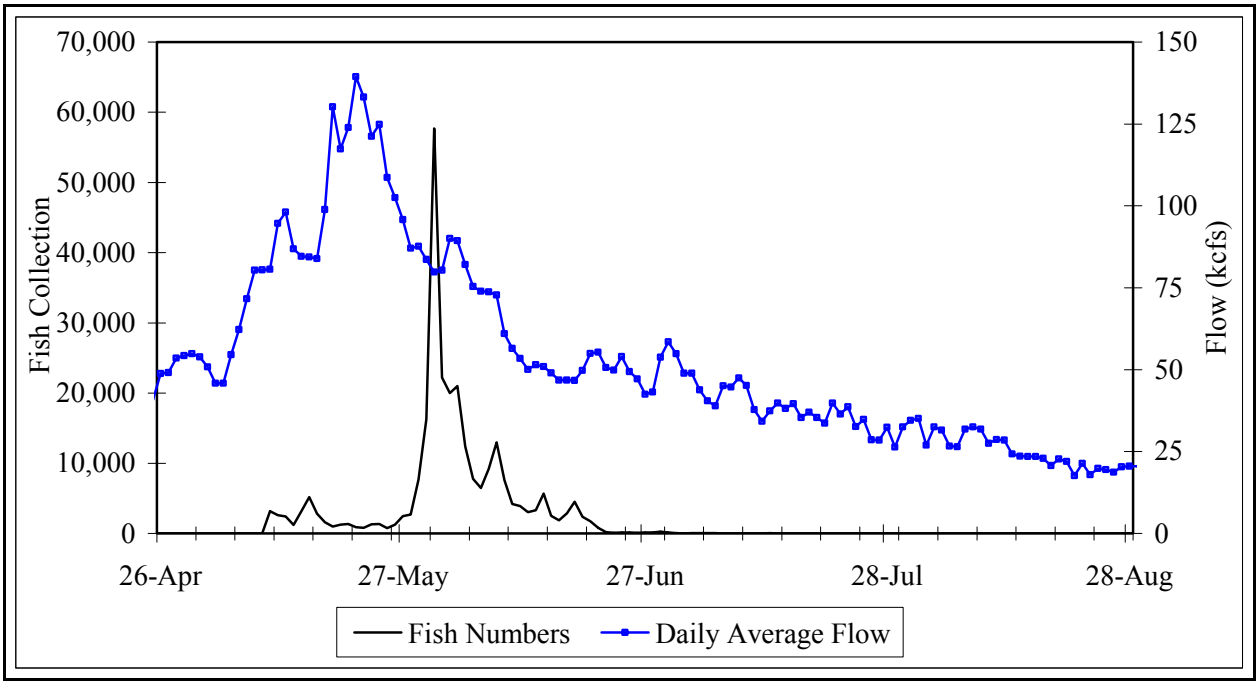

Figure 25. Daily collection of unclipped subyearling chinook with CWT and river flow at LGR from April 26 through Auguts 28, 2005.

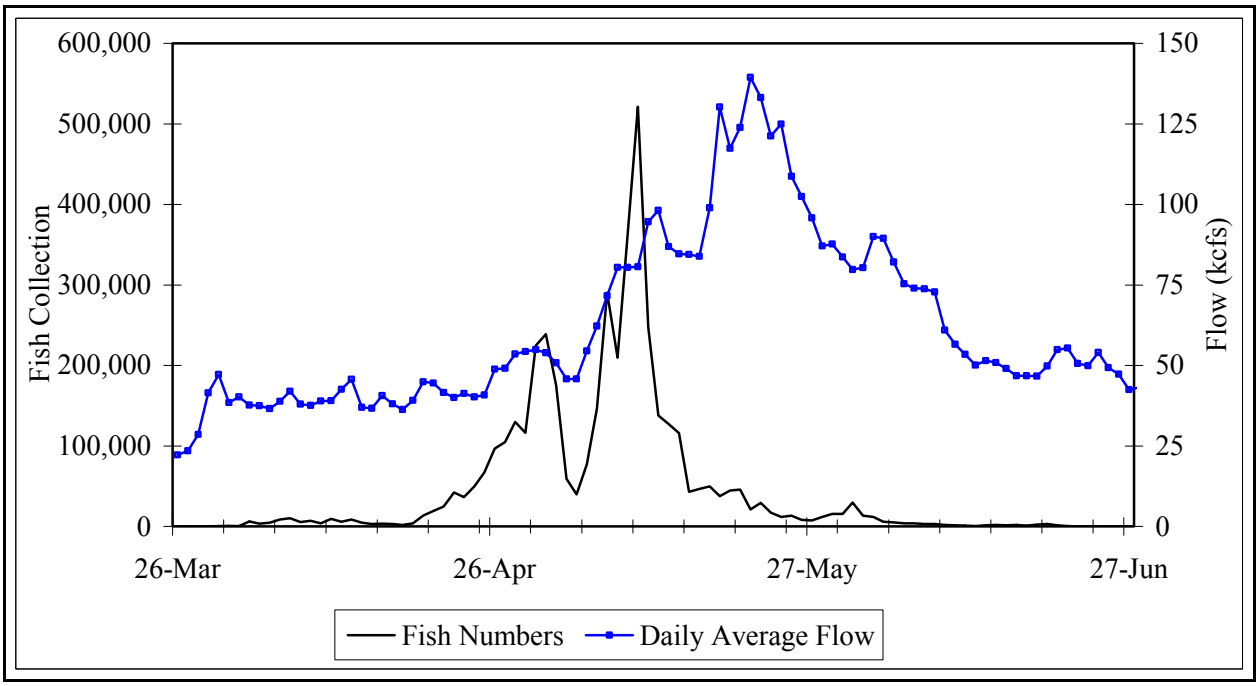

Figure 26. Daily collection of clipped steelhead and river flow at LGR from March 26 through June 27, 2005.

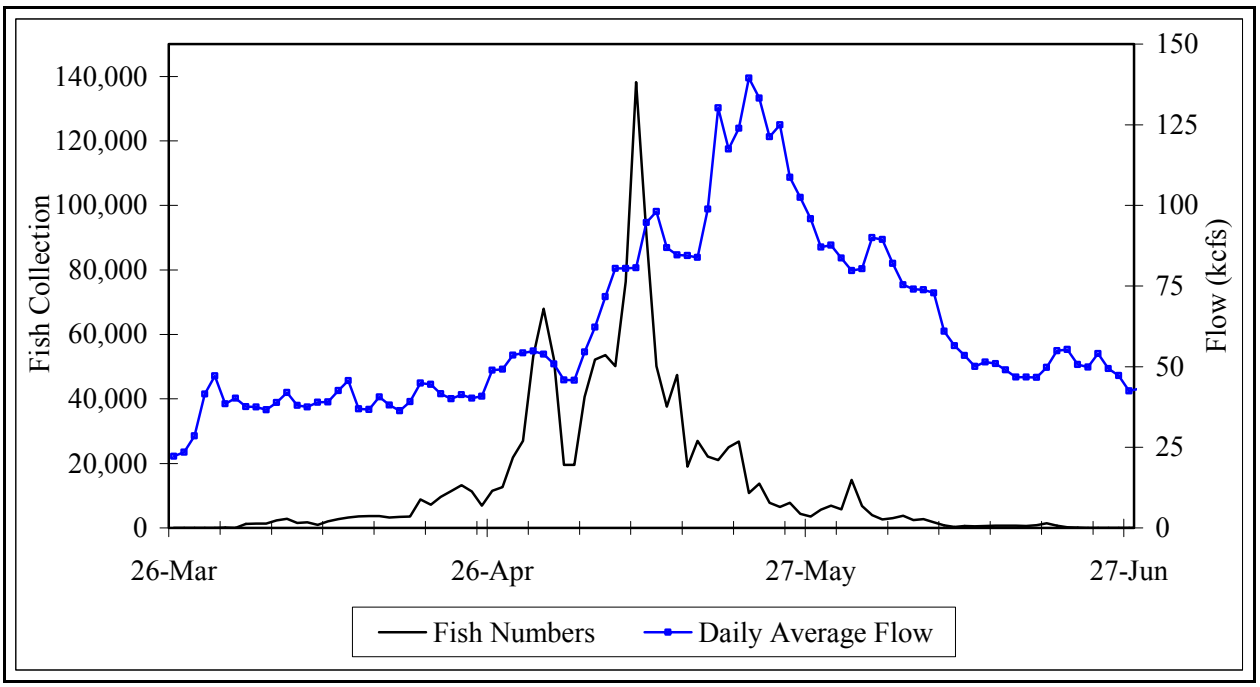

Figure 27. Daily collection of unclipped steelhead without fin erosion and river flow at LGR from March 26 through June 27, 2005.

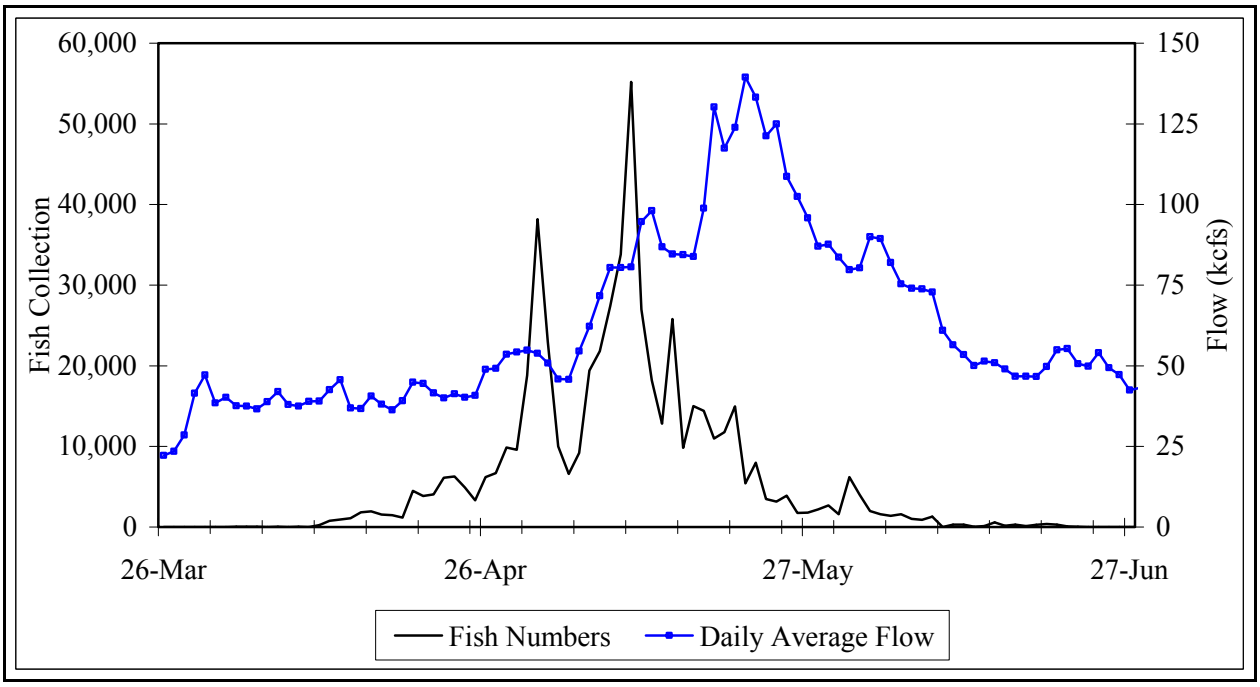

Figure 28. Daily collection of unclipped steelhead with fin erosion and river flow at LGR from March 26 through June 27, 2005.

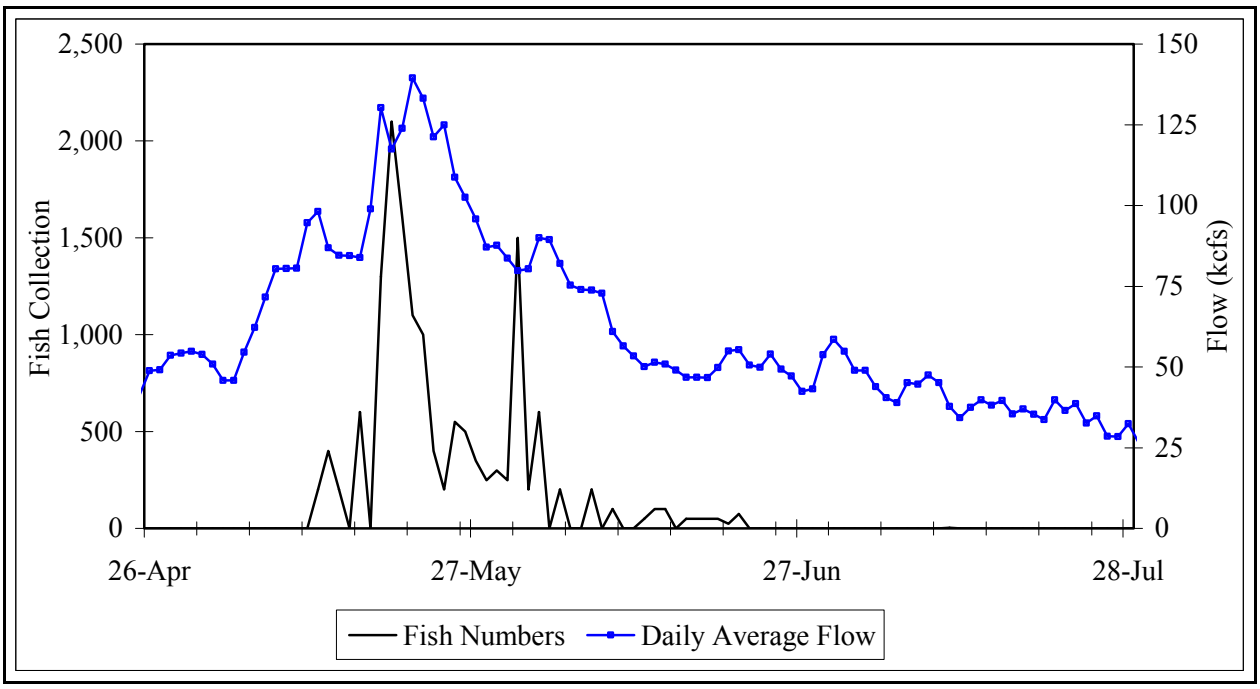

Figure 29. Daily collection of clipped sockeye and river flow at LGR from April 26 through July 28, 2005.

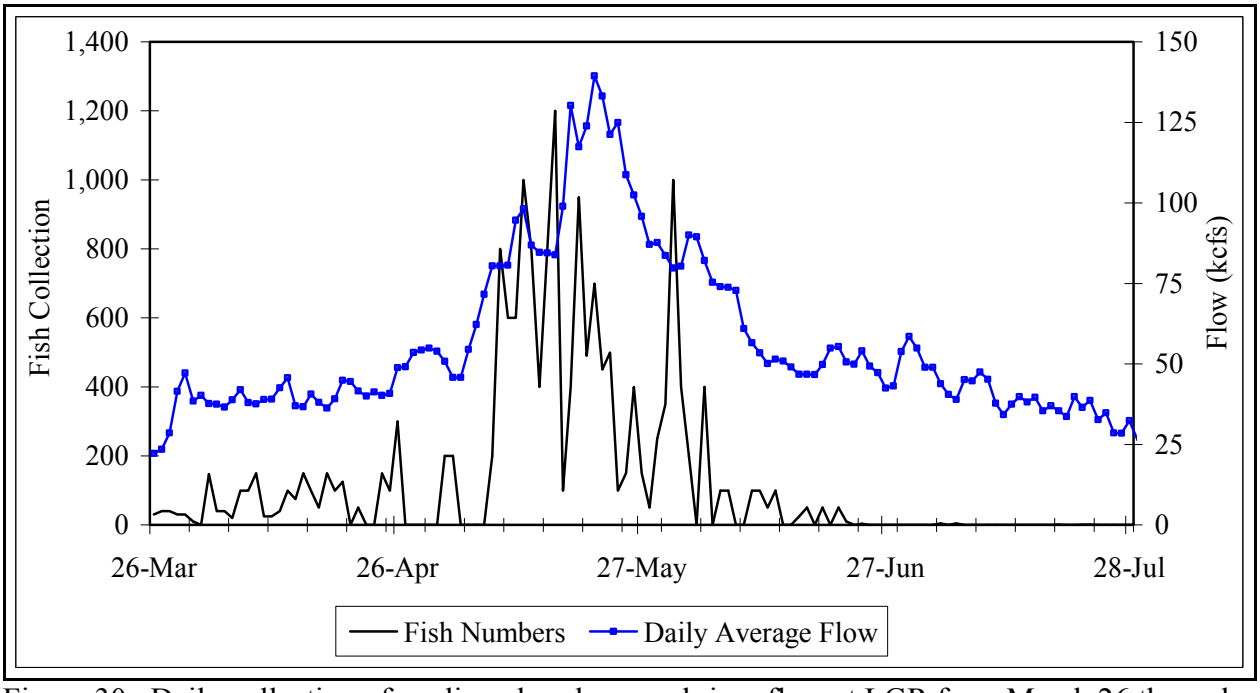

Figure 30. Daily collection of unclipped sockeye and river flow at LGR from March 26 through July 28, 2005.

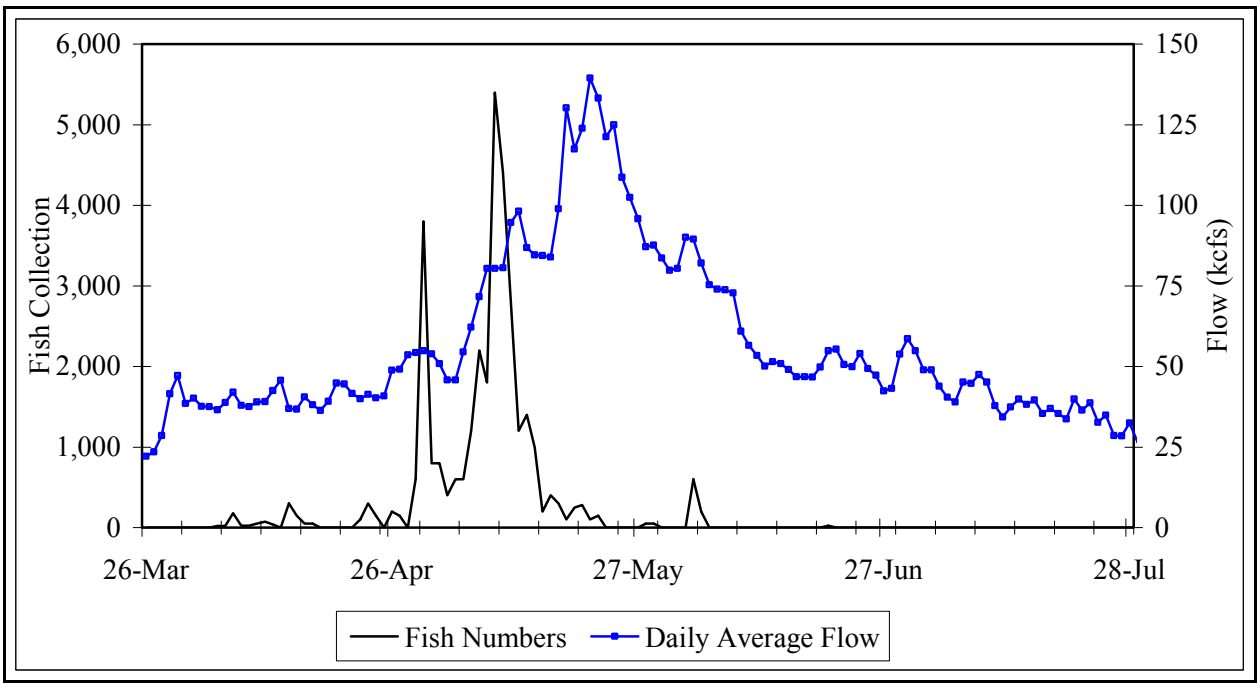

Figure 31. Daily collection of clipped coho and river flow at LGR from March 26 through July 28, 2005.

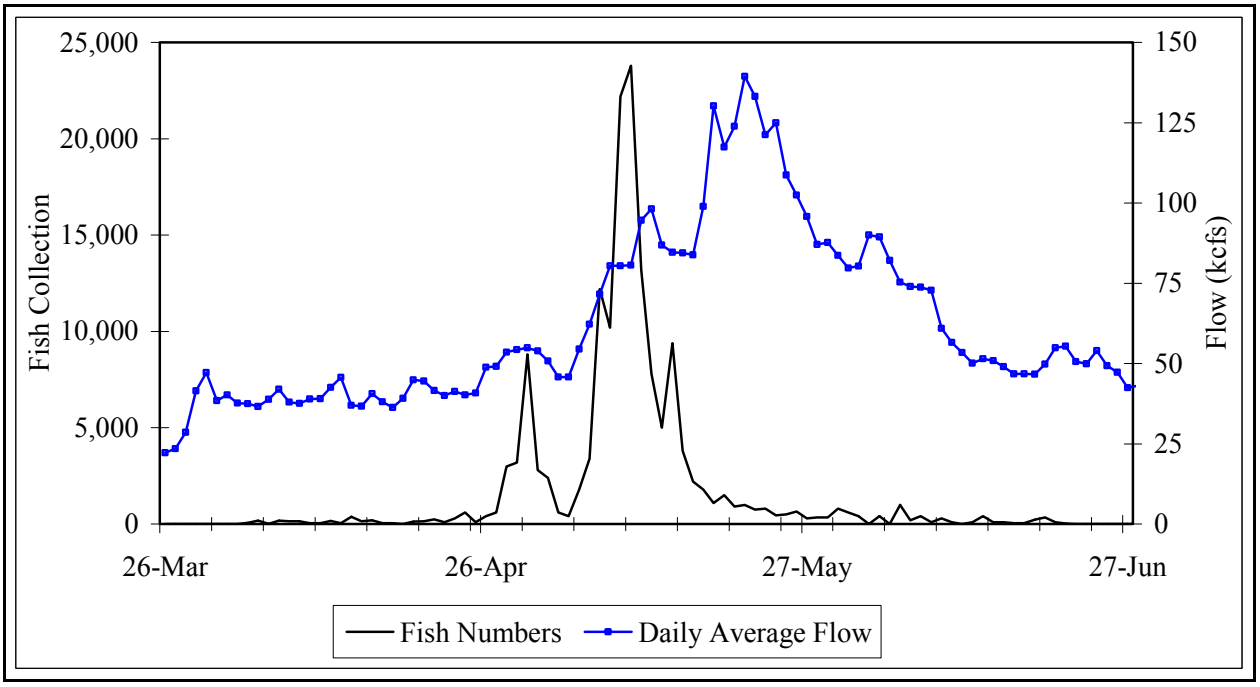

Figure 32. Daily collection of unclipped coho and river flow at LGR from March 26 through July 28, 2005.

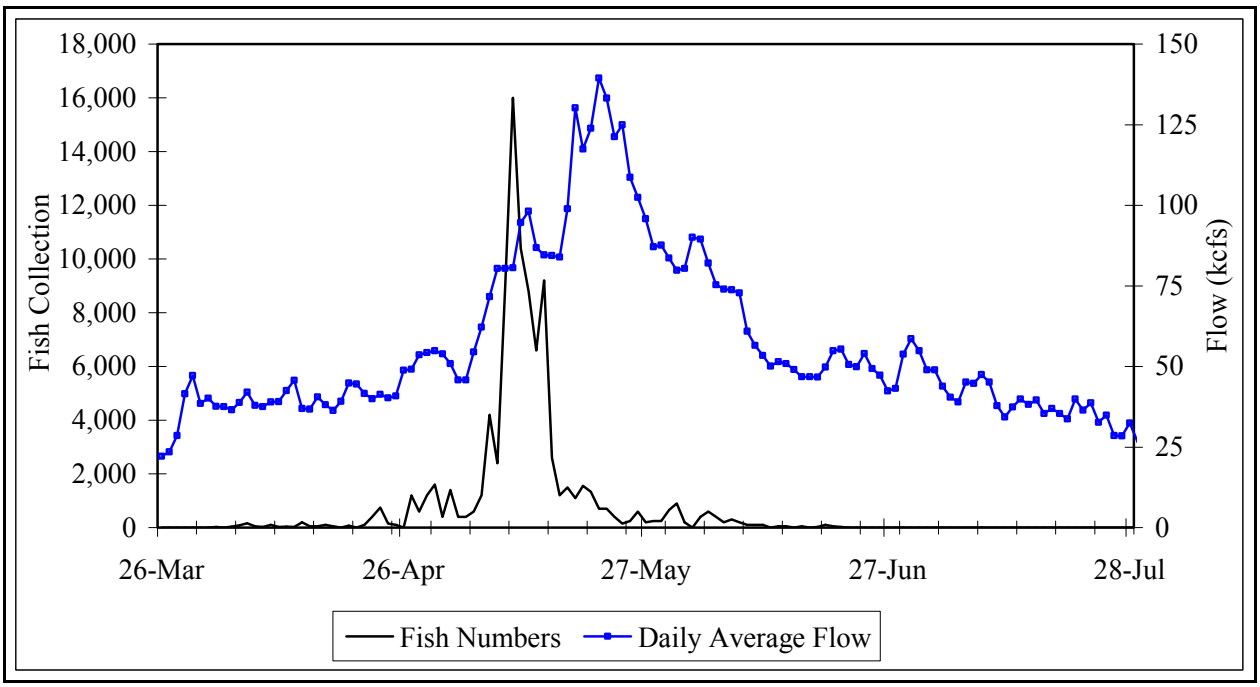

Figure 33. Daily collection of unclipped coho with CWT and river flow at LGR from March 26 through July 28, 2005.

Migration Run Timing

The distribution of daily collection counts for a particular species provides a measure of migration timing for smolts passing LGR (Table 29). Collection efficiency, flow and spill volume influence daily and seasonal collection at the facility. The 10% and 90% dates are approximations of the middle 80% passage timing for smolts passing LGR. These dates of 10% and 90% passage are based on the cumulative daily collection.

Table 29. Estimated 10%, 50% and 90% passage dates based on cumulative numbers of fish at LGR, 1996-2005.

	Yearling Chinook		Subyearling[1, 2] Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip[3]	Clipped	No Clip[3]	Clipped	No Clip	Clipped	No Clip	All	Total
10%										
1996	4/24	4/17	----	6/27	4/24	4/17	5/17	3/30	5/18	4/23
1997	4/22	4/13	6/30	6/22	4/23	4/17	7/18	4/23	5/22	4/22
1998	4/20	4/12	6/1	6/24	4/27	4/25	5/8	5/11	5/6	4/24
1999	4/23	4/17	7/31	6/10	4/24	4/22	5/24	4/1	5/20	4/23
2000	4/22	4/15	----	6/18	4/22	4/18	5/11	4/12	5/12	4/23
2001	4/27	4/24	6/8	6/12	4/29	4/29	5/16	4/5	5/18	4/29
2002	4/18	4/15	6/3	6/25	4/21	4/17	5/16	4/23	5/18	4/19
2003	4/22	4/14	5/31	6/7	4/25	4/19	5/28	4/25	5/18	4/24
2004	4/24	4/17	5/28	6/8	4/26	4/28	5/13	4/14	5/7	4/26
2005	4/27	4/19	5/30	5/25	4/26	4/27	5/18	4/19	4/30	4/27
50%										
1996	5/9	4/25	----	7/23	5/5	5/4	5/27	4/4	6/2	5/5
1997	5/3	4/23	7/19	7/18	5/3	4/29	7/29	5/14	6/2	5/3
1998	4/30	5/2	6/7	7/14	5/4	5/5	5/12	5/14	5/15	5/4
1999	5/6	5/1	8/29	7/18	5/7	5/10	5/29	5/2	5/26	5/8
2000	5/4	5/2	----	7/3	5/6	5/7	5/23	5/25	5/24	5/6
2001	5/5	5/5	6/14	7/7	5/11	5/7	5/27	5/18	6/5	5/10
2002	5/6	5/5	6/19	7/16	5/10	5/18	5/21	5/18	5/23	5/14
2003	5/6	5/2	6/13	6/23	5/14	5/17	6/1	5/28	5/27	5/14
2004	5/4	5/4	6/5	6/21	5/9	5/8	5/22	5/21	5/20	5/6
2005	5/5	5/3	6/1	6/5	5/8	5/9	5/21	5/16	5/10	5/7
90%										
1996	5/19	5/19	----	8/29	5/17	5/20	6/15	5/16	6/17	5/19
1997	5/20	5/16	8/19	9/24	5/23	5/19	9/24	7/5	6/27	5/25
1998	5/10	5/17	6/17	8/30	5/20	5/23	5/26	5/26	5/29	5/20
1999	5/22	6/2	11/8	8/22	5/27	5/30	6/7	6/9	5/30	5/30
2000	5/13	6/3	----	8/26	5/23	5/24	5/28	9/15	6/3	6/2
2001	5/17	5/25	7/5	8/10	5/26	5/27	6/12	10/11	7/13	6/15
2002	5/20	5/24	6/30	8/11	5/28	5/31	6/10	5/28	6/7	7/6
2003	5/18	5/26	6/27	7/18	5/28	5/30	6/5	6/8	6/15	6/22
2004	5/9	5/21	6/13	7/13	5/23	5/23	6/12	9/28	5/27	5/30
2005	5/10	5/16	6/14	6/19	5/17	5/20	6/2	6/1	5/17	5/31

[1] Clipped subyearling fall chinook was not present until 1997.

[2] Unclipped hatchery subyearling fall chinook were indistinguishable from wild subyearling chinook in 1999-2005.

[3] Includes unclipped -yearling chinook with CWT in 1999-2005.

Passage dates for hatchery reared fish typically reflect release dates. Passage dates for naturally produced smolts reflect many variables including photoperiod, flow and water temperatures. Passage dates for clipped (hatchery) subyearling fall chinook this season were influenced by the late-April to late-May releases of 1,800,213 clipped smolts and 2,163,904 unclipped (520,545 with CWT) subyearling fall chinook above LGR.

The 10% passage date for all species combined over the last 10 years has been very consistent, varying by only 10 days. Clipped and unclipped yearling chinook 10% passage dates in 2005 followed the general trend for 1996-2004, with clipped yearling chinook always later than their unclipped counterpart, averaging seven days later (Table 29). Since 2002 clipped yearling chinook 10% passage dates have been later each year. Clipped subyearling fall chinook 10% passage dates in 2005 were similar to those observed in 1998, and from 2001-2005. The 10% passage date of July 31 in 1999 was 101 days, and only 107 smolts were collected for the entire season, reflecting an accidental release. The 2005 unclipped subyearling fall chinook 10% passage date of May 25 surpasses the previous earliest date by 13 days and is the earliest in the last 10 years (Table 29). Clipped steelhead 10% passage dates from 1996-2005 generally are a few days later than their unclipped counterparts and both species often have their 10% passage dates in late April. Clipped sockeye/kokanee 10% passages typically fall within a two to three week period in May, with 1997 a notable exception (July 18). Unclipped sockeye/kokanee in 2005 had their 10% passage date April 19, typical of the 1996-2004 trends. The coho 10% passage date of April 30 in 2005 was earlier than in the previous 10 years (Table 29).

The 50% passage dates from 1996-2005 for clipped and unclipped yearling chinook and clipped steelhead typically occur during the first week in May, while for unclipped steelhead the 50% passage dates usually occur in late May. The 50% passage dates in 2005 for clipped and unclipped subyearling fall chinook are the earliest in the last 10 years. The 2005 clipped sockeye/kokanee 50% passage date of May 21 follows the 1996-2004 trends, with 1997 having the latest 50% passage date (July 29). Unclipped sockeye/kokanee tend to have their 50% passage dates slightly earlier in May than their clipped counterparts and the coho 50% passage dates are similar to clipped sockeye/kokanee. The 50% passage dates for all species combined from 1996-2005 usually occurs within the first two weeks in May, with 1996 an exception, the only year to have its' 50% passage date in June.

The 2005 clipped yearling chinook 90% passage date of May 10 is about one week earlier compared with the 1996-2003 general trend and one day later than 2004 (Table 29). With the exceptions in 1996 and 1997, clipped yearling chinook 90% passages dates have varied by nearly three weeks and are earlier than their unclipped counterparts, which have less variability in their 90% passage dates since 1996. An estimated 40% of the clipped yearling chinook passed LGR between May 5 and May 10. Clipped subyearling fall chinook 90% passage dates have been earlier since 2001 and less variable compared to the wide fluctuations observed from 1997-1999. The 2005 unclipped subyearling fall chinook 90% passage date of June 19 is the earliest observed in the last 10 years, 25 days earlier than in 2004 and over three months earlier than the 1997 90% passage date of September 24. The general trend since 1996, except in 1997, is for the 90% passage date being earlier in succeeding years (Table 29). The 2005 clipped steelhead 90% passage date was the earliest observed since 1996 and generally clipped steelhead are a few days earlier than the unclipped steelhead 90% passage dates, which was earlier in 2005 than in most years since 1997. With the exception of 1999, the unclipped steelhead 90% passage dates have occurred in late May. Clipped sockeye/kokanee 90% passage dates usually occur in late

May to mid-June, with 1997 being the exception. Unclipped sockeye/kokanee have had very protracted 90% passage dates since 1996, making it difficult to predict and the most variable of all the salmonid species seen at LGR. The coho 90% passage date of May 17 in 2005 is the earliest recorded in the last 10 years, 10 days earlier than in 2004, the previous earliest 90% passage date. The overall 90% passage date for all species combined in 2005 was May 31 compared to May 30 in 2004, 23 days earlier than observed in 2003, the latest recorded 90% passage date in the last 10 years.

The number of days for the middle 80% passage run-timing (23 days) for all species combined in 2005 was 19 days less than in 2004 and for the 1996-2003 average (Table 34). The number of days for the middle 80% passage for every species in 2005, except sockeye/kokanee, was the lowest in the last 10 years. When comparing 2005 with the 1996-2003 average length of 80% passage, all species, including sockeye/kokanee, had shorter passage times in 2005. Unclipped sockeye/kokanee has the most protracted 80% passage time over the last ten years and the longest 1996-2003 average (Figure 34). Clipped yearling chinook number of days for the middle 80% passage since 1996 are less thaan that of unclipped yearling chinook, an average of 19 fewer days. A similar trend holds for clipped subyearling fall chinook, averaging 21 days less for the middle 80% passage compared to unclipped subyearling fall chinook. Clipped steelhead average four fewer days for the middle 80% passage compared to unclipped steelhead from 1996-2005. The number of days for 80% passage for clipped sockeye/kokanee range from nine to 70 days and 16-190 days for unclipped sockeye/kokanee. Coho average 12 fewer days for the 80% passage compared to all species combined.

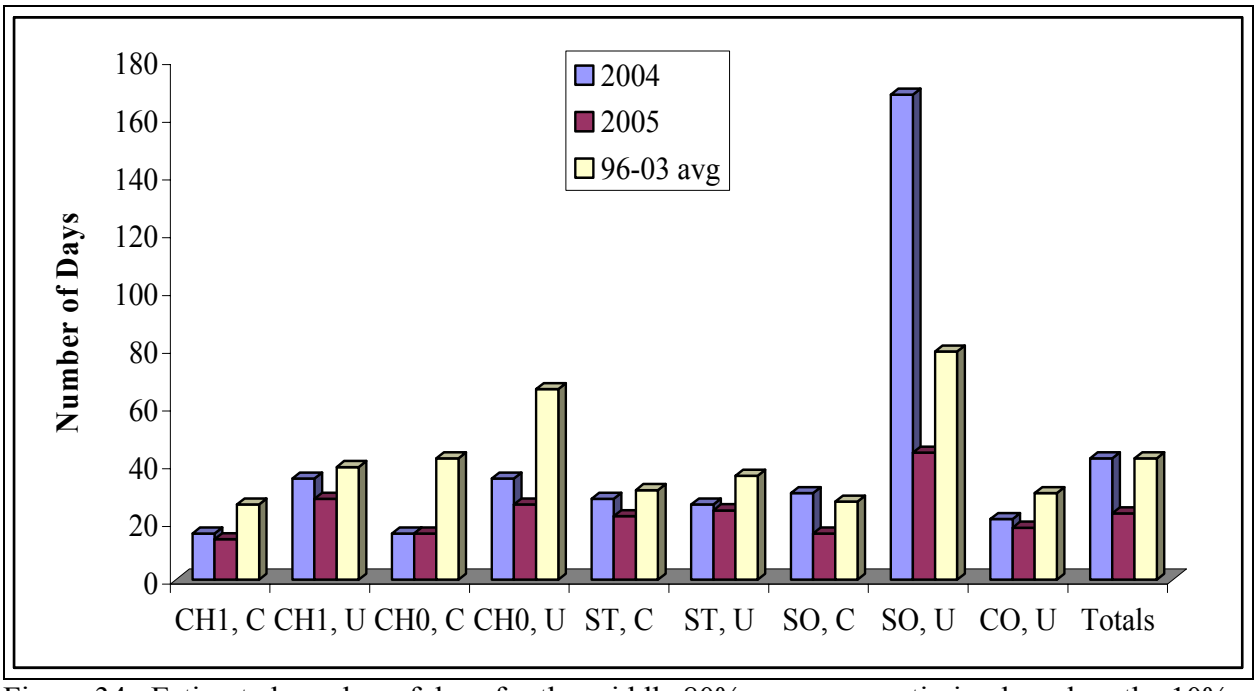

Figure 34. Estimated number of days for the middle 80% passage run-timing based on the 10% and 90% cumulative numbers of fish (by species) at LGR, 1996 through 2005.

Table 30. The estimated number of days for the middle 80% passage at LGR, 1996-2005.

	Yearling Chinook		Subyearling[1, 2] Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip[3]	Clipped	No Clip[3]	Clipped	No Clip	Clipped	No Clip	All	Total
1996	26	33	----	64	24	34	30	48	31	36
1997	29	34	51	96	30	33	70	74	37	50
1998	21	36	17	68	24	29	19	16	24	28
1999	30	47	101	75	34	39	16	68	20	48
2000	22	50	----	70	32	37	18	157	23	51
2001	21	32	28	61	28	29	28	190	57	53
2002	33	40	28	48	38	45	26	36	21	35
2003	27	43	29	42	34	42	9	46	29	33
2004	16	35	16	35	28	26	30	168	21	42
2005	14	28	16	26	22	24	16	44	18	23
96-03 avg	26	39	42	66	31	36	27	79	30	42

[1] Clipped subyearling fall chinook was not present until 1997.

[2] Unclipped hatchery subyearling fall chinook were indistinguishable from wild subyearling fall chinook in 1999-2005.

[3] Includes unclipped yearling chinook with CWT 1999-2005.

Transportation

In 2005, 12,099,019 juvenile salmonids (92.85%) of all fish collected were transported from LGR (Table 27) compared to 11,253,837 (95.47%) in 2004 and 5,969,460 (96.26%) for the 1996-2003 average. The numbers of fish and the percentages transported of each species group in 2005 included: 3,851,512 clipped yearling chinook (92.97%), 1,335,074 unclipped yearling chinook (95.50%), 683,543 clipped subyearling fall chinook (98.69%), 872,682 unclipped subyearling fall chinook (98.12%), 3,882,951 clipped steelhead (90.49%), 1,186,258 unclipped steelhead (91.28%), 14,668 clipped sockeye/kokanee (99.67%), 16,140 unclipped sockeye/kokanee (95.28%) and 256,191 coho (89.57%).

The COE began the season using trucks to transport smolts. As the numbers of smolts collected increased, the COE switched to barges and later as the numbers declined, resumed using trucks. The first truck left Lower Granite March 27 and then, every-other-day truck (EOD) transport continued through April 6. On April 6, fish collection numbers increased to where the COE used three large tanker trucks to transport the fish collected. The first barge departed Lower Granite April 8 and barging continued EOD through April 22. From April 24 through May 30, the Corps barged fish every day and then EOD June 2 through July 31. Every-other-day trucking resumed August 2 and continued through October 11 when the large tanker truck (fish holding capacity of 1,750 pounds) was put back into service October 13 and October 15 due to increased fish collection. The 300 gallon capacity midi-tanker was returned to service October 17 when fish collection decreased and for the remainder of the fish transportation season ending October 31.

This season 66,396 juvenile salmonids, (0.55% of the fish transported in 2005) were transported by truck from LGR (Table 27), compared to 89,705 (0.80%) in 2004, and 158,517 (2.65%) for the 1996-2003 averages. The numbers of fish trucked and the percentages of the total transported for each species group in 2005 included: 5,563 clipped yearling chinook (0.14%), 6,423 unclipped yearling chinook (0.48%), 43 clipped subyearling fall chinook (0.01%), 9,937 unclipped subyearling fall chinook (1.14%), 34,182 clipped steelhead (0.88%), 8,842 unclipped steelhead (0.75%), four clipped sockeye/kokanee (0.03%), 518 unclipped sockeye/kokanee (3.21%) and 884 coho (0.35%).

A total of 12,032,623 juvenile salmonids, 99.45% of the fish transported from LGR in 2005, were transported by barge, compared to 11,164,123 in 2004 and 5,810,943 (93.71%) for the 1996-2003 average (Table 27). The number of fish barged and the percentages of the total transported by species group in 2005 included: 3,845,949 clipped yearling chinook (99.86%), 1,328,651 unclipped yearling chinook (99.52%), 683,500 clipped subyearling fall chinook (99.99%), 862,745 unclipped subyearling fall chinook (98.86%), 3,848,769 clipped steelhead (99.12%), 1,177,416 unclipped steelhead (99.25%), 14,664 clipped sockeye/kokanee (99.97%), 15,622 unclipped sockeye/kokanee (96.79%) and 255,307 coho (99.65%).

Fish collected for transportation by barge at Little Goose Dam, Lower Monumental Dam and McNary Dam were transported by tug boats and barges that originated at LGR. In addition to fish barged from LGR, there were 5,618,907 barged from Little Goose Dam, 1,161,600 fish from Lower Monumental Dam and 2,901,648 fish from McNary Dam.

Bypass

The juvenile fish facility was placed in primary bypass mode (fish are diverted directly back to the river) March 23, 2005. At 0700 hours March 25 the facility was taken off primary bypass and fish collection began. Collection ended 0700 hours October 31. The facility was then placed back into primary bypass until the bypass system was dewatered and shut down December 19. Over the course of the season, some events require that the facility be placed in primary bypass mode or that fish collected in the raceways, be bypassed back to the river.

This season, 898,235 fish were bypassed from the LGR Juvenile Fish Facility. The first event occurred between 0500-0700 April 6 when three 3,500 gallon tanker trucks were loaded to capacity and the remaining fish were bypassed back to the river. The remaining bypass events occurred because collection numbers were high and the raceways and barge holds were full. These events occurred from 0500-1000 hours April 30, from 0700-1500 hours May 2, from 1100-2300 hours May 9 and the last bypass event occurred from 1630-1930 hours May 10.

Of the bypassed fish, 814,942 (6.3%) were bypassed from the raceways when collection numbers exceeded raceway capacity and or transport capacity (Table 27) compared to 501,395 juvenile salmonids bypassed in 2004. The numbers and percentages of fish bypassed from the raceways during 2005 by species group included: 231,224 clipped yearling chinook (5.58%), 52,336 unclipped yearling chinook (3.74%), 3,492 clipped subyearling fall chinook (0.50%), 7,360 unclipped subyearling fall chinook (0.83%), 385,213 clipped steelhead (8.98%), 106,208 unclipped steelhead (8.17%), 490 unclipped sockeye/kokanee (2.89%) and 28,619 coho (10.01%).

Also bypassed at LGR were 83,231 fish as part of several research studies. The National Marine Fisheries Service (NMFS) bypassed fish in 2005 for two research studies. The NMFS Extra Mortality study bypassed 47,617 PIT-tagged clipped yearling chinook. The NMFS Survival study PIT-tagged and bypassed 6,885 clipped yearling chinook, 18,445 clipped steelhead and 5,319 unclipped steelhead. The United States Geological Survey-Biological Resources Division (USGS-BRD) subyearling fall chinook Radio Telemetry study radio-tagged and bypassed 454 clipped subyearling chinook and 1,682 unclipped subyearling fall chinook. The USGS-BRD yearling chinook and steelhead Radio Telemetry study radio-tagged and bypassed 1,666 clipped yearling chinook, 521 clipped steelhead and 523 unclipped steelhead. The USGS-BRD subyearling fall chinook migrational behavior study, radio-tagged and bypassed 119 subyearling fall chinook.

An additional total of 62 radio-tagged fish were bypassed from the sample to aid on-going research projects. These included: eight clipped yearling chinook, three unclipped yearling chinook, five clipped subyearling fall chinook, 30 unclipped subyearling fall chinook, 10 clipped steelhead and six unclipped steelhead.

When fish numbers decline in mid to late summer, the sample rate is increased to 100% and trucks are used to transport fish down river. To reduce loading desities and reduce stress on subyearling fall chinook, steelhead are bypassed back to the river. In 2005 most of the steelhead had already passed LGR at the time the sample rate was increased to 100%, eliminating the need to bypass them. A total of 381 and 408 steelhead were bypassed during this time in 2004 and 2003 respectively.

PIT-tag Diversion

The PIT tag diversion system was operated in the standard diversion mode (NON-DIVERT), between March 25 and July 1 at 1200 hours. During this time, the sample diversion gate overrode the PIT-tag diversion gate and any fish present during a sample diversion gate operation went to the sample holding tank. After 1200 hours on July 1 the system was set to DIVERT mode for the remainder of the season. In this mode, the PIT-tag diversion gate overrides the sample gate to divert all PIT-tagged fish to the river or to the separation-by-code holding tanks (SBC). Most of the PIT-tagged fish detected exiting the separator were diverted to the river and some fish were diverted to the raceways to be transported. A small number of research fish may be missed by the diversion system and are sent to the raceways or the sample tank and transported. An unknown number of non-tagged fish were bypassed by the PIT-tag diversion system along with the tagged fish. These fish not included in the facility bypass numbers. The research study desigm for any group of tagged fish determines whether that group of fish is bypassed or transported.

Between 1997 and 2002, 63% of the PIT-tagged fish detected at LGR were bypassed and 36% were transported in each year. In 2003 this ratio was reversed, 41% were bypassed to the river and 58% were transported. In 2004 60% of the PIT-tagged smolts were bypassed and 40% were transported, similar to that observed 1997-2002. In 2005, 55% of the PIT-tagged smolts were bypassed and 45% were transported (Table 31).

Table 31. Final disposition of PIT-tagged juvenile salmonids by detected at LGR, 1996-2005.

Year	Bypass to River		Raceways/Transport		Sample Tank/Transport		Not Detected at Exit		Total
1996	48,934	89.41%	3,719	6.80%	1,392	2.54%	686	1.25%	54,731
1997	46,691	59.29%	28,564	36.28%	1,803	2.29%	1,686	2.14%	78,744
1998	81,000	59.76%	50,126	36.98%	1,683	1.24%	2,729	2.01%	135,538
1999	47,574	59.98%	29,251	36.88%	1,359	1.71%	1134	1.43%	79,318
2000	62,409	61.90%	34,437	34.15%	1,287	1.28%	2,696	2.67%	100,829
2001	130,825	61.40%	75,684	35.52%	4,294	2.02%	2,272	1.07%	213,075
2002	57,920	60.95%	29,933	31.50%	2,650	2.79%	4,519	4.76%	95,022
2003	62,122	40.80%	87,119	57.21%	2,225	1.46%	802	0.53%	152,268
2004	105,894	59.82%	69,130	39.05%	1,640	0.93%	345	0.20%	177,009
96-04 ave.	71,485	59.21%	45,329	37.55%	2,037	1.69%	1,874	1.55%	120,726
2005	114,503	54.93%	89,874	43.11%	3,435	1.65%	645	0.31%	208,457

According to the PTAGIS database, 208,457 PIT-tagged fish were detected at LGR in 2005 compared to 177,009 PIT-tagged fish in 2004, 152,268 in 2003, 95,022 in 2002 and 211,914 in 2001 (Table 31). Of these, 114,503 (55%) were bypassed to the river through the PIT-tag diversion system, 89,874 (43%) were diverted to the raceways and transported, 3,435 (2%) were diverted to the sample tank (sampled and then transported) and 645 (<1%) were not detected at any of the exit monitors (fish disposition unknown). There were 1,594 PIT-tagged smolts that were classified as orphans in the PTAGIS database. The total number of fish detected by species at LGR included 104,606 hatchery yearling chinook, 18,826 wild yearling chinook, 32,729 hatchery subyearling chinook, 70 wild subyearling chinook, 2,916 hatchery chinook of unknown race, 8,799 wild chinook of unknown race, one chinook of unknown rearing type or age, 23,494 hatchery steelhead, 12,574 wild steelhead, 159 steelhead of unknown rearing

type, 1,876 hatchery coho, 609 hatchery sockeye, 204 wild sockeye and 1,594 orphans (Table 32).

Table 32. Disposition of PIT-tagged fish detected at LGR by species, 1996-2005.

	Yearling Chinook		Subyearling Chinook		Unknown Chinook		Unknown Chinook	Steelhead			Sockeye		Coho		
	Hatch.	Wild	Hatch.	Wild	Hatch	Wild	Unk.	Hatch.	Wild	Unk.	Hatch.	Wild	All	Orphan	Total
Bypass	44,870	10,667	21,455	41	2,857	3,575	1	19,332	7,880	151	226	85	1,848	1,515	114,503
Raceway	58,722	7,835	9,239	8	20	5,065		3,886	4,543	3	370	113	13	57	89,874
Sample	858	294	1,658	21	32	131		257	132	5	13	6	13	15	3,435
Unk Exit	156	30	377		7	28		19	19				2	7	645
Total	104,606	18,826	32,729	70	2,916	8,799	1	23,494	12,574	159	609	204	1,876	1,594	208,457

The 114,503 PIT-tagged fish bypassed to the river included 44,870 hatchery yearling chinook, 2,857 hatchery chinook of unknown race, 10,667 wild yearling chinook, 3,575 wild chinook of unknown race, one unknown rearing/race type chinook, 21,455 hatchery subyearling chinook, 41 wild subyearling chinook, 19,332 hatchery steelhead, 7,880 wild steelhead, 151 steelhead of unknown rear type, 226 hatchery sockeye/kokanee, 85 wild sockeye/kokanee, 1,848 hatchery coho, and 1,515 PIT-tags were classified as orphans.

Another 89,874 PIT-tagged fish were diverted to raceways and transported. This group included 58,722 hatchery yearling chinook, 7,835 wild yearling chinook, 9,239 hatchery subyearling chinook, eight wild subyearling fall chinook, 20 hatchery chinook of unknown race, 5,065 wild chinook of unknown race, 3,886 hatchery steelhead, 4,543 wild steelhead, three steelhead of unknown rear type, 370 hatchery sockeye/kokanee, 113 wild sockeye/kokanee, 13 hatchery coho and 57 PIT-tags were classified as orphans.

The 3,435 PIT-tagged fish diverted to the sample tank and transported included 858 hatchery yearling chinook, 294 wild yearling chinook, 1,658 hatchery subyearling chinook, 21 wild subyearling chinook, 32 hatchery chinook of unknown race, 131 wild chinook of unknown race, 257 hatchery steelhead, 132 wild steelhead, five steelhead of unknown rear type, 13 hatchery sockeye/kokanee, six wild sockeye/kokanee, 13 hatchery coho and 15 PIT-tags were classified as orphans.

Only 645 PIT-tagged fish were not detected at an exit monitor this season: 156 hatchery yearling chinook, 30 wild yearling chinook, 377 hatchery subyearling chinook, seven hatchery chinook of unknown race, 28 wild chinook of unknown race, 19 hatchery steelhead, 19 wild steelhead, two hatchery coho and seven PIT-tags were classified as orphans. An unknown number of non-tagged fish were also bypassed by the PIT-tag diversion system along with the tagged fish. Fish bypassed through the PIT-tag diversion system are not included in the facility bypass numbers. The total of 645 fish not detected at an exit monitor is higher than the 345 PIT-tagged fish not detected at an exit monitor in 2004 and less than the 802 in 2003, 4,519 in 2002 and 2,242 in 2001.

PIT-tag Detections

A total of 93,308 PIT-tagged fish were sent to raceways or the sample tank in 2005. We scanned all sample mortalities and raceway mortalities for the presence of PIT-tags and reported these to PTAGIS since 1998. We found 266 mortalities (0.29%) of 93,308 PIT-tagged fish that entered the raceways and sample tank in 2005 compared to 183 of 70,770 in 2004. The PIT-tagged fish mortality rate of 0.29% in 2005 is higher than the 1998-2004 average of 0.24% (Table 33). PIT-tagged fish mortality rates were higher than the total facility mortality rate in five of the eight years examined (1998-1999, 2001-2002 and 2005), less in 2005 and nearly identical in 2003, 2004 and 2005.

Table 33. Sample and raceway PIT-tag mortality at LGR, 1998-2005.

Year	Number of PIT-tag Mortalities	No. of PIT-tags Detected in Sample and Raceways	PIT-tag Mortality (%) in Sample and Raceways	Facility Mortality (%) (Comparison)
1998	117	51,809	0.23%	0.16%
1999	173	30,610	0.57%	0.28%
2000	7	35,724	0.02%	0.09%
2001	168	79,978	0.21%	0.13%
2002	186	32,583	0.57%	0.34%
2003	346	89,344	0.39%	0.43%
2004	183	70,770	0.26%	0.27%
98-04 ave.	169	55,831	0.30%	0.24%
2005	266	93,308	0.29%	0.26%

Once the sample rate is set at 100%, we report all PIT-tag fish detected in the sample. A total of 961 smolts were detected by the PIT-tag system between 0600 hours July 14 to 0600 hours October 10 and 0600 hours October 16 to October 31 at 0600 hours. In 2004 only 52 smolts were detected when the sample rate was set to 100% for 52 days while in 2005 the sample rate was set at 100% for 104 days. Due to the court ordered summer spill few fish were entering the juvenile bypass system, so the sample system was set to sample 100% of the smolts for twice as many days as in 2004. Of these, 881 were hatchery fall chinook released by NMFS from Big Canyon Cr. Acclimation Facility, 31 were wild fall chinook released by Nez Perce Tribe into the Clearwater River, 30 were hatchery fall chinook released by NMFS into the Snake River between the Clearwater River and the Salmon River, six were hatchery chinook with an unknown race released by USFWS into the Snake River between the Clearwater River and the Salmon river, six were hatchery spring chinook released by IDFG from Powell Rearing Pond, four were hatchery fall chinook released by WDFW into the Snake River, two were orphan tags with no species, race or release information and one wild chinook with an unknown race released from the Snake River Trap (Table 34).

Table 34. PIT-tagged fish detected in daily samples at LGR with 100% sample rate, 2005.

Organization	Tag Site	Release Date	Release Site	Run	Rearing and Species	Number
NMFS	Dworshak NFH	5/27-7/8/05	Big Canyon Acc. Fac.	Fall	Hatchery Chinook	881
NPT	Clearwater R.	6/20-7/20/05	Clearwater R.	Fall	Wild Chinook	31
NMFS	Dworshak NFH	5/19-5/27/05	Snake R. (km 224-303)	Fall	Hatchery Chinook	30
USFWS	Snake R. (km 224-303)	5/24-6/14/05	Snake R. (km 224-303)	Unknown	Wild Chinook	6
IDFG	Powell Rearing Pond	9/16/2005	Powell Rearing Pond	Spring	Hatchery Chinook	6
WDFW	Lyons Ferry Hat.	05/26/05	Snake R.	Fall	Hatchery Chinook	4
PTAGIS	ORPHAN	N/A	ORPHAN	N/A	N/A	2
IDFG	Snake Trap	6/18/05	Snake Trap	Unknown	Wild Chinook	1
					Total	**961**

In the weekly LGR task order reports prepared for the Corps of Engineers we reported the number of PIT-tagged smolts detected at LGR by species, race type, rear type, release dates, release site, tag site and tagging organization. We summarized these observed detections at LGR by species, rear type (hatchery or wild), run type (spring, summer or fall), tag site and release site groups by week, Friday-Thursday. We combined detections for common tagging sites with different release sites. Typically, these are hatchery tag sites that had several release sites and wild fish tagged and released in different reaches of the same river or creek. PIT-tagged smolts detected at LGR identified as unknown race, rear type, or as orphans in the data download from PITAGIS were not included in these summaries.

The number of fish collected in 2005 was the highest recorded at LGR because there was very little spring spill, so similar rates of detection were observed for nearly all groups of PIT-tagged fish. In 2001, very low flows and no spill occurred at LGR which also resulted in high rates of detections. In 2002 and 2003, flows were higher and the project spilled water for fish passage throughout the spring migration to test and evaluate the removable spillway weir. All PIT-tag release groups are summarized in Appendix 2.

Hatchery Yearling Spring Chinook

The largest number of PIT-tagged hatchery yearling spring chinook detected at LGR during the 2005 sampling season originated from fish tagged at six hatcheries. These hatcheries were Lookingglass, Rapid River, Dworshak, Clearwater, Kooskia and Nez Perce Tribal, respectively. Rapid River Hatchery PIT-tagged smolts accounted for the most PIT-tagged hatchery yearling spring chinook detected at LGR (26,590) followed by 25,443 from Dworshak Hatchery, 14,709 from Lookingglass Hatchery, 1,387 from Nez Perce Tribal Hatchery, 373 from Clearwater Hatchery and 341 from Kooskia Hatchery.

Overall detection rates of these hatchery groups of PIT-tagged fish were higher than those observed in 2004 (Table 35). Similar to previous years Rapid River, Dworshak, Lookingglass, Clearwater and Kooskia hatchery fish peak detections occurred during week 5 or 6. Peak detections of Nez Perce Tribal Hatchery fish occurred during week 9 in 2005, versus week 4 in 2004 (Figures 35-40). Similar to previous year's releases of these hatchery groups, their PIT-tag detections appear to reflect release dates more than river flows.

PIT-tag detection rates for Rapid River, Dworshak, Lookingglass, and Clearwater Hatchery smolts were greater than those observed 2002-2004 but were still lower than the

detection rates observed during 2001's no spill year. Kooskia Hatchery PIT-tagged smolts were detected at their highest rate, even higher than the detection rate observed in 2001. Nez Perce Tribal Hatchery has had detections of hatchery yearling spring chinook at LGR in 2004 and 2005 and their detection rate was higher in 2005 compared to 2004, but was significantly lower than the detection rates observed for the other hatchery release groups.

Table 35. PIT-tagged hatchery spring chinook release groups at LGR, 2001-2005.

Hatchery	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Rapid River	5	April 27-May 3	59.8	55,091	29,399	53.4
Dworshak	5	April 27-May 3	52.3	55,142	28,989	52.6
Lookingglass	7	May 11-17	37.3	42,000	21,732	51.7
Clearwater	5	April 27-May 3	63.8	1,657	962	58.1
Kooskia	5	April 27-May 3	33.7	749	306	40.9
2002						
Rapid River	6	May 3-9	50.1	183,924	27,811	15.1
Dworshak	6	May 3-9	40.6	54,725	6,526	11.9
Lookingglass	8	May 17-23	33.7	42,000	7,445	17.7
Clearwater	6	May 3-9	30.0	3,671	260	7.1
Kooskia	8	May 17-23	35.9	1,500	167	11.1
2003						
Rapid River	6	May 2-8	28.6	184,475	42,511	23.0
Dworshak	6	May 2-8	19.3	54,705	10,782	19.7
Lookingglass	6	May 2-8	26.7	42,000	10,360	24.7
Clearwater	5	April 25-31	28.9	4,820	713	14.8
Kooskia	5	April 25-31	26.4	1,501	277	18.5
2004						
Rapid River	5	April 30-May 6	52.4	51,969	22,598	43.5
Dworshak	5	April 30-May 6	49.1	51,616	21,232	41.1
Lookingglass	5	April 30-May 6	52.5	64,506	25,348	39.3
Clearwater	5	April 30-May 6	49.7	2,396	648	27.0
Kooskia	5	April 30-May 6	37.8	1,505	524	34.8
Nez Perce Tribal	4	April 23-29	17.4	1,039	86	8.3
2005						
Rapid River	6	May 5-12	50.2	51,975	26,590	51.2
Dworshak	6	May 5-12	49.8	51,819	25,443	49.1
Lookingglass	5	April 28-May 5	44.2	36,000	14,709	40.9
Clearwater	5	April 28-May 5	48.5	897	373	41.6
Kooskia	5	April 28-May 5	44.0	723	341	47.2
Nez Perce Tribal	9	May 26-June 2	60.6	9,901	1,387	14.0

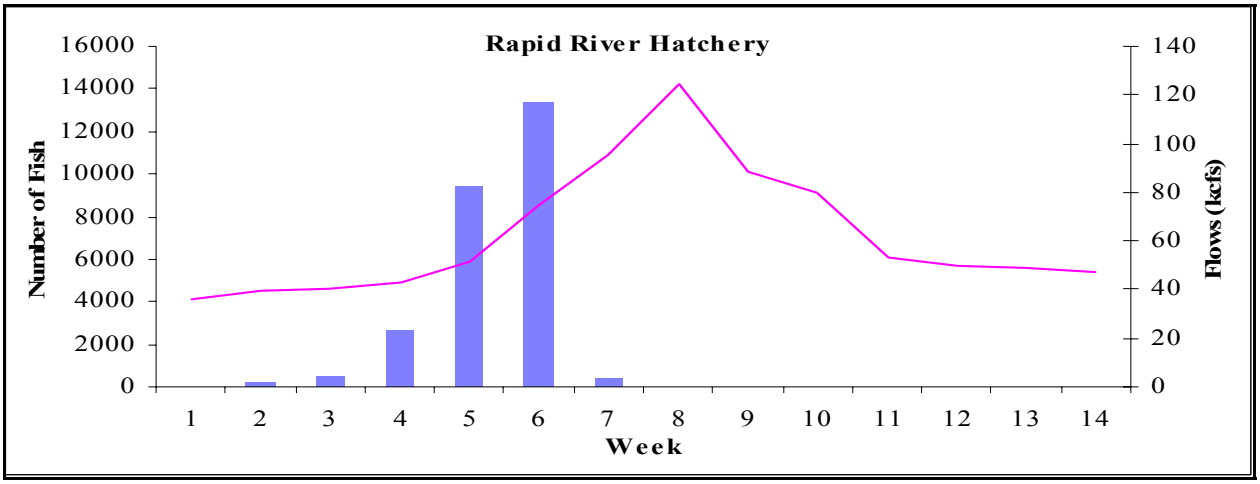

Figure 35. Number of PIT-tagged Rapid River Hatchery spring chinook detected by week and flows at LGR, 2005.

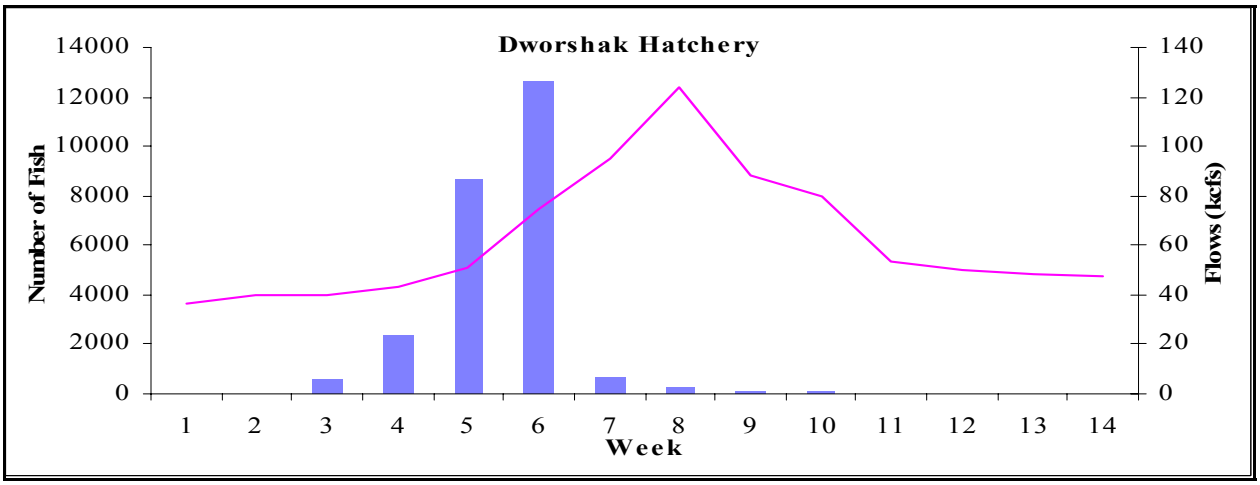

Figure 36. Number of PIT-tagged Dworshak Hatchery spring chinook detected by week and flows at LGR, 2005.

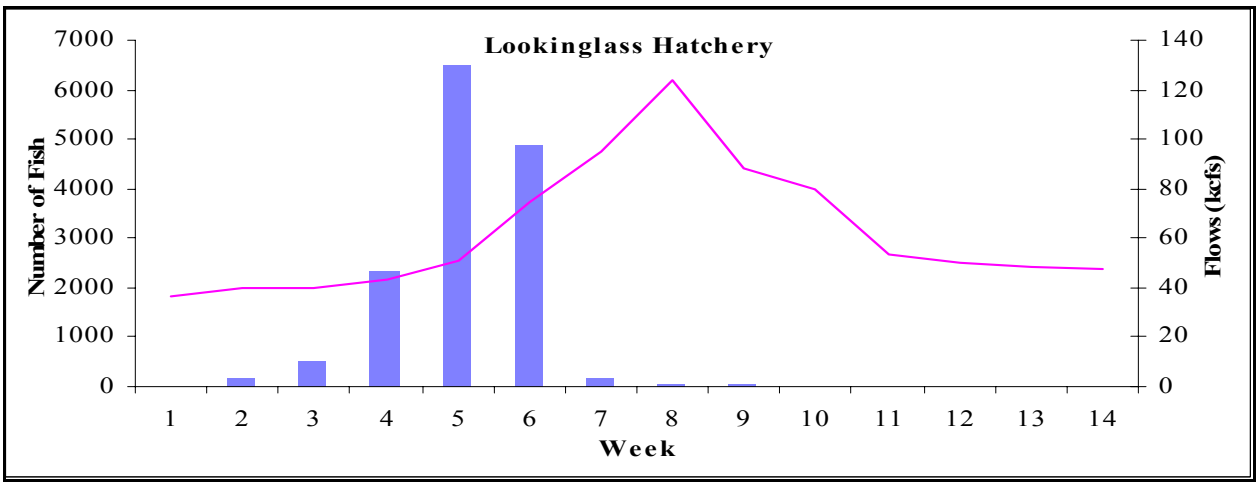

Figure 37. Number of PIT-tagged Lookinglass Hatchery spring chinook detected by week and flows at LGR, 2005.

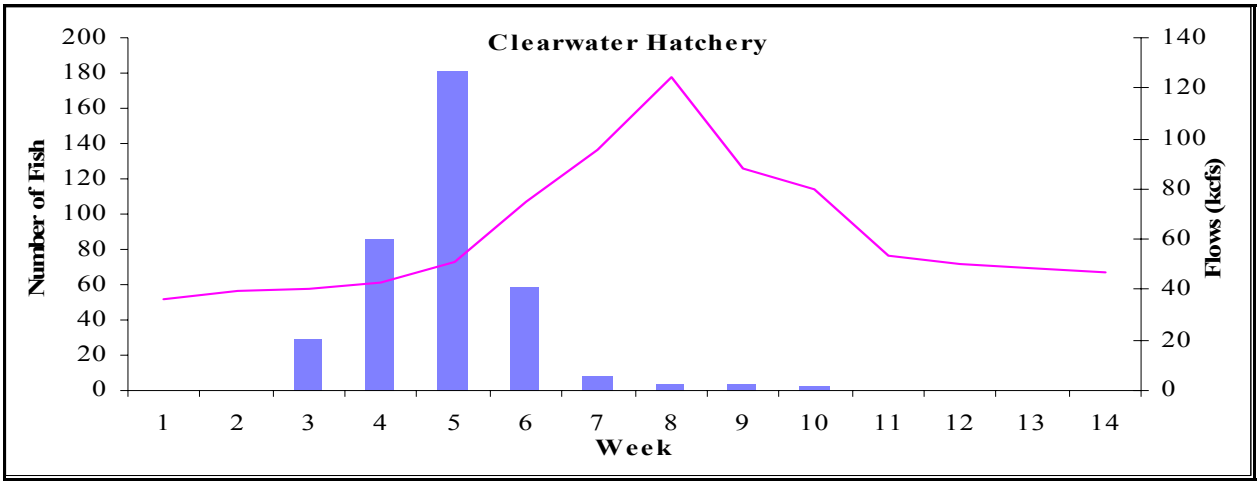

Figure 38. Number of PIT-tagged Clearwater Hatchery spring chinook detected by week and flows at LGR, 2005.

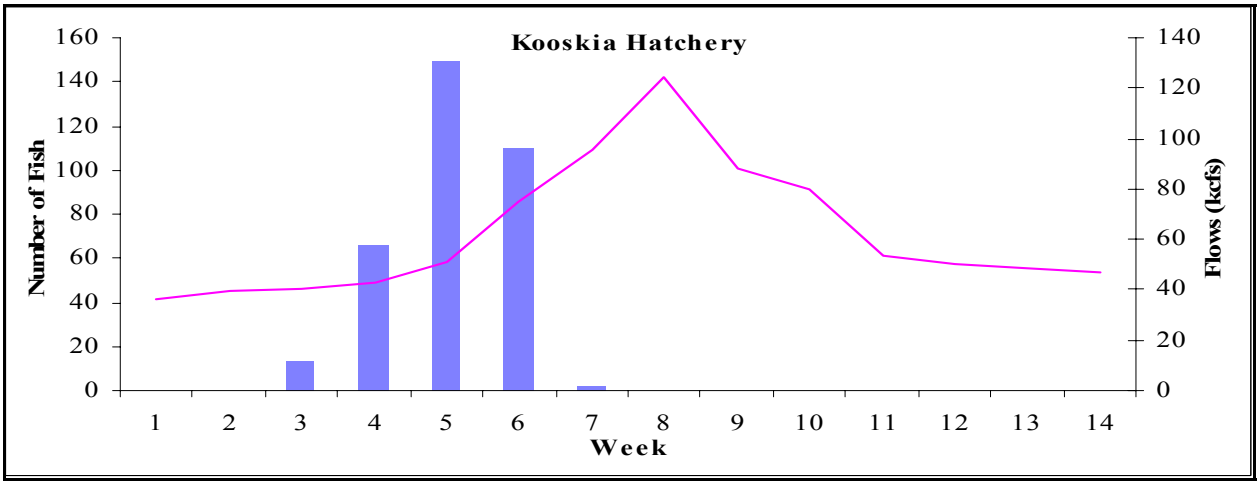

Figure 39. Number of PIT-tagged Kooskia Hatchery spring chinook detected by week and flows at LGR, 2005.

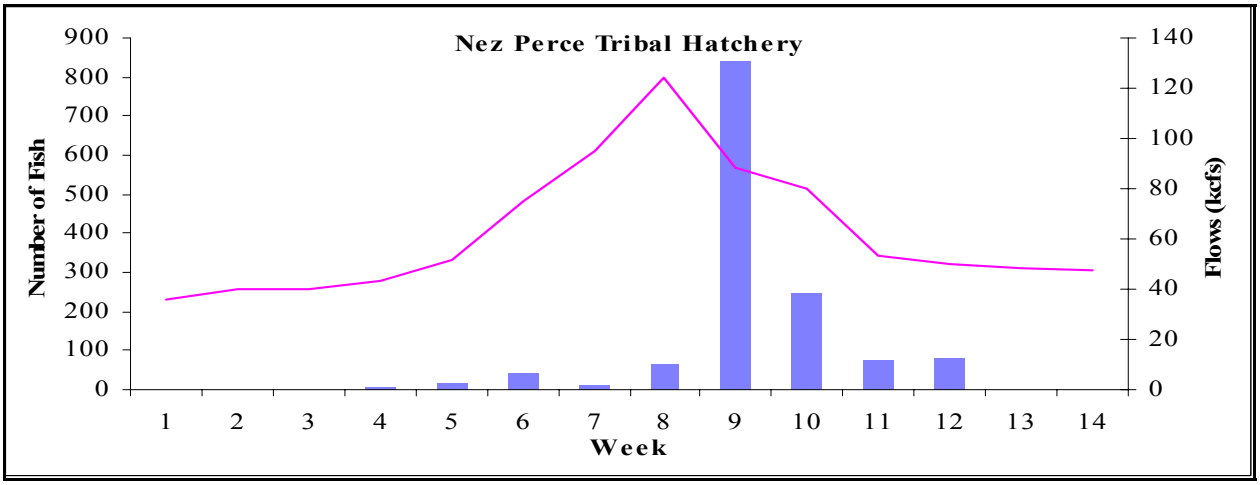

Figure 40. Number of PIT-tagged Nez Perce Tribal Hatchery spring chinook detected by week and flows at LGR, 2005.

Wild Yearling Spring Chinook

Wild yearling spring chinook collected and PIT-tagged at traps and in streams typically have the same tag site and release site and we grouped these by tagging site. Depending upon the trap location or stream site where the fish were tagged, the tagged chinook may represent stock components from one or more tributaries upstream of the tagging site.

More than 10,129 PIT-tagged wild yearling spring chinook were detected at LGR this season originating from 38 tagging sites compared to 10,512 PIT-tagged wild yearling spring chinook detected from 42 tagging sites in 2004, 5,540 PIT-tagged wild yearling spring chinook detected from 47 tagging sites in 2003 and 2,972 PIT-tagged wild yearling spring chinook detected from 32 tagging sites in 2002. In 2004 most of the detections originated from juveniles tagged at the Grande Ronde Trap (1,628), Sawtooth Trap (1,297), Marsh Cr. Trap (1,007), Lolo Creek (712), and Lemhi River Weir (673). In 2005, Sawtooth Trap (1,217), Grande Ronde Trap (938) and Lolo Creek (843) were the top three sites for number of PIT-tags detected while Lemhi River Weir (357) and Marsh Cr. Trap (304) finished 10^{th} and 14^{th} respectively. Detections of PIT-tagged wild spring chinook from the Grande Ronde Trap peaked week 6, Sawtooth Trap peaked week 8, Lolo Creek peaked week 6, Lemhi River Weir peaked week 4 and Marsh Cr. Trap peaked week 6 (Figures 41-45). These groups of PIT-tagged smolts peaked similarly to 2004 and somewhat earlier than in 2002 and 2003 and did not appear to coincide to peak flows, with the exception of Sawtooth Trap detections that appeared to be significantly correlated with flows. More than 99% of all detections for these groups were recorded by the end of week 12, earlier than previous years. In 2004 all groups did not have 99% of their fish detected until week 16.

The groups of PIT-tagged wild spring chinook peaked as early as week 4 (Lemhi River Weir) and as late as week 8 (Sawtooth Trap) while PIT-tagged hatchery spring chinook detections mostly peaked during week 5. These same trends were observed in previous years. Lolo Cr. and Marsh Cr. Trap each had their highest percent of PIT-tagged fish detected at LGR during since 2001 (Table 36). Lemhi River Weir and Grand Ronde Trap tagged juveniles had their second highest rate of detection in these five years.

Table 36. PIT-tagged wild spring chinook release groups at LGR, 2001-2005.

Tag Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Grande Ronde Trap	5	April 27-May 3	36.7			
Sawtooth Trap	7	May 11-17	34.2	1,589	389	24.5
Lolo Cr.	10	June 1-7	17	1,396	311	22.3
Lemhi R. Weir	6	May 4-10	38.2	1,593	424	26.6
Marsh Cr. Trap	6	May 3-9	100	60	1	1.7
2002						
Grande Ronde Trap	3	April 12-18	30.1	1,336	286	21.4
Sawtooth Trap	8	May 17-23	34.1	3,357	214	6.4
Lolo Cr.	12	June 14-20	16.2	2,986	247	8.3
Lemhi R. Weir	14	June 28-July 4	24.2	1,565	293	18.7
Marsh Cr. Trap	8	May 17-23	26.8	1,854	142	7.7
2003						
Grande Ronde Trap	4	April 18-24	21.7	2669	861	32.3
Sawtooth Trap	9	May 23-29	33.7	6418	754	11.8
Lolo Cr.	11	June 6-12	31.0	3335	449	13.5
Lemhi R. Weir	5	April 25-May 1	27.5	3332	262	7.9
Marsh Cr. Trap	9	May 23-29	17.7	4122	356	8.6
2004						
Grande Ronde Trap	5	April 30-May 6	25.3	3,103	1,628	52.5
Sawtooth Trap	6	May 7-13	26.5	7,099	1,297	18.3
Lolo Cr.	8	May 21-27	34.3	2,583	712	27.6
Lemhi R. Weir	4	April 23-29	25.6	4,060	673	16.6
Marsh Cr. Trap	6	May 7-13	18.9	6,099	1007	16.5
2005						
Grande Ronde Trap	6	May 5-12	27.7	1,975	938	47.5
Sawtooth Trap	8	May 19-26	26.6	6,949	1,217	17.5
Lolo Cr.	6	May 5-12	19.9	2,656	843	31.7
Lemhi R. Weir	4	April 21-28	30.5	1,379	357	25.9
Marsh Cr. Trap	6	May 5-12	38.8	3,228	304	9.4

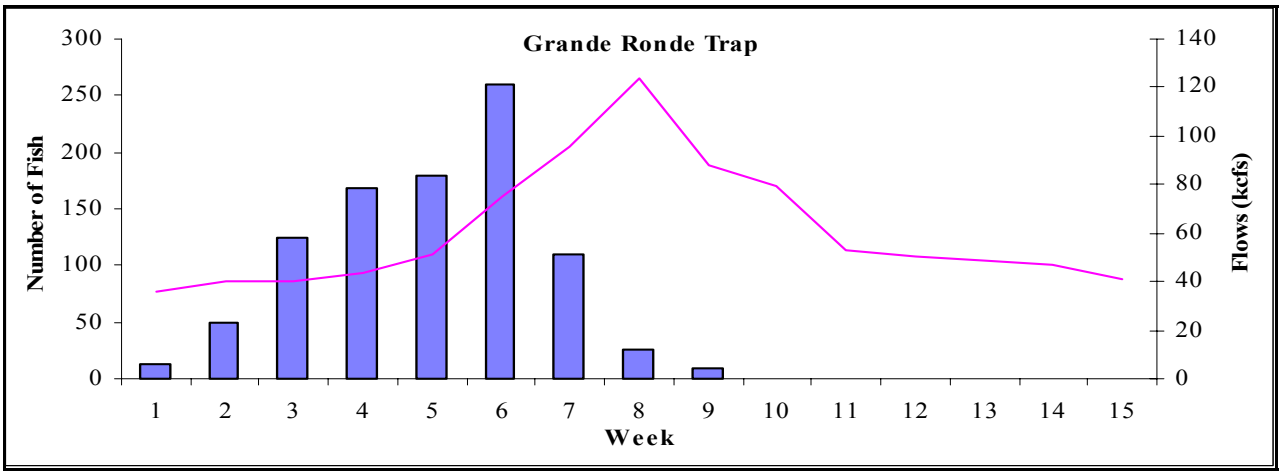

Figure 41. Number of PIT-tagged Grande Ronde Trap wild spring chinook detected by week and flows at LGR, 2005.

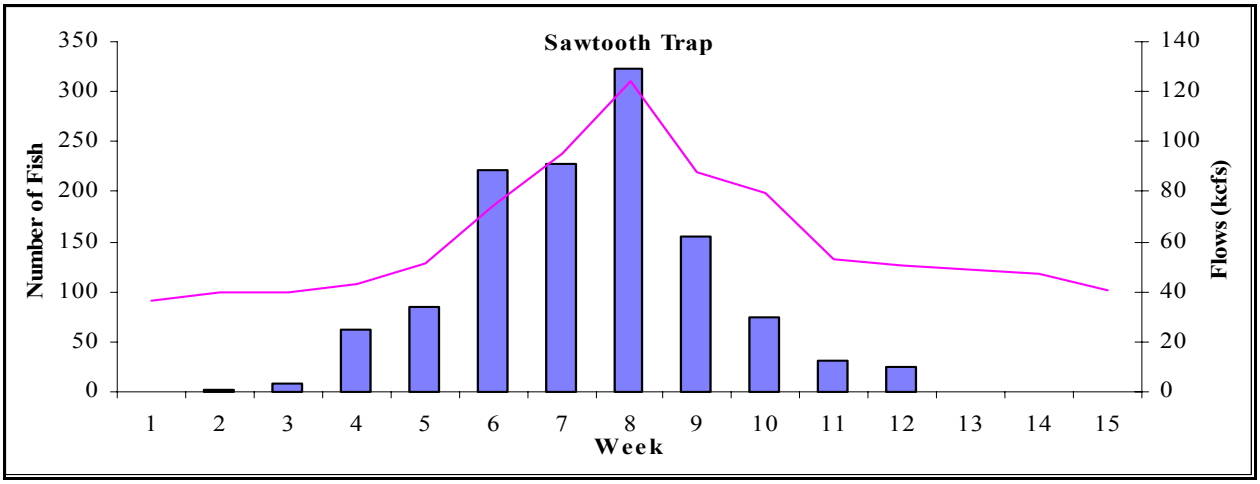

Figure 42. Number of PIT-tagged Sawtooth Trap wild spring chinook detected by week and flows at LGR, 2005.

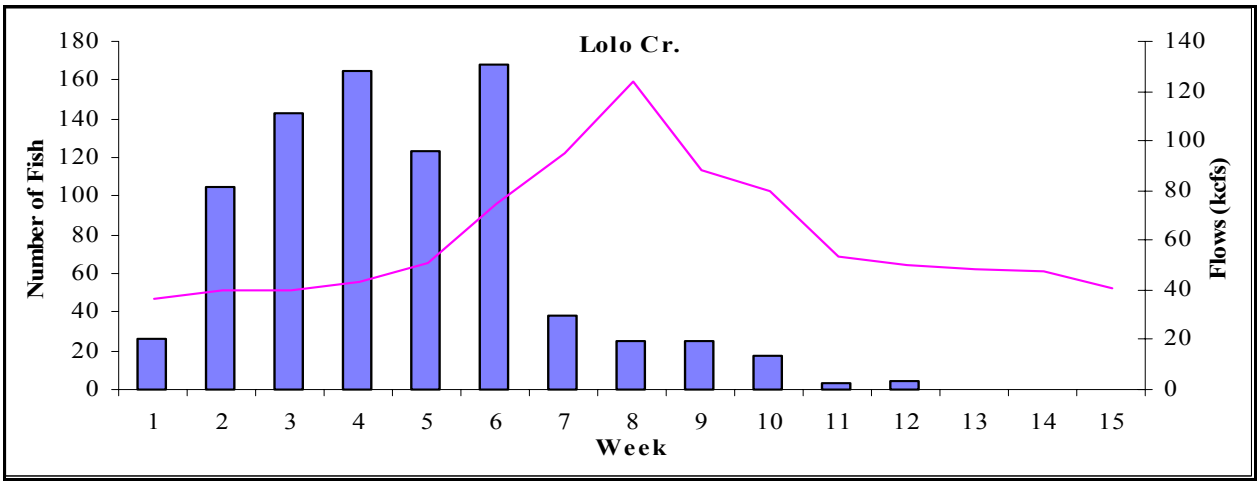

Figure 43. Number of PIT-tagged Lolo Cr. wild spring chinook detected by week and flows at LGR, 2005.

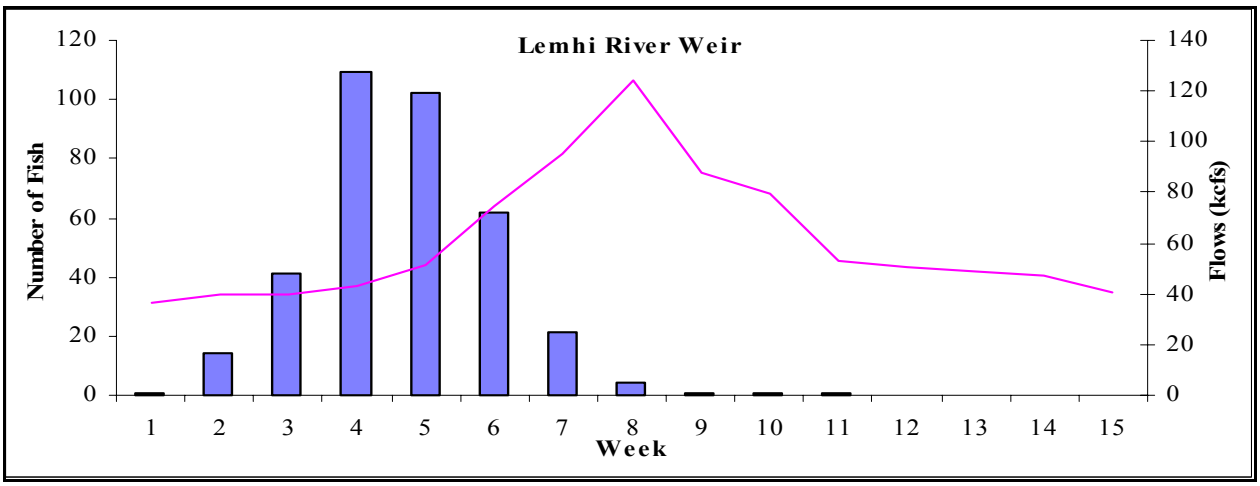

Figure 44. Number of PIT-tagged Lemhi River Weir wild spring chinook detected by week and flows at LGR, 2005.

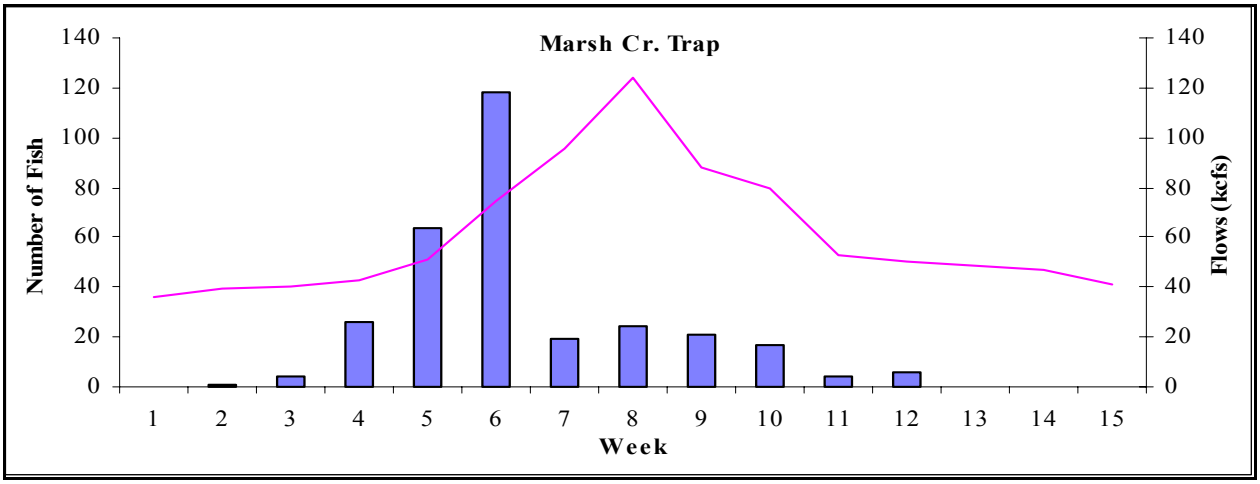

Figure 45. Number of PIT-tagged Marsh Cr. Trap wild spring chinook detected by week and flows at LGR, 2005.

Hatchery Yearling Summer Chinook

PIT-tagged hatchery yearling summer chinook were detected from McCall Hatchery, Imnaha Trap, Pahsimeroi Pond, Snake River Trap and Salmon River Trap in 2005. McCall Hatchery PIT-tagged smolts accounted for 31,864 PIT-tagged hatchery yearling summer chinook detected at LGR, similar to the 31,554 detected in 2004 and more than twice as many as the 14,755 detected in 2003. Pahsimeroi Pond had 94 PIT-tagged smolts detected followed by 44 from the Salmon River Trap, two from Imnaha Trap and one from the Snake River Trap in 2005 (Table 37).

The peak week of detection for PIT-tagged summer chinook yearlings from McCall Hatchery occurred during week 6 in 2005 similar to that observed in 2004 but earlier than the peak week of detections in 2001-2003. Similar to previous years, detections for all groups exceeded 99 % by the end of week 9. Detection rates to LGR for McCall Hatchery and Salmon Trap were similar to those observed in 2004, higher than those observed in 2002 and 2003 but still lower than in 2001's no spill year, when they had their highest detection rates to LGR. Similar to previous years the detection rates of PIT-tagged hatchery summer chinook does not seem to correspond to the peak in spring flows at LGR (Figures 46-48). Both the Imnaha and Snake Traps classified very few fish as hatchery summer chinook and had very few detections. The Snake River Trap classified one fish as a hatchery summer chinook and it was detected at LGR for a detection rate of 100%.

Table 37. PIT-tagged hatchery summer chinook release groups at LGR, 2001-2005.

Tag Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
McCall Hatchery	7	May 11-17	49.3	56,327	29,494	52.4
Pahsimeroi Pond	7	May 11-17	45.3	1,002	488	48.7
Imnaha Trap	5	April 27-May 3	56.2	3,008	1,706	56.7
2002						
McCall Hatchery	8	May 17-23	41.6	65,416	7,564	11.6
Pahsimeroi Pond	6	May 3-9	48.2	992	135	13.6
Imnaha Trap	6	May 3-9	32.8	3,022	467	15.5
2003						
McCall Hatchery	8	May 16-22	35.6	87,046	14,755	17.0
Pahsimeroi Pond	5	April 25-May 1	36.8	982	193	19.7
Imnaha Trap	6	May 2-8	46.2	47	13	27.7
S. Fk. Salmon R. Trap	10	May 30-June 5	27.7	608	46	7.6
Salmon Trap	6	May 2-8	23.1	50	13	26.0
2004						
McCall Hatchery	5	April 30-May 6	53.4	81,187	31,554	38.9
Pahsimeroi Pond	5	April 30-May 6	69.9	972	319	32.8
Imnaha Trap	5	April 30-May 6	66.7	1	3	300
S. Fk. Salmon R. Trap	6	May 7-13	36.7	617	60	9.7
Salmon Trap	5	April 30-May 6	33.3	21	9	42.9
Stolle Pond	6	May 7-13	35.3	590	17	2.9
2005						
McCall Hatchery	6	May 5-12	61.4	83,774	31,864	38.0
Pahsimeroi Pond	4	April 21-28	47.8	499	92	18.4
Salmon Trap	6	May 5-12	50.0	94	44	46.8
Imnaha Trap	5	April 28-May 5	50.0	5	2	40.0
Snake Trap	6	May 5-12	100.0	1	1	100.0

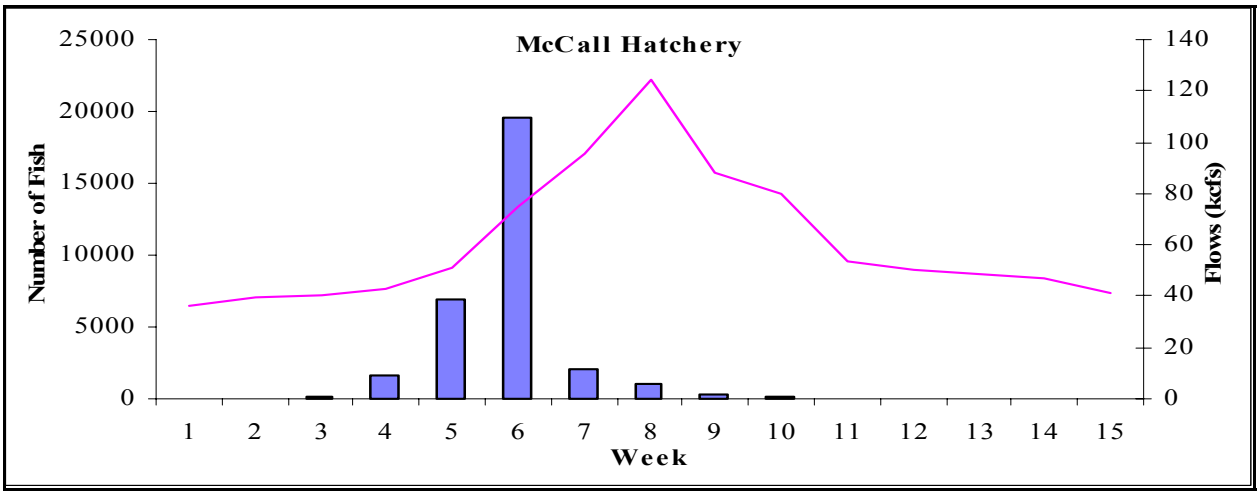

Figure 46. Number of PIT-tagged McCall Hatchery summer chinook detected by week and flows at LGR, 2005.

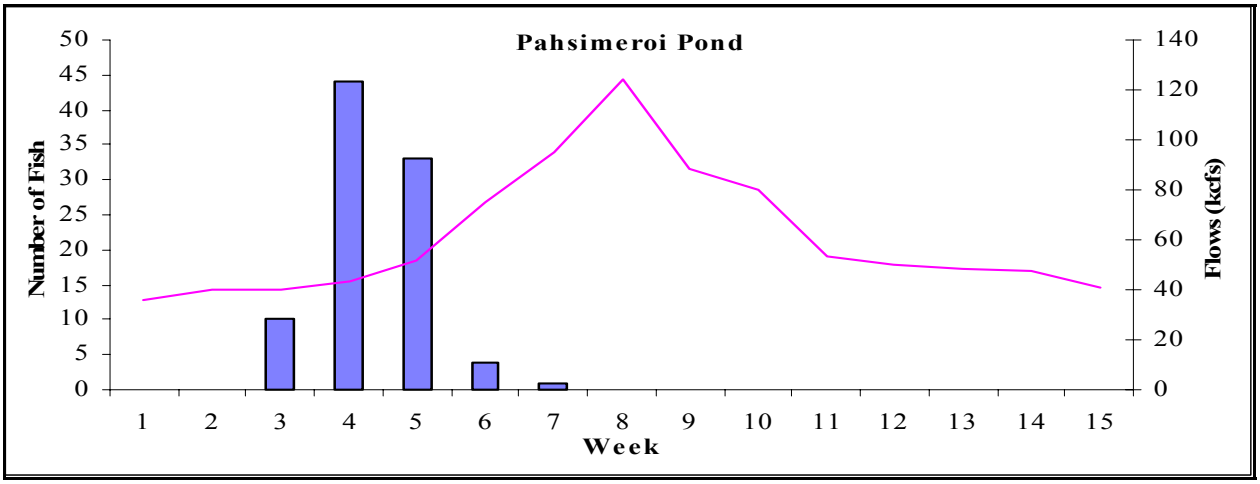

Figure 47. Number of PIT-tagged Pahsimeroi Pond hatchery summer chinook detected by week and flows at LGR, 2005.

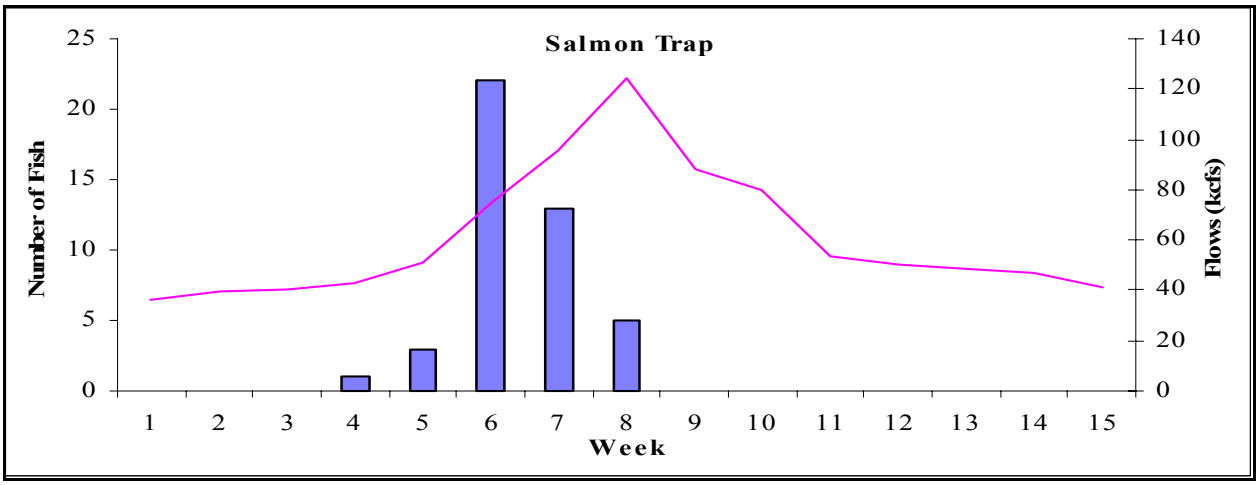

Figure 48. Number of PIT-tagged Salmon River Trap hatchery summer chinook detected by week and flows at LGR, 2005.

Wild Yearling Summer Chinook

Wild summer chinook collected and PIT-tagged at the traps and in stream typically have the same tag and release site and we grouped these by tagging site. Depending upon the trap location or stream site where the fish were tagged, the tagged chinook may represent stock components from one or more different tributaries upstream of the tagging site. There were 8,246 PIT-tagged wild yearling summer chinook detected at LGR this season originating from nine tagging sites. Most of the detections originated from juveniles tagged at the Imnaha Trap (2,939), followed by Johnson Creek and Trap (2,477), Pahsimeroi Trap (1,104), South Fork Salmon River and Trap (872) and Secesh River (463) (Table 38).

All release groups of PIT-tagged wild yearling summer chinook have showed variation in their peak week of detections between the years 2001-2005. Imnaha Trap, Secesh River, South Fork Salmon River and Trap and Johnson Cr.Trap detections peaked similarly to those observed in 2004, while Pahsimeroi River Trap detections peaked during week 5 in 2005 versus week 11 in 2004.

The overall detection rates for each group in 2005 were similar to those observed in 2004, higher than in 2002 and 2003 yet lower than those observed in 2001 (no spill). Total detections for these groups reached 99% week 12, earlier than the week 16 observed in 2004. In comparison, total detections for PIT-tagged hatchery summer chinook release groups exceeded 99% by week 9, about 3 weeks earlier than the wild yearling summer chinook groups. The PIT-tagged wild yearling summer chinook smolts exhibited a more protracted migration period to LGR than PIT-tagged hatchery yearling summer chinook. Detections of PIT-tagged wild yearling summer chinook appear to be more related to flows observed at LGR than hatchery yearling summer chinook (Figures 49-53). During the week of peak flows (week 8) there was a decrease of PIT-tagged wild yearling summer chinook detected at LGR.

Table 38. PIT-tagged wild summer chinook release groups at LGR, 2001-2005.

Tag Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Imnaha Trap	5	April 27-May 3	47.2	12,062	7,277	60.3
Secesh R.	5	April 27-May 3	48.0	4,232	1,285	30.4
Johnson Cr. Trap	7	May 11-17	26.9	5,626	2,072	36.8
S. Fk. Salmon R. and Trap	7	May 11-17	21.8	1,950	432	22.2
Pahsimeroi R. Trap	6	May 4-10	33.6	2,288	468	20.5
2002						
Imnaha Trap	6	May 3-9	29.0	6,237	655	10.5
Secesh R.	3	April 12-18	24.6	4,554	191	4.2
Johnson Cr. Trap	3	April 12-18	26.0	7,009	477	6.8
S. Fk. Salmon R. and Trap	10	May 31-June 6	21.2	2,072	193	9.3
Pahsimeroi R. Trap	13	June 21-27	27.7	2,247	329	14.6
2003						
Imnaha Trap	4	April 18-24	20.2	12,560	2,401	19.1
Secesh R.	4	April 18-24	14.9	7,123	268	3.8
Johnson Cr. Trap	9	May 23-29	21.0	11,393	878	7.7
S. Fk. Salmon R. and Trap	9	May 23-29	15.5	6,021	323	5.4
Pahsimeroi R. Trap	4	April 18-24	17.6	8,523	890	10.4
2004						
Imnaha Trap	5	April 30-May 6	34.8	13,346	4,665	35.0
Secesh R.	4	April 23-29	14.5	3,474	249	7.2
Johnson Cr. Trap	6	May 7-13	24.4	8,091	1,571	19.4
S. Fk. Salmon R. and Trap	6	May 7-13	17.3	6,351	713	11.2
Pahsimeroi R. Trap	11	June 11-17	17.5	6,540	1,118	17.1
2005						
Imnaha Trap	3	April 14-21	21.9	9,654	2,939	30.4
Secesh R.	4	April 21-28	25.9	4,414	463	10.5
Johnson Cr. Trap	6	May 5-12	35.9	14,812	2,477	16.7
S. Fk. Salmon R. and Trap	6	May 5-12	25.3	6,504	872	13.4
Pahsimeroi R. Trap	5	April 28-May 5	22.4	6,844	1,104	16.1

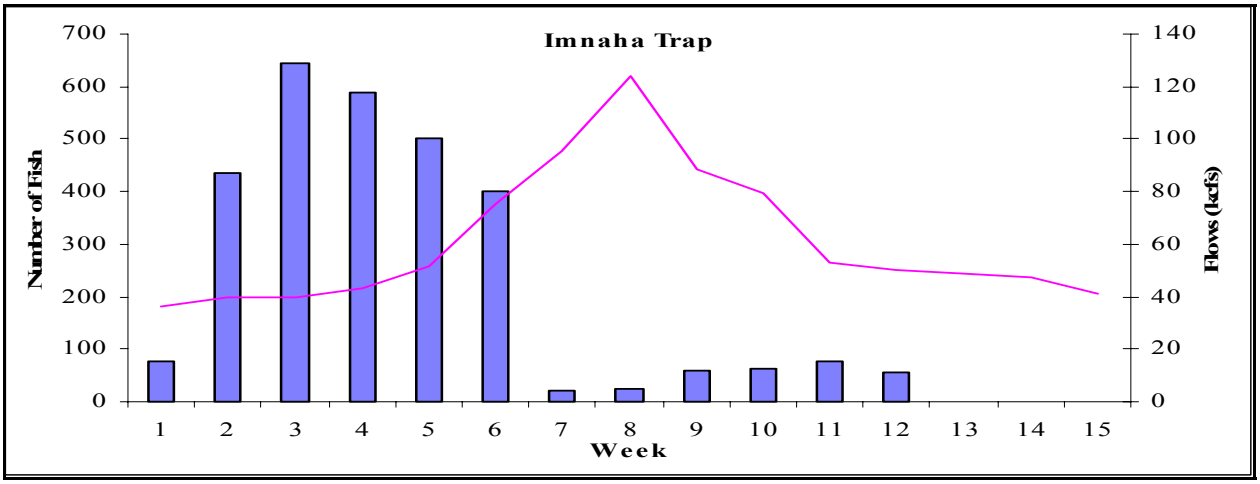

Figure 49. Number of PIT-tagged Imnaha Trap wild summer chinook detected by week and flows at LGR, 2005.

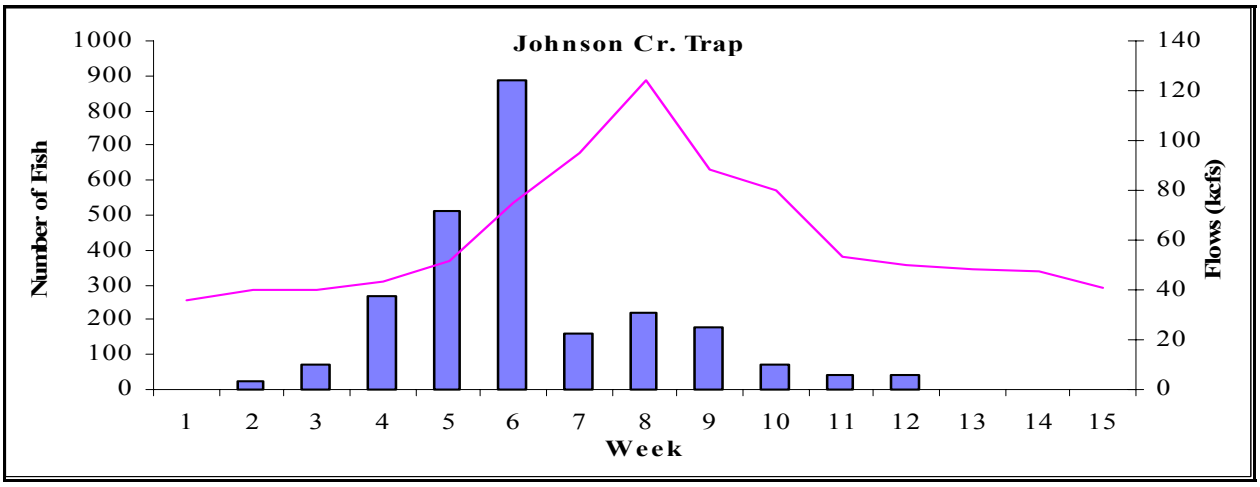

Figure 50. Number of PIT-tagged Johnson Cr. Trap wild summer chinook detected by week and flows at LGR, 2005.

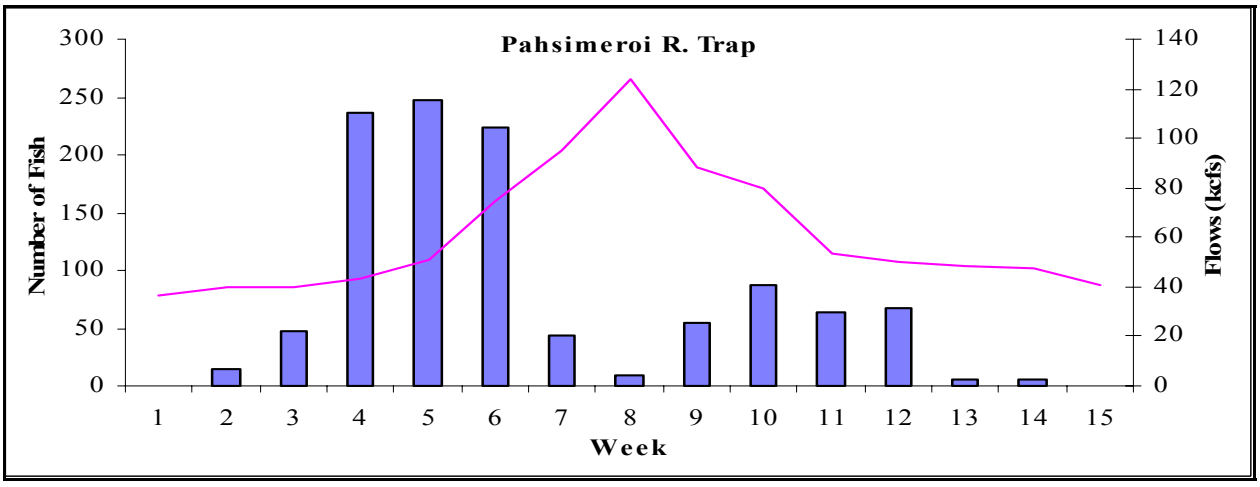

Figure 51. Number of PIT-tagged Pahsimeroi Trap wild summer chinook detected by week and flows at LGR, 2005.

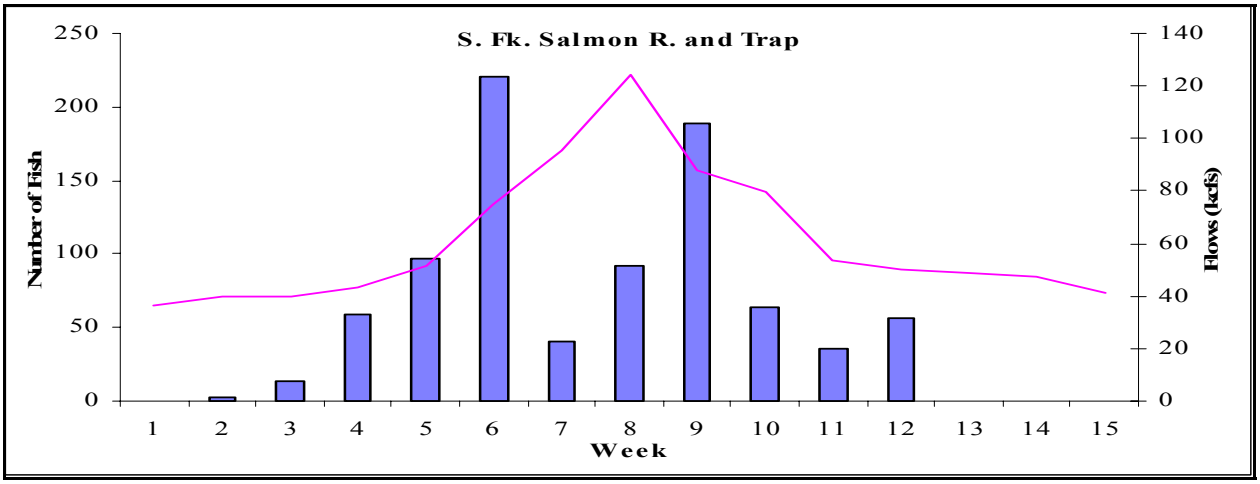

Figure 52. Number of PIT-tagged South Fork Salmon River and Trap wild summer chinook detected by week and flows at LGR, 2005.

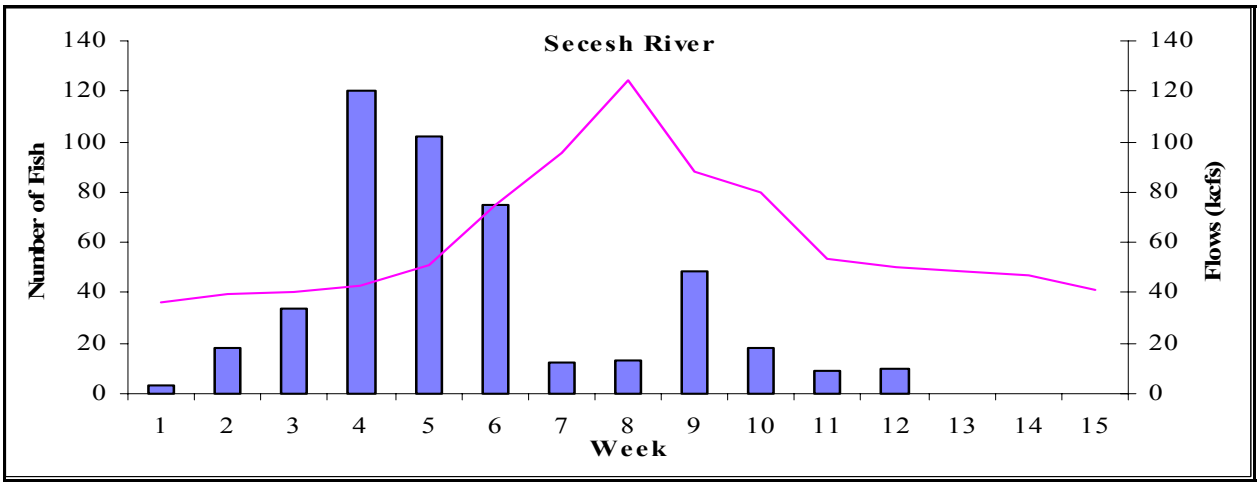

Figure 53. Number of PIT-tagged Secesh River wild summer chinook detected by week and flows at LGR, 2005.

Hatchery Yearling Fall Chinook

Since 2001 we have reported PIT-tagged hatchery yearling fall chinook release group detections at LGR. These fish were reared at Lyons Ferry Hatchery, elastomer tagged, PIT-tagged and released at one of the following three acclimation sites: Big Canyon Cr. Acclimation Facility (BCCAP), Captain John Rapids Acclimation Pond (CJRAP) and Pittsburg Landing Acclimation Facility (PLAP). In 2005, hatchery yearling fall chinook were released from only Pittsburg Landing Acclimation Facility and Big Canyon Cr. Acclimation Facility and were not elastomer tagged, as in previous years.

In 2005, PIT-tagged yearling fall chinook from BCCAP accounted for 2,689 detections and PLAP had 518 detections at LGR. Similar to previous years the PIT-tag detections peaked during the first five weeks of the season (Figures 54-55). BCCAP PIT-tagged hatchery yearling fall chinook were detected at the highest rate (53.9%) recorded to date, even higher than in 2001's no spill year (47.9%). The PLAP PIT-tagged hatchery yearling fall chinook were detected at the lowest rate recorded to date (10.4%), significantly lower than the rates observed in previous years (Table 39). This may reflect spill beginning week 5 in 2005 just when the PLAP PIT-tagged fish were initially detected at LGR, while in 2004 there was no spill when these fish were detected at LGR.

Table 39. PIT-tagged hatchery yearling fall chinook (elastomer tagged 2001-2004) release groups at LGR, 2001-2005.

Release Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Big Canyon Cr. Acc. Fac.	5	April 27-May 3	54.0	7,499	3,593	47.9
Capt. John Rapids Acc. Pond	5	April 27-May 3	58.2	2,518	1,326	52.7
Pittsburg Landing Acc. Fac.	5	April 27-May 3	52.7	7,503	3,629	48.4
2002						
Big Canyon Cr. Acc. Fac.	3	April 12-18	41.0	7,482	1,851	24.7
Capt. John Rapids Acc. Pond	5	April 26-May 2	36.7	2,487	686	27.6
Pittsburg Landing Acc. Fac.	5	April 26-May 2	43.2	7,545	1,634	21.7
2003						
Big Canyon Cr. Acc. Fac.	5	April 25-May 1	40.7	7,494	2,566	34.2
Capt. John Rapids Acc. Pond	4	April 18-24	47.6	2,497	947	37.9
Pittsburg Landing Acc. Fac.	5	April 25-May 1	46.5	7,492	2,734	36.5
2004						
Big Canyon Cr. Acc. Fac.	4	April 23-29	42.5	4,984	2,084	41.8
Capt. John Rapids Acc. Pond	3	April 16-22	41.9	4,982	1,572	31.6
Pittsburg Landing Acc. Fac.	4	April 23-29	51.2	4,983	1,933	38.8
2005						
Big Canyon Cr. Acc. Fac.	3	April 14-21	47.7	4,988	2,689	53.9
Pittsburg Landing Acc. Fac.	5	April 28-May 5	81.1	4,997	518	10.4

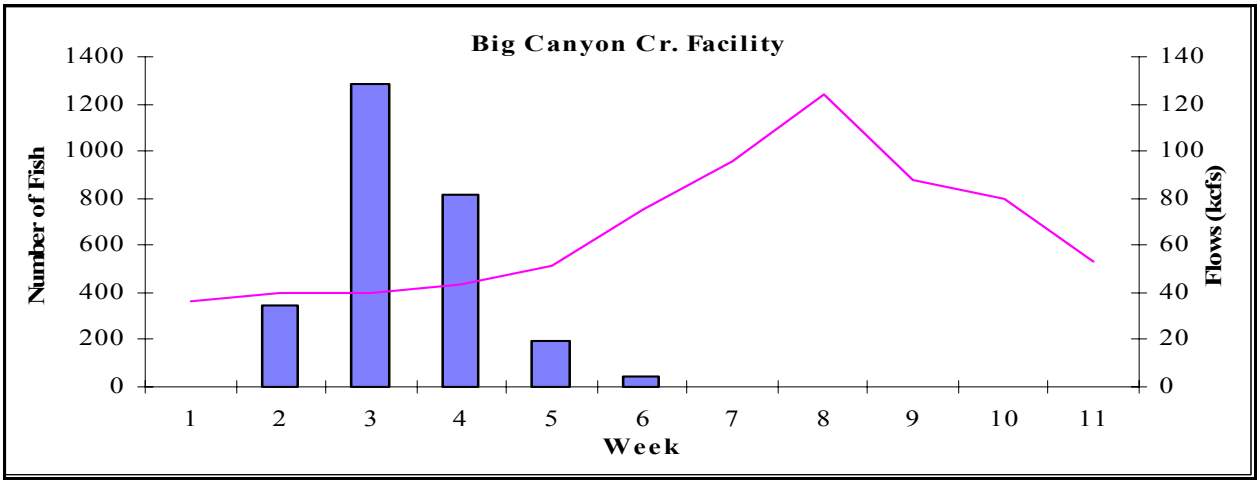

Figure 54. Number of PIT-tagged Big Canyon hatchery yearling fall chinook detected by week and flows at LGR, 2005.

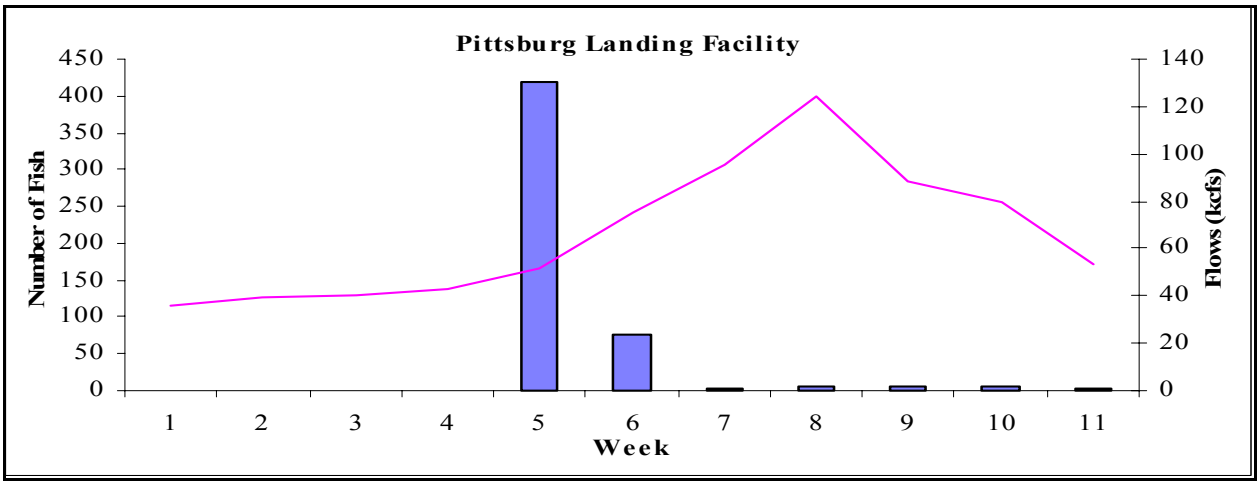

Figure 55. Number of PIT-tagged Pittsburg Landing hatchery yearling fall chinook detected by week and flows at LGR, 2005.

Hatchery Subyearling Chinook

PIT-tagged hatchery subyearling chinook were grouped together by release site except from Big Canyon Cr. Acclimation Facility because the NMFS and NPT tagged fish exhibited much different run timings. Dworshak Hatchery (18,512) subyearling fall chinook had the most PIT-tagged fish detected at LGR in 2005 followed respectively by Captain John Rapids (CJRAP) (1,336), BCCAP (1,072) PIT-tagged by NMFS, Pittsburg Landing Acclimation Pond (972) and BCCAP (752) PIT-tagged by NPT (Figures 56-60).

The peak weeks of detection, weeks 9-10, were similar to those observed in 2003-2004 and were earlier than the detections observed in 2001 and 2002 (Table 40) except for the BCCAP fish that were tagged by NMFS. These fish were PIT-tagged as part of a collaborative passage route study between the USFWS and NMFS and most of these fish passed during the summer spill so they were detected in higher numbers after the summer spill had ended. Detection rates were lower for PIT-tagged hatchery subyearling chinook released from BCCAP-NPTand CJRAP while higher for PIT-tagged fish released from PLAP compared to 2004.

Table 40. PIT-tagged hatchery subyearling chinook release groups at LGR, 2001-2005.

Release Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Big Canyon Cr. Fac.	14	June 29-July 5	26.2	27,339	5,894	21.6
Pittsburg Landing Fac.	14	June 29-July 5	27.0	1,974	441	22.3
Captain John Rapids Fac.	14	June 29-July 5	24.7	4,516	932	20.6
2002						
Big Canyon Cr. Fac.	17	July 19-25	25.3	5,016	1,149	22.9
Pittsburg Landing Fac.	15	July 5-11	22.7	2,539	587	23.1
Captain John Rapids Fac.	17	July 19-25	26.4	5,024	1,298	25.8
2003						
Big Canyon Cr. Fac.	11	June 6-12	32.0	2,495	893	35.8
Pittsburg Landing Fac.	13	June 20-26	41.0	17,483	6,120	35.0
Captain John Rapids Fac.	10	May 30-June 5	51.5	2,498	497	19.9
Nez Perce Tribal Hatchery	11	June 6-12	34.4	5,449	1,543	28.3
2004						
Big Canyon Cr. Fac.	11	June 11-17	31.9	2,490	1,010	40.6
Pittsburg Landing Fac.	10	June 4-10	61.8	2,496	837	33.5
Capt. John Rapids Pond	11	June 11-17	50.0	2,493	1,082	43.4
Nez Perce Tribal Hatchery	13	June 25-July 1	40.7	2,615	996	38.1
2005						
Snake R.-Clw to Sal	10	June 2-9	36.1	124,447	18,512	14.9
Big Canyon Cr. Fac.-NMFS	30	October 20-27	21.9	45,790	1,072	2.3
Big Canyon Cr. Fac.-NPT	10	June 2-9	51.6	2,498	752	30.1
Pittsburg Landing Fac.	9	May 26-June 2	74.3	2,492	957	38.4
Capt. John Rapids Pond	10	June 2-9	56.9	3,494	1,336	38.2

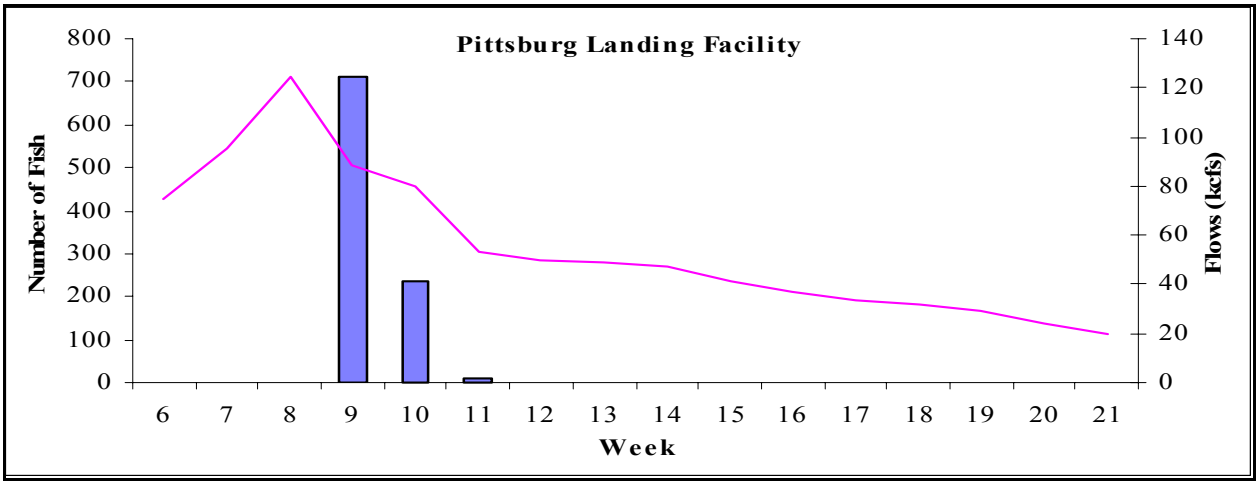

Figure 56. Number of PIT-tagged hatchery subyearling fall chinook released from Pittsburg Landing Acclimation facility, detected by week and flows at LGR, 2005.

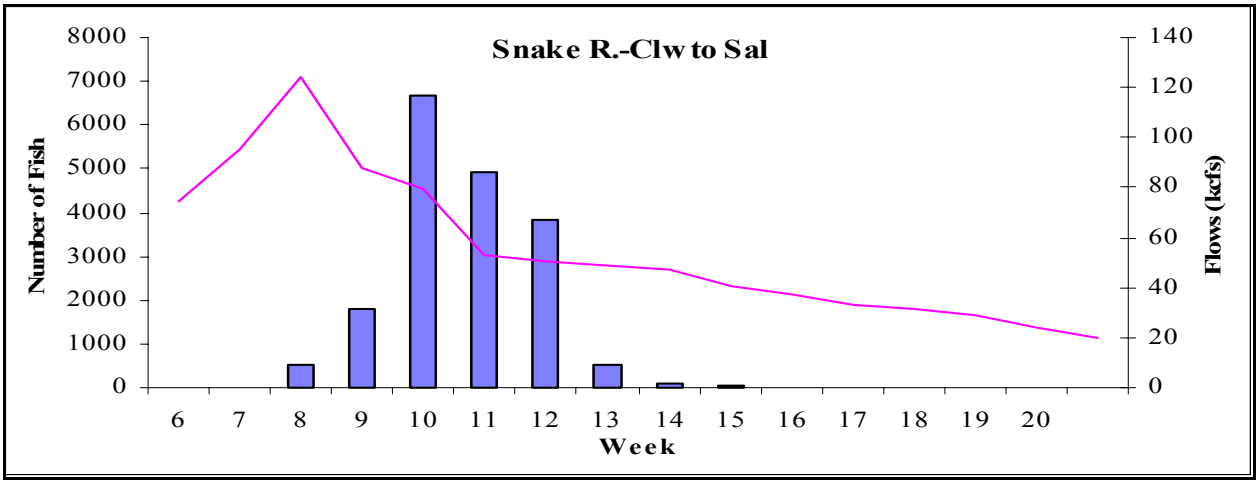

Figure 57. Number of Dworshak Hatchery. PIT-tagged subyearling fall chinook released into the Snake R. (Clearwater R. to Salmon R.), detected by week and flows at LGR, 2005.

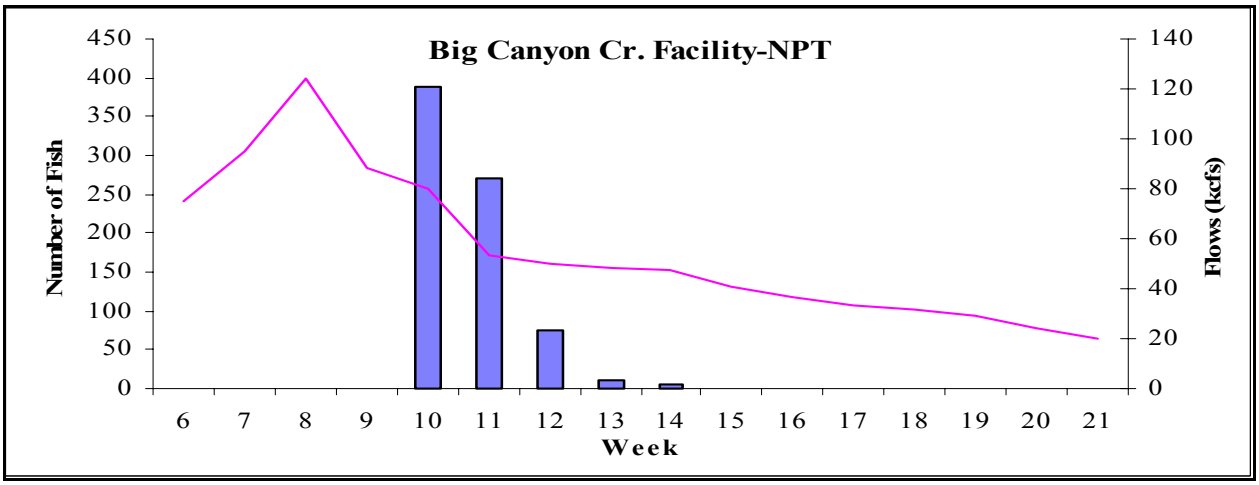

Figure 58. Number of NPT PIT-tagged hatchery subyearling fall chinook released from Big Canyon Cr., detected by week and flows at LGR, 2005.

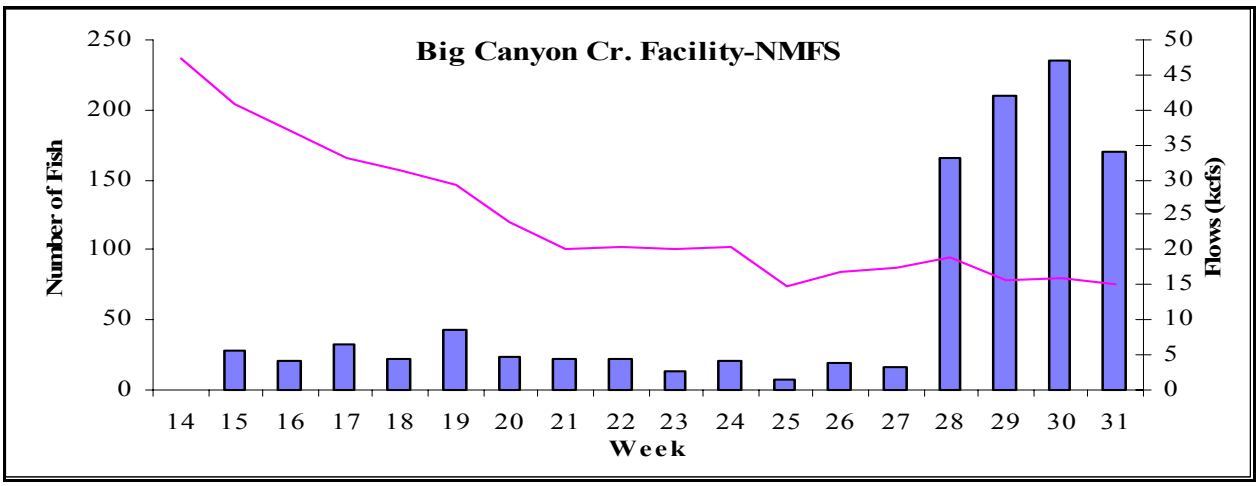

Figure 59. Number of NMFS PIT-tagged subyearling fall chinook released from Big Canyon Cr. facility, detected by week and flows at LGR, 2005.

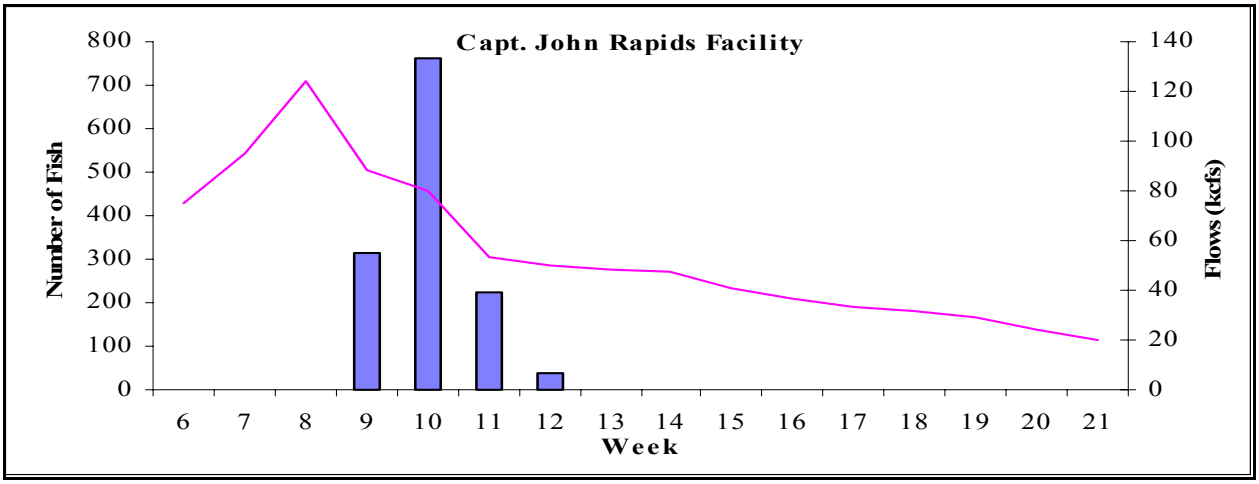

Figure 60. Number of PIT-tagged subyearling fall chinook released from Captain John Rapids facility, detected by week and flows at LGR, 2005.

Wild Subyearling Chinook

In previous years few wild subyearling fall chinook were PIT-tagged so few have been detected at LGR. In 2004 and 2005 almost 1900 wild subyearling chinook from the Clearwater River were captured by beach seining and PIT-tagged. In 2004, 12.5% of the PIT-tagged Clearwater River wild subyearling chinook were detected at LGR, with detections peaking in mid-July. In 2005, 1.0% of the fish PIT-tagged in 2004 were detected at LGR and their detections peaked during late March and early April. The subyearling PIT-tag detections from the 2004 releases occurred when there was no spill at LGR. In 2005, only 2.6% of the wild subyearling chinook PIT-tagged and released were detected at LGR and their detections peaked at the end of October (Table 41 and Figures 61-62).

Table 41. PIT-tagged Clearwater River wild subyearling chinook release groups at LGR, 2001-2005.

Release Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2004						
Clearwater River	15	July 9-15	15.7	1,884	236	12.5
2005						
Clearwater River-2004	1	March 24-April 7	42.1	1,884	19	1.0
Clearwater River-2005	30	October 20-27	18.8	1,875	48	2.6

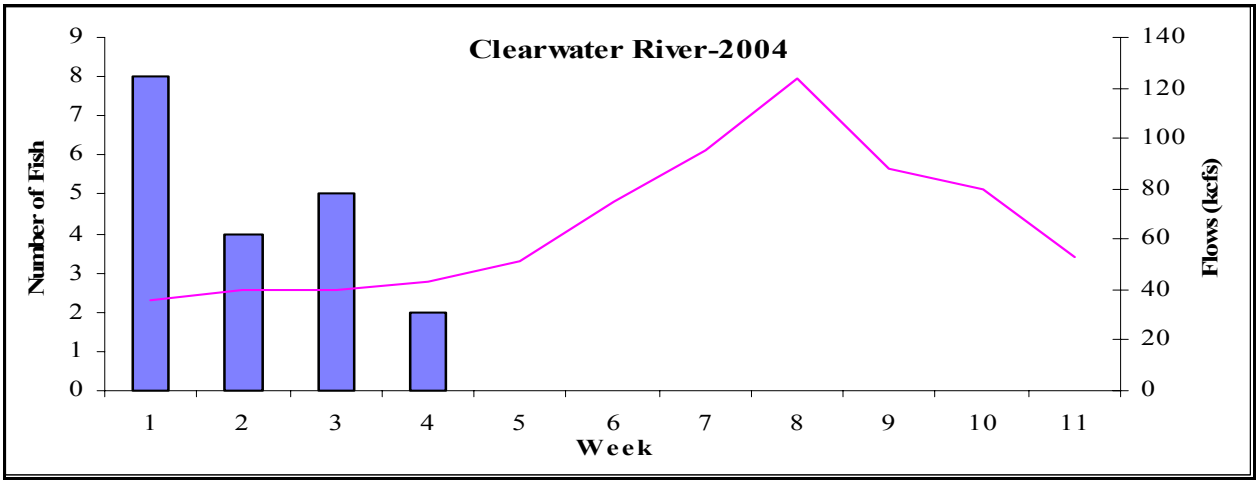

Figure 61. Number of PIT-tagged and released in 2004 Clearwater River wild subyearling fall chinook detected by week and flows at LGR, 2005.

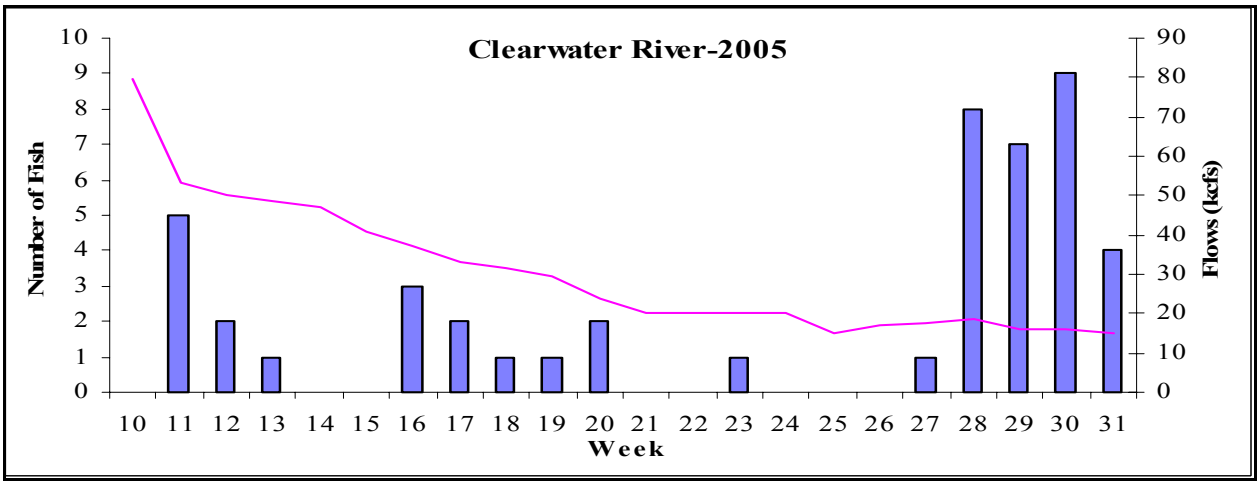

Figure 62. Number of PIT-tagged and released in 2005 Clearwater River wild subyearling fall chinook detected by week and flows at LGR, 2005.

Hatchery Steelhead

PIT-tagged hatchery steelhead were released at multiple release sites, therefore we grouped PIT-tagged hatchery steelhead by the hatchery where they were PIT-tagged. Hatchery steelhead tagged at traps and subsequently detected at LGR were not included in this analysis due to their unknown hatchery origin.

Clearwater Hatchery (5,795) had the most PIT-tagged hatchery steelhead smolts detected at LGR during the 2004 season followed respectively by Irrigon Hatchery (4,509), Magic Valley Hatchery (1,608), Dworshak Hatchery (900), Hagerman Hatchery (739) and Niagra Springs Hatchery (570) (Table 42). The peak weeks of detection for PIT-tagged hatchery steelhead were similar to those observed in previous years. Irrigon Hatchery PIT-tagged hatchery steelhead were detected at their highest rate recorded to date (Table 42). The overall detection rate for each hatchery's release showed little variation in 2005 while in previous year's the detection rates were more variable. In previous years Irrigon Hatchery PIT-tagged steelhead had consistently been the latest group to arrive at LGR while this season their detections peaked during week 6, the earliest run timing observed. All groups of PIT-tagged hatchery steelhead run timings did not appear to be significantly related to river flows (Figures 63-68).

Table 42. PIT-tagged hatchery steelhead release groups at LGR, 2001-2005.

Hatchery	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Irrigon	8	May 18-24	36.4	3,607	1,266	35.1
Magic Valley	7	May 11-17	30.7	2,701	1,513	56.0
Hagerman	7	May 11-17	32.1	1,787	971	54.3
Clearwater	5	April 27-May 3	34.0	1,496	782	52.3
Niagra Springs	7	May 11-17	41.3	901	172	19.1
Dworshak	5	April 27-May 3	63.1	6,016	4,162	69.2
2002						
Irrigon	8	May 17-23	29.0	5,597	555	9.9
Magic Valley	9	May 24-30	33.0	2,994	737	24.6
Hagerman	8	May 17-23	23.4	1,198	167	13.9
Clearwater	9	May 24-30	36.0	1,201	161	13.4
Niagra Springs	9	May 24-30	34.4	897	157	17.5
Dworshak	9	May 24-30	27.5	1,500	40	2.7
2003						
Irrigon	9	May 23-29	30.4	2,012	759	37.7
Magic Valley	5	April 25-May 1	23.4	3,268	594	18.2
Hagerman	8	May 16-22	33.5	1,939	520	26.8
Clearwater	5	April 25-May 1	27.9	3,967	729	18.4
Niagra Springs	9	May 23-29	31.1	1,194	277	23.2
Dworshak	5	April 25-May 1	58.4	1,500	363	24.2
2004						
Irrigon	8	May 21-27	35.9	5,238	1,342	25.6
Magic Valley	6	May 7-13	42.2	3,185	2,000	62.8
Hagerman	8	May 21-27	34.6	1,450	676	46.6
Clearwater	6	May 7-13	49.0	11,169	7,091	63.5
Niagra Springs	6	May 7-13	33.8	1,190	736	61.8
Dworshak	4	April 23-29	45.2	1,496	951	63.6
2005						
Irrigon	6	May 5-12	61.9	8,810	4,509	51.2
Magic Valley	6	May 5-12	48.1	3,186	1,608	50.5
Hagerman	7	May 12-19	26.9	1,466	739	50.4
Clearwater	6	May 5-12	48.0	11,277	5,795	51.4
Niagra Springs	6	May 5-12	39.3	1,193	570	47.8
Dworshak	5	April 28-May 5	38.0	1,498	900	60.1

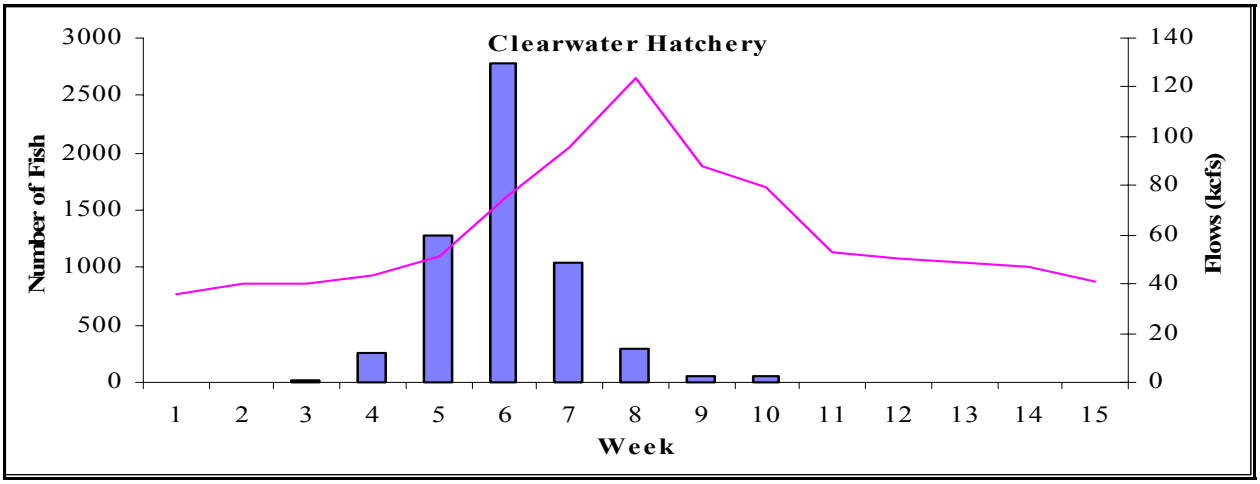

Figure 63. Number of PIT-tagged Clearwater hatchery steelhead detected by week and flows at LGR, 2005.

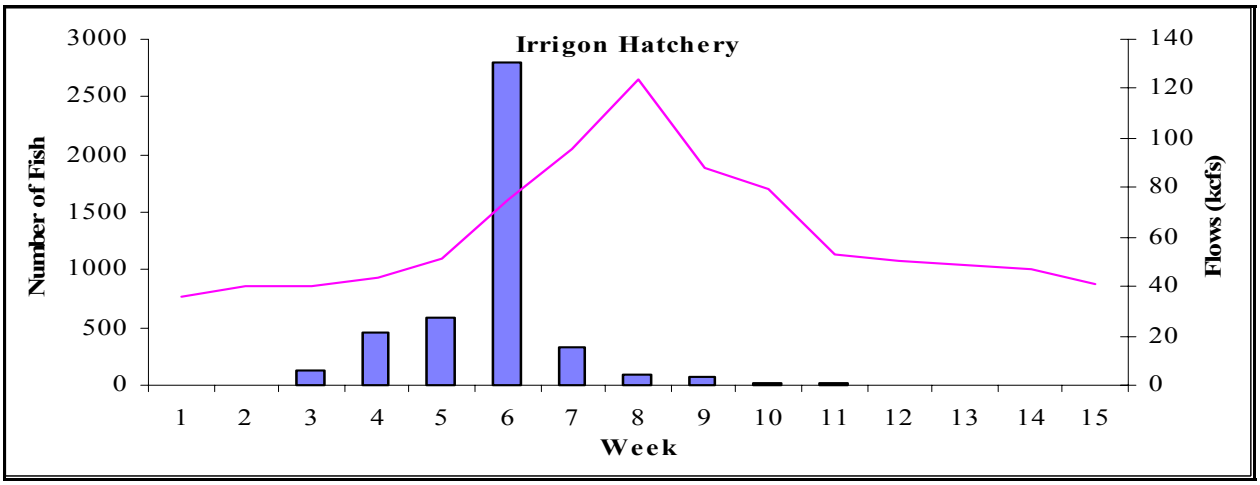

Figure 64. Number of PIT-tagged Irrigon hatchery steelhead detected by week and flows at LGR, 2005.

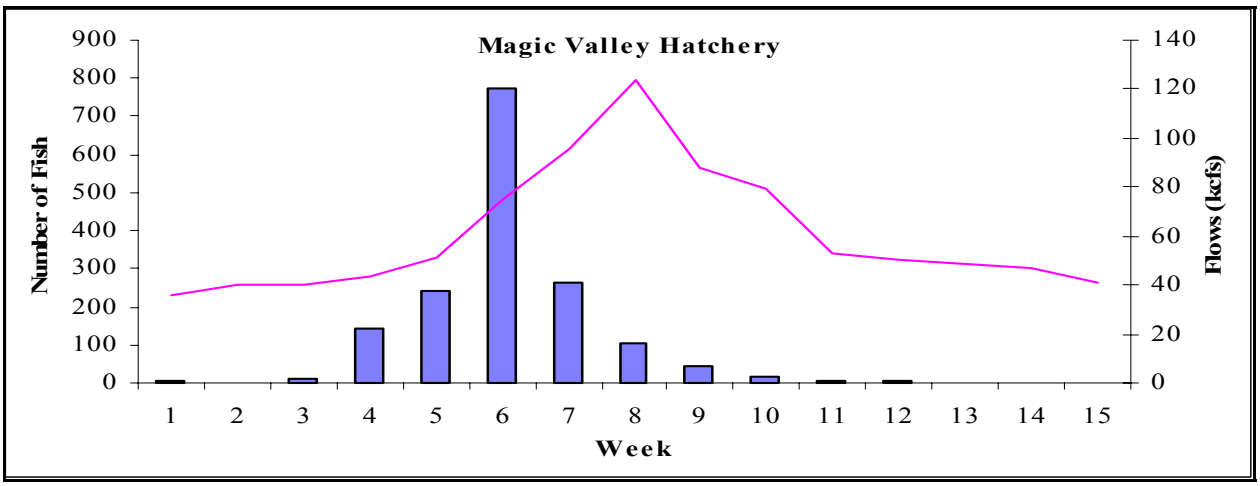

Figure 65. Number of PIT-tagged Magic Valley hatchery steelhead detected by week and flows at LGR, 2005.

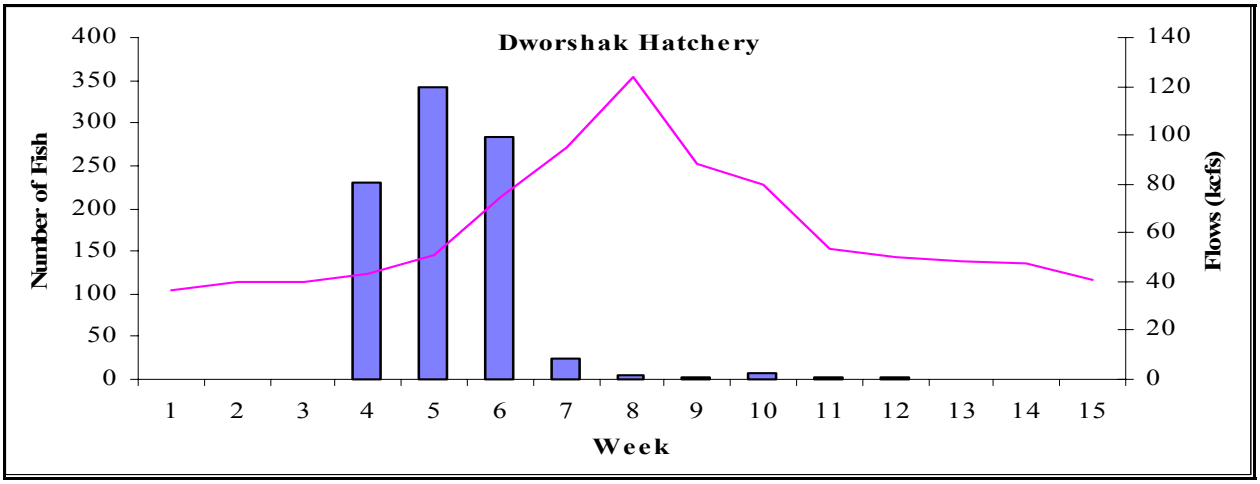

Figure 66. Number of PIT-tagged Dworshak hatchery steelhead detected by week and flows at LGR, 2005.

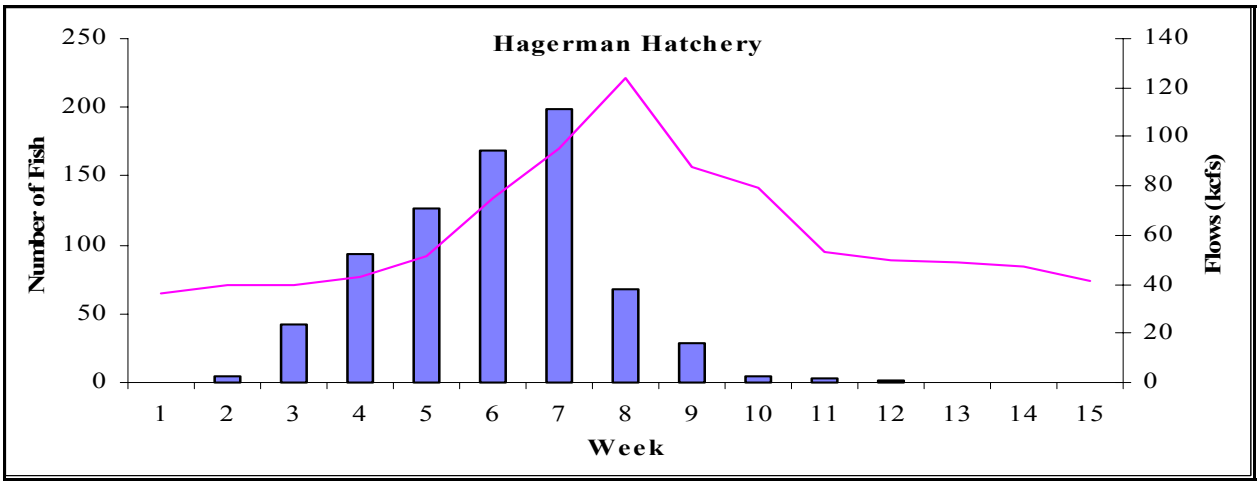

Figure 67. Number of PIT-tagged Hagerman hatchery steelhead detected by week and flows at LGR, 2005.

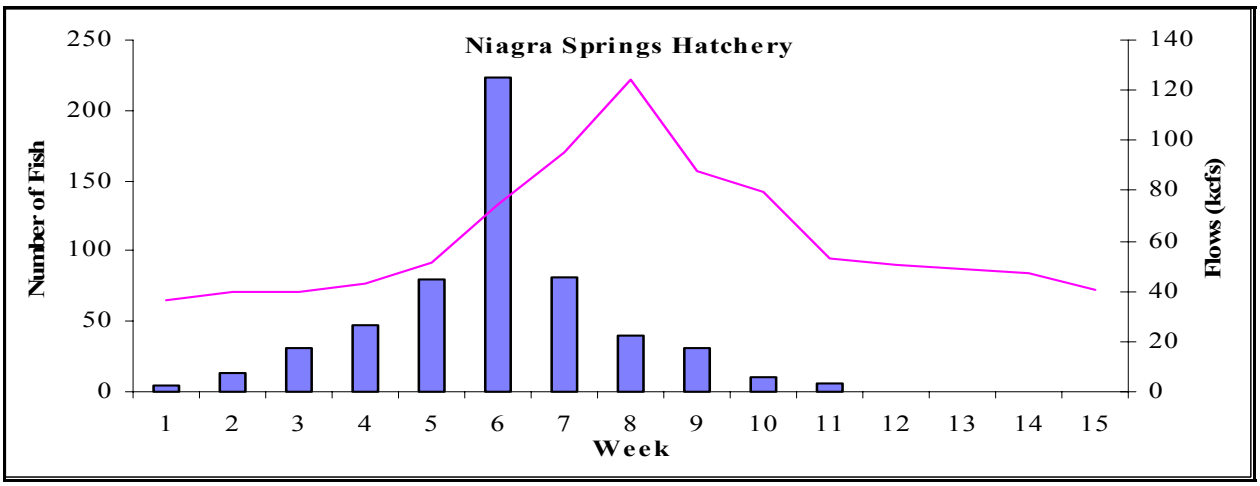

Figure 68. Number of PIT-tagged Niagra Springs hatchery steelhead detected by week and flows at LGR, 2005.

Wild Steelhead

Wild steelhead captured and PIT-tagged at traps and stream locations were grouped by tag site. Fish tagged at these sites include different stock components of upstream tributaries of wild steelhead so the specific origin of a wild steelhead smolt is unknown. This data includes all wild steelhead detected at LGR in 2004 including those tagged in prior years

The five trap sites with the greatest number of PIT-tagged fish detected at LGR in previous years were Imnaha trap (2,279), Fish Cr. trap (1,722), Snake trap (911), Grande Ronde trap (569) and Clearwater trap (1,029) (Table 43). In 2005, Big Bear Creek (886) and Asotin Creek (607) had significant numbers of PIT-tagged wild steelhead detected at LGR but neither site had any wild steelhead detected at LGR in 2004. The peak week of detections for all release groups was similar to those observed in 2004 and occurred before flows peaked (Figures 69-75). Detection rates at were similar to those observed in 2004.

Table 43. PIT-tagged wild steelhead release groups at LGR, 2001-2005.

Tag Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Fish Cr. Trap	5	April 27-May 3	70.1	5,893	3,366	57.1
Imnaha Trap	7	May 11-17	46.7	3,681	2,654	72.1
Snake Trap	6	May 4-10	57.5	876	717	81.9
Grande Ronde Trap	6	May 4-10		602	276	45.9
2002						
Fish Cr. Trap	3	April 12-18	50.1	7,031	1,413	20.1
Imnaha Trap	8	May 17-23	23.1	4,809	1,029	21.4
Snake Trap	8	May 17-23	23.2	2,518	612	24.3
Grande Ronde Trap	9	May 24-30	28.5	609	151	24.8
2003						
Fish Cr. Trap	5	April 25-May 1	23.7	5,286	819	15.5
Imnaha Trap	8	May 16-22	35.2	6,303	1,891	30.0
Snake Trap	9	May 23-29	31.2	1,208	397	32.9
Clearwater Trap	8	May 16-22	39.5	457	167	36.5
Grande Ronde Trap	9	May 23-29	37.2	612	218	35.6
2004						
Fish Cr. Trap	5	April 30-May 6	43.1	7,493	1,787	23.9
Imnaha Trap	5	April 30-May 6	27.5	5,720	3,628	63.4
Snake Trap	6	May 7-13	40.5	1,923	1,458	75.8
Clearwater Trap	5	April 30-May 6	41.7	990	520	52.5
Grande Ronde Trap	6	May 7-13	43.1	771	566	73.4
2005						
Fish Cr. Trap	5	April 28-May 8	44.1	9,958	1,722	17.3
Imnaha Trap	6	May 5-12	38.2	4,500	2,279	50.6
Snake Trap	6	May 5-12	41.8	1,357	911	67.1
Clearwater Trap	5	April 28-May 8	44.4	1,427	1,029	72.1
Grande Ronde Trap	7	May 12-19	43.8	978	569	58.2
Big Bear Cr.-Potlatch R.	6	May 5-12	74.6	2,304	886	38.5
Asotin Cr.	7	May 12-19	34.3	2,253	607	26.9

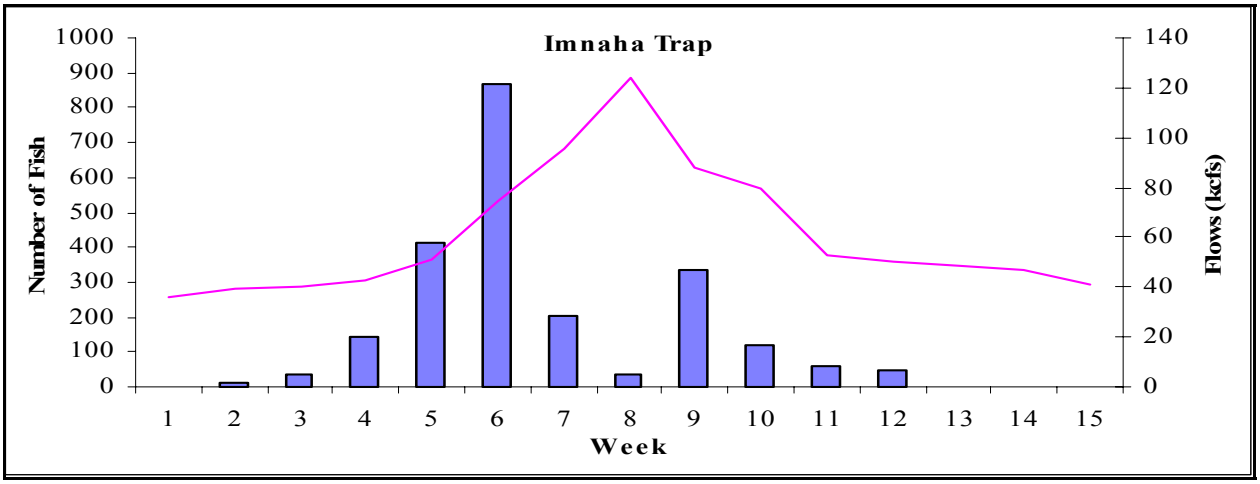

Figure 69. Number of PIT-tagged Imnaha trap wild steelhead detected by week and flows at LGR, 2005.

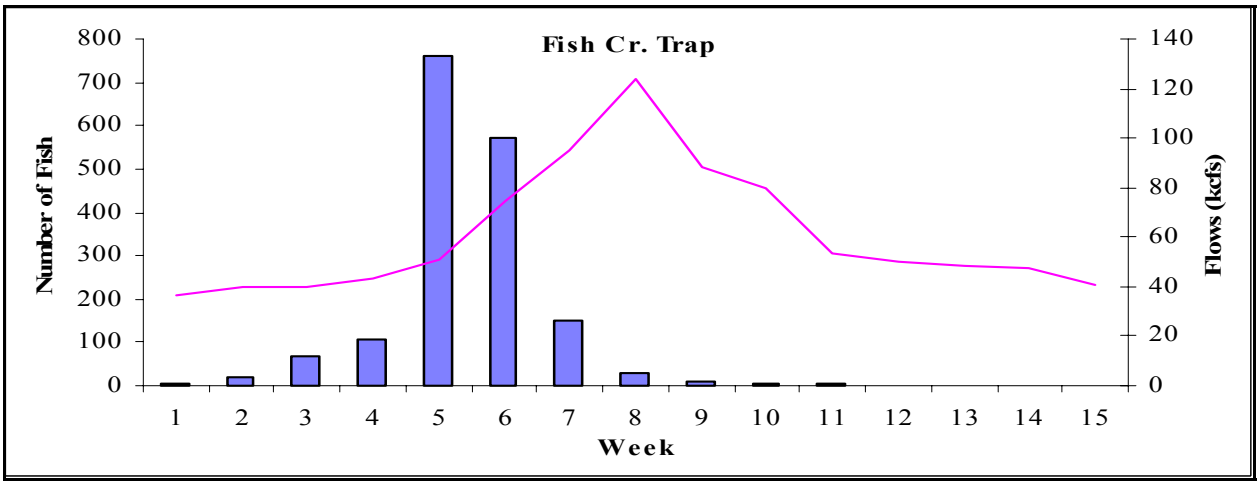

Figure 70. Number of PIT-tagged Fish Cr. trap wild steelhead detected by week and flows at LGR, 2005.

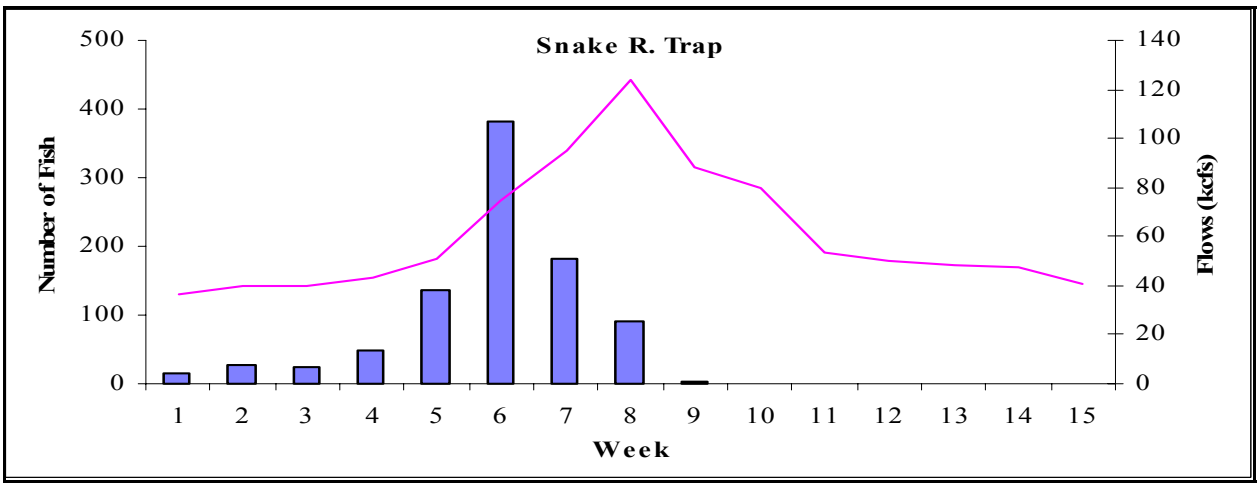

Figure 71. Number of PIT-tagged Snake River trap wild steelhead detected by week and flows at LGR, 2005.

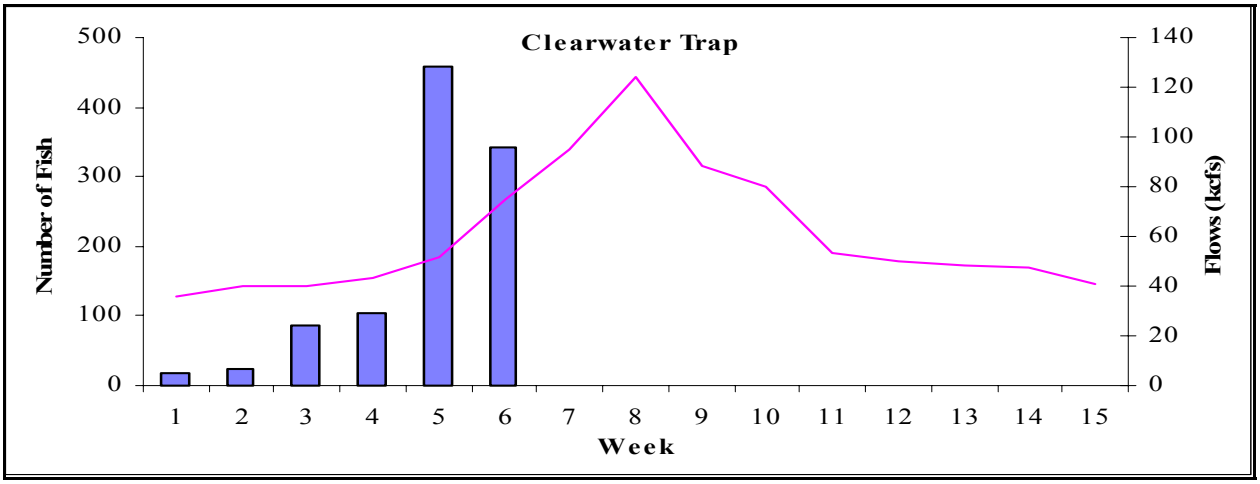

Figure 72. Number of PIT-tagged Clearwater trap wild steelhead detected by week and flows at LGR, 2005.

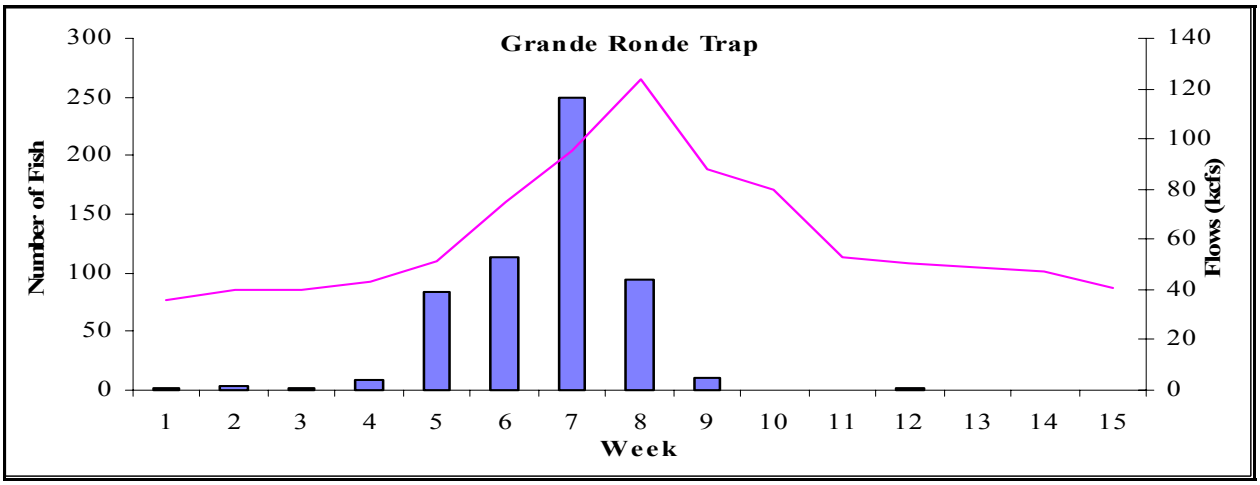

Figure 73. Number of PIT-tagged Grande Rhonde trap wild steelhead detected by week and flows at LGR, 2005.

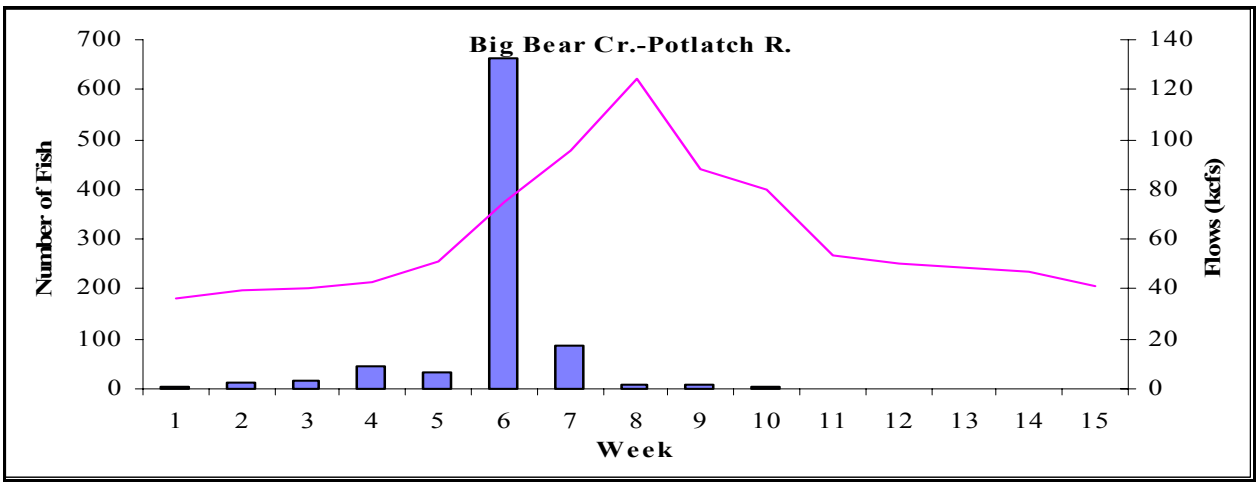

Figure 74. Number of PIT-tagged Big Bear Creek wild steelhead detected by week and flows at LGR, 2005.

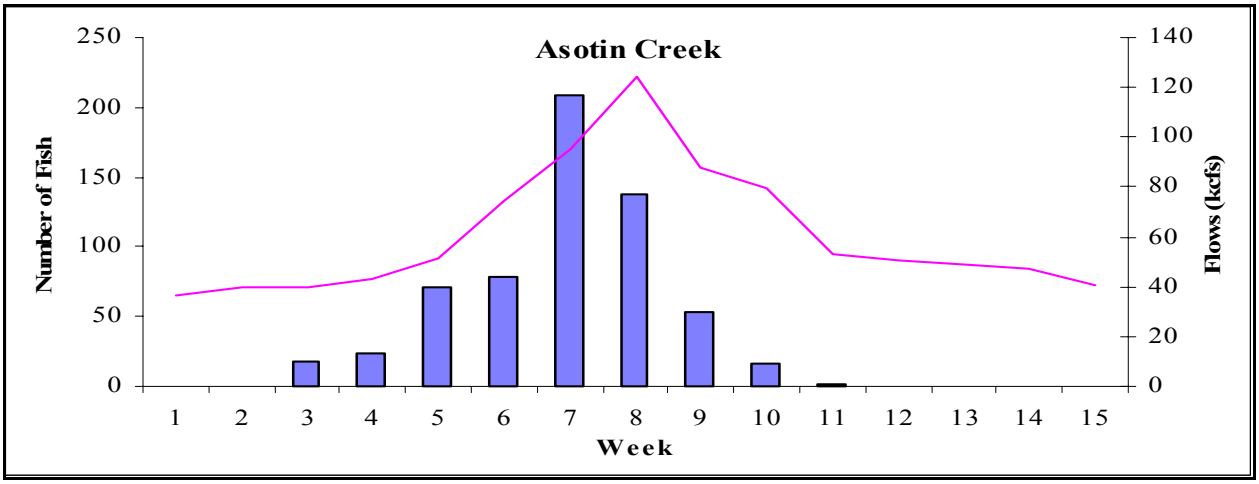

Figure 75. Number of PIT-tagged Asotin Creek wild steelhead detected by week and flows at LGR, 2005.

Hatchery Sockeye

PIT-tagged hatchery sockeye were tagged at multiple sites, therefore we grouped PIT-tagged hatchery sockeye groups by their release site. PIT-tagged hatchery sockeye were detected at LGR from eight release sites this season (Table 44, Figures 76-82).

Redfish Lake Cr. trap (184) had the most PIT-tagged smolts detected at LGR in 2005 followed respectively by Sawtooth Hatchery smolts released into Redfish Lake Cr. Trap (149), Sawtooth Hatchery smolts released into Alturus Lake (73), Sawtooth Hatchery smolts released into Redfish Lake (68), Sawtooth Hatchery smolts released into Pettit Lake (57), Alturus Lake Cr. (21), Pettit Lake Cr. (13) and one fish from Sawtooth Hatchery with no release site listed. In 2004 and 2005, PIT-tagged hatchery sockeye detections at LGR did not appear to be as related to peak flows as observed in previous years. Compared to other PIT-tagged species groups detection rates at LGR for PIT-tagged sockeye are typically lower. Detection rates were similar to those observed in 2004. The groups released in the lakes as fry have much lower detection rates than the hatchery sockeye tagged at the traps or stream sites as smolts.

Table 44. PIT-tagged hatchery sockeye release groups at LGR, 2001-2005.

Release Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Pettit Lk. Cr.	8	May 18-24	56.7	143	30	21.0
Pettit Lk. Cr. from Alturas L. Cr.	10	June 1-7	50.0	130	2	1.5
Alturas Cr.	8	May 18-24	80.3	385	71	18.4
Redfish Lk. Cr. Trap	8	May 18-24	33.9	1,390	325	23.4
Redfish Lk. Cr. from Bonn. Hat.	7	May 11-17	54.7	1,000	117	11.7
2002						
Pettit Lk. Cr.	9	May 24-30	75.0	390	16	4.1
Alturas Cr.	9	May 24-30	75.0	249	4	1.6
Redfish Lk. Cr. Trap (Sawt. Hat.)	8	May 17-23	97.1	994	34	3.4
Redfish Lk. Cr. Trap	8	May 17-23	30.4	1,813	112	6.2
2003						
Pettit Lk. Cr.	9	May 23-29	83.3	75	6	8.0
Redfish Lake Cr.	10	May 30-June 5	49.2	1,331	122	9.2
Redfish Lake from Bonn. Hat.	10	May 30-June 5	60.0	1,007	15	1.5
Redfish Lake from Sawt. Hat.	10	May 30-June 5	61.1	1,015	36	3.5
Pettit Lake from Bonn. Hat.	10	May 30-June 5	73.6	1,565	140	8.9
Pettit Lake from Sawt. Hat.	10	May 30-June 5	62.4	2,013	263	13.1
Alturas Lake	11	June 6-12	50.0	1,481	4	0.3
2004						
Pettit Lake	7	May 14-20	43.4	2,014	106	5.3
Redfish Lake	8	May 21-27	36.5	1,519	96	6.3
Sawtooth Hat.	8	May 21-27	100.0	96	19	20.0
Redfish Lake Cr. Trap	8	May 21-27	26.6	1,915	511	26.7
Pettit Lake from Sawt. Hat.	6	May 7-13	54.7	2,017	139	6.9
Pettit Lake Cr.	6	May 7-13	57.9	203	19	9.4
2005						
Redfish Lake Cr. Trap	9	May 26-June 2	37.5	1,065	184	17.3
Redfish Lake Cr. Trap (Sawt. Hat.)	7	May 12-19	49.0	2,016	149	7.4
Alturus Lake (Sawt. Hat.)	7	May 12-19	52.1	1,009	73	7.5
Redfish Lake (Sawt. Hat.)	9	May 26-June 2	48.5	1,020	68	6.7
Pettit Lake (Sawt. Hat.)	8	May 19-26	61.4	1,013	57	5.6
Alturas Lake Cr.	7	May 12-19	66.7	246	21	8.5
Pettit Lake Cr.	9	May 26-June 2	46.2	309	13	4.2

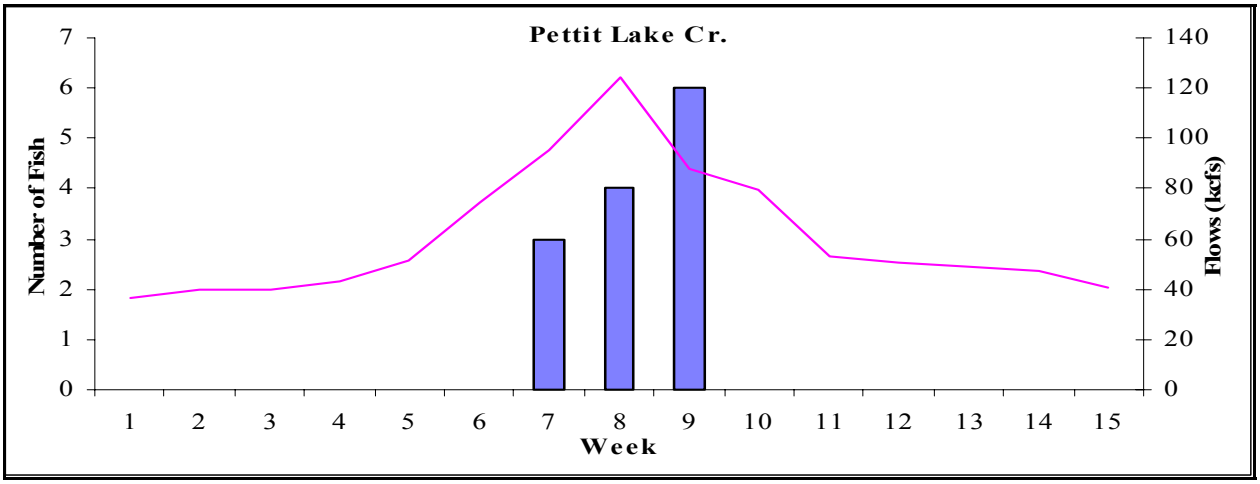

Figure 76. Number of PIT-tagged Pettit Lake Cr. hatchery sockeye detected by week and flows at LGR, 2005.

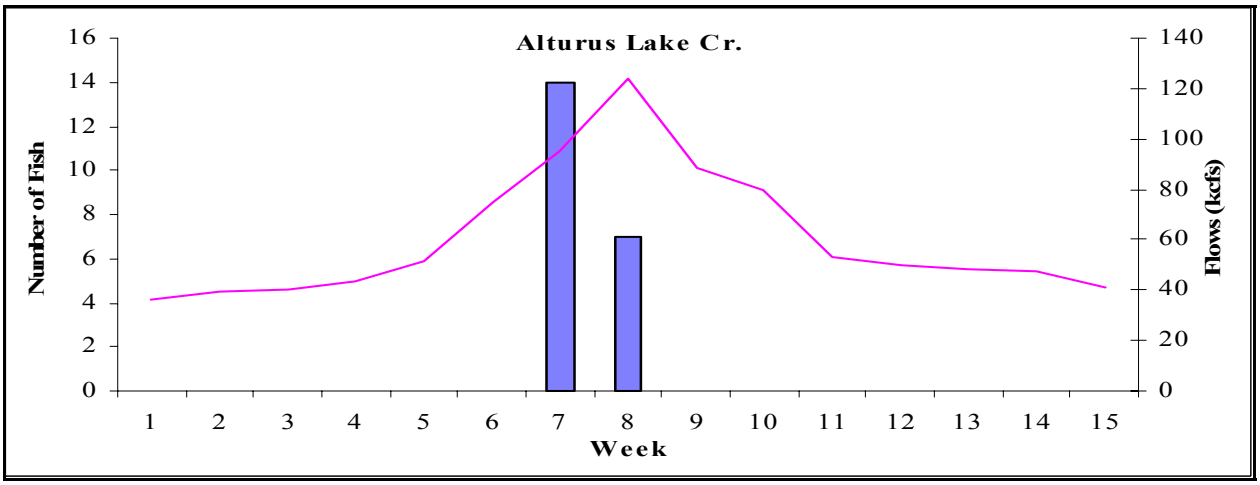

Figure 77. Number of PIT-tagged Alturus Lake Creek hatchery sockeye detected by week and flows at LGR, 2005.

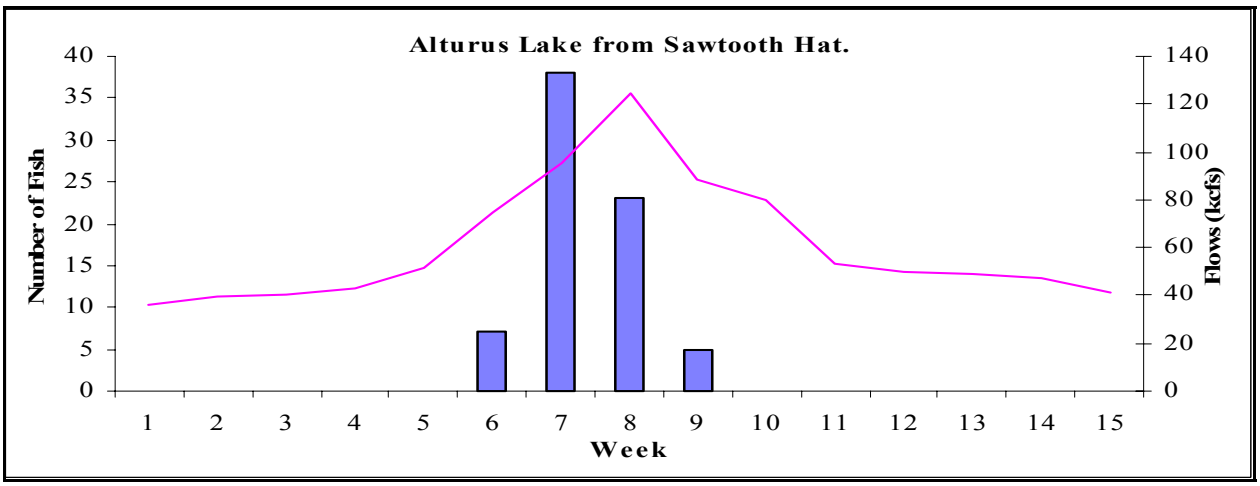

Figure 78. Number of PIT-tagged Alturus Lake hatchery sockeye from Sawtooth Hatchery detected by week and flows at LGR, 2005.

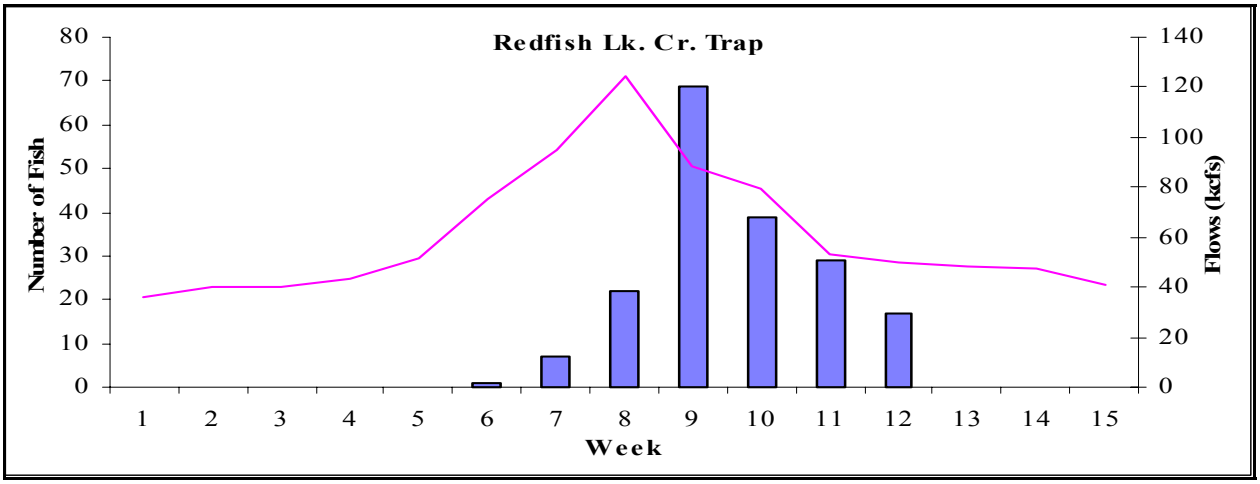

Figure 79. Number of PIT-tagged Redfish Lake Cr. trap hatchery sockeye detected by week and flows at LGR, 2005.

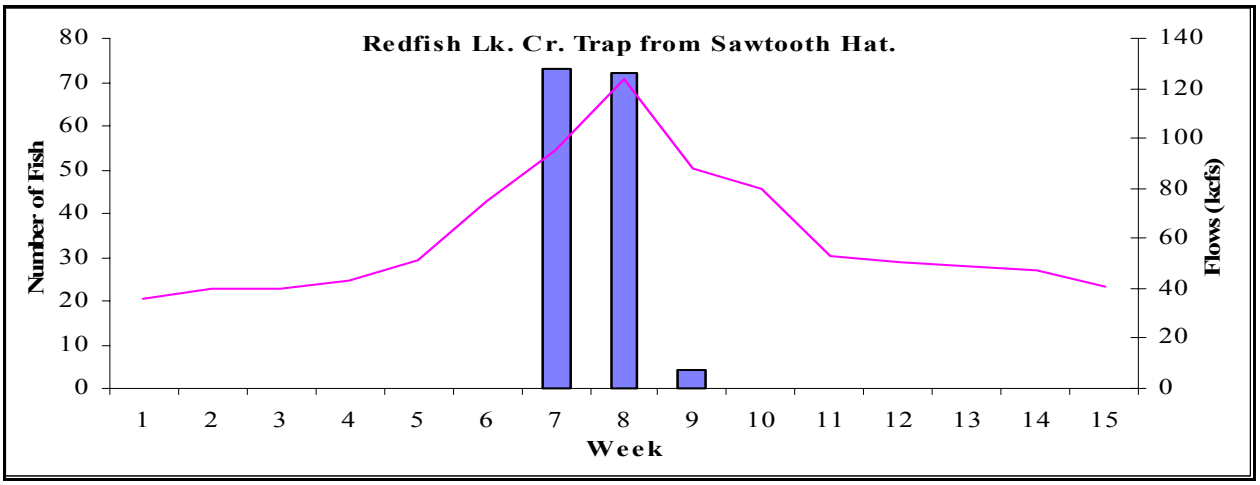

Figure 80. Number of PIT-tagged Redfish Lake Cr. trap hatchery sockeye from Sawtooth Hatchery detected by week and flows at LGR, 2005.

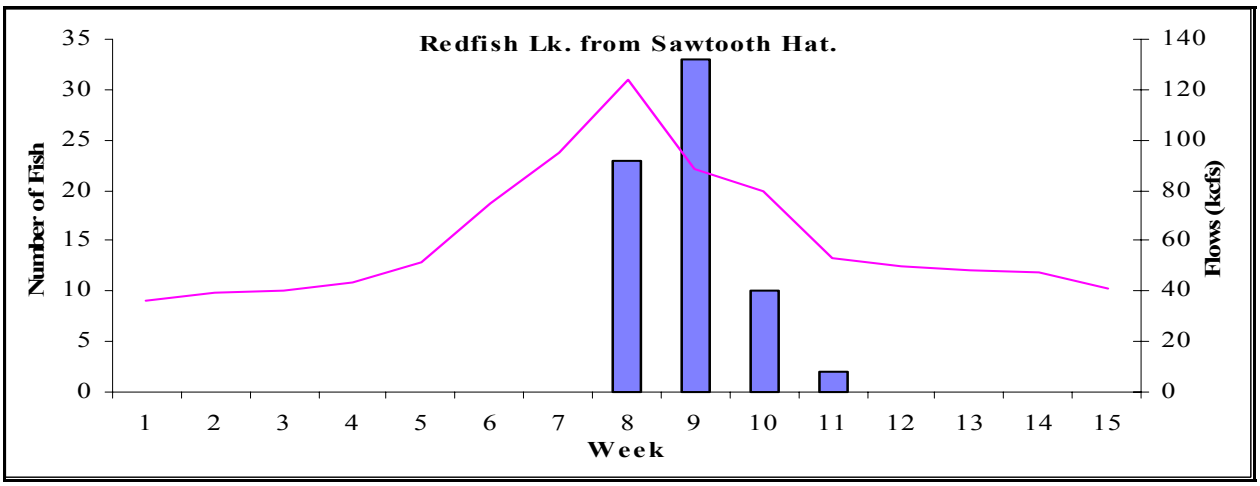

Figure 81. Number of PIT-tagged Redfish Lake hatchery sockeye from Sawtooth Hatchery detected by week and flows at LGR, 2005.

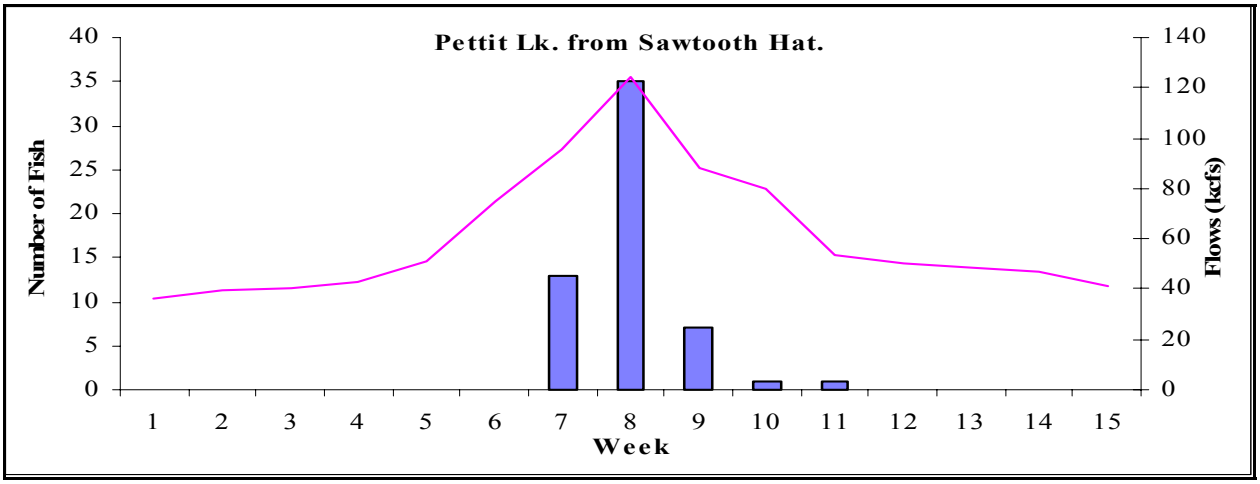

Figure 82. Number of PIT-tagged Sawtooth Hatchery sockeye released into Pettit Lake detected by week and flows at LGR, 2005.

Wild Sockeye

There were three release groups or sites for sockeye that were classified as wild in the PTAGIS database and Redfish Lake Cr. Trap (133) had the most fish detected followed respectively by Pettit Lake Cr. (23) and Alturus Lake Cr. (19). The wild sockeye peak detections occurred at similar times to the fish classified as hatchery sockeye (Figures 83-85).

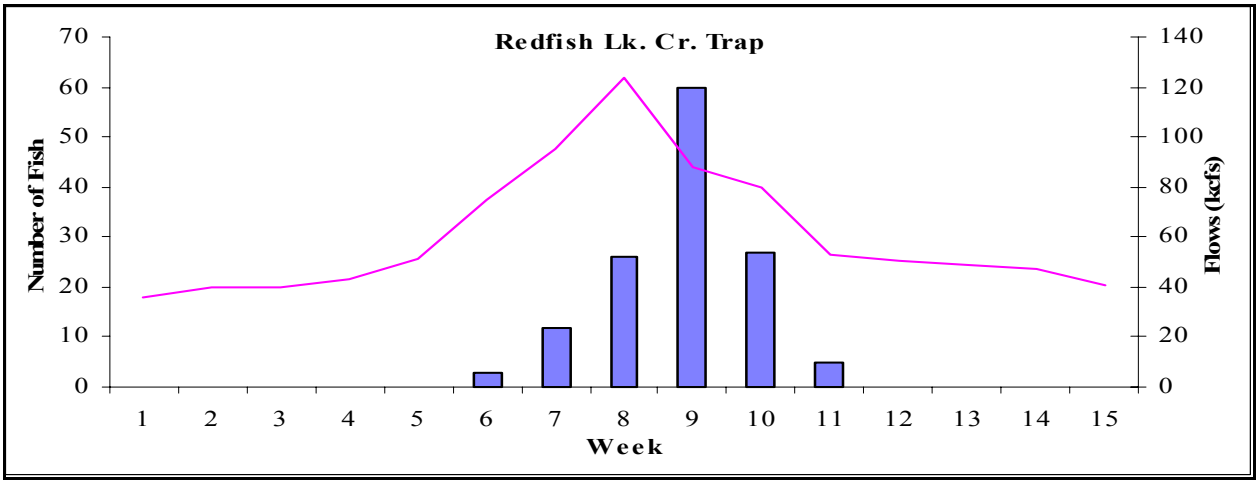

Figure 83. Number of PIT-tagged Redfish Lake Cr.trap wild sockeye detected by week and flows at LGR, 2005.

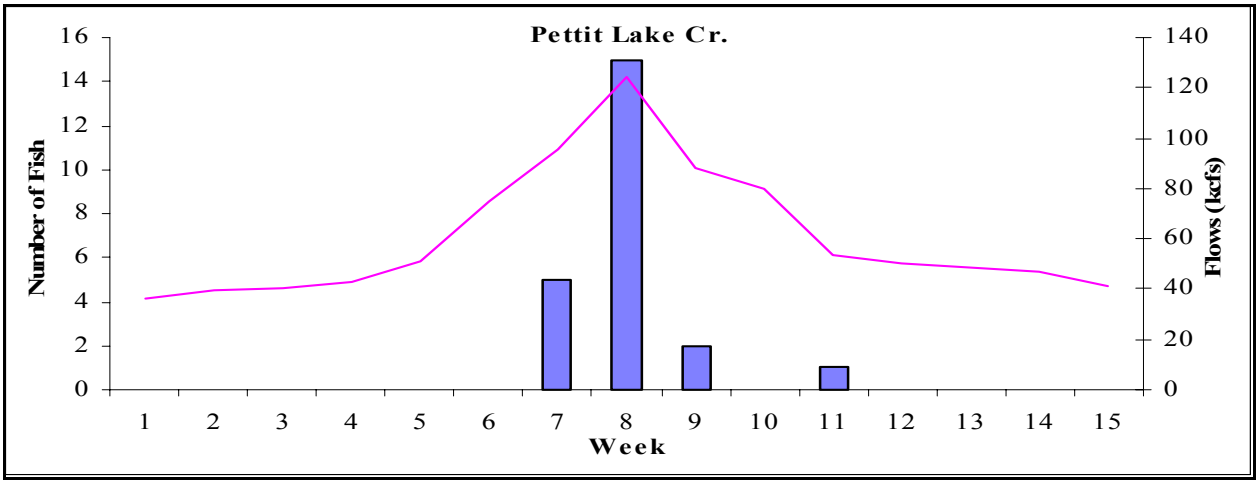

Figure 84. Number of PIT-tagged Pettit Lake Cr. wild sockeye detected by week and flows at LGR, 2005.

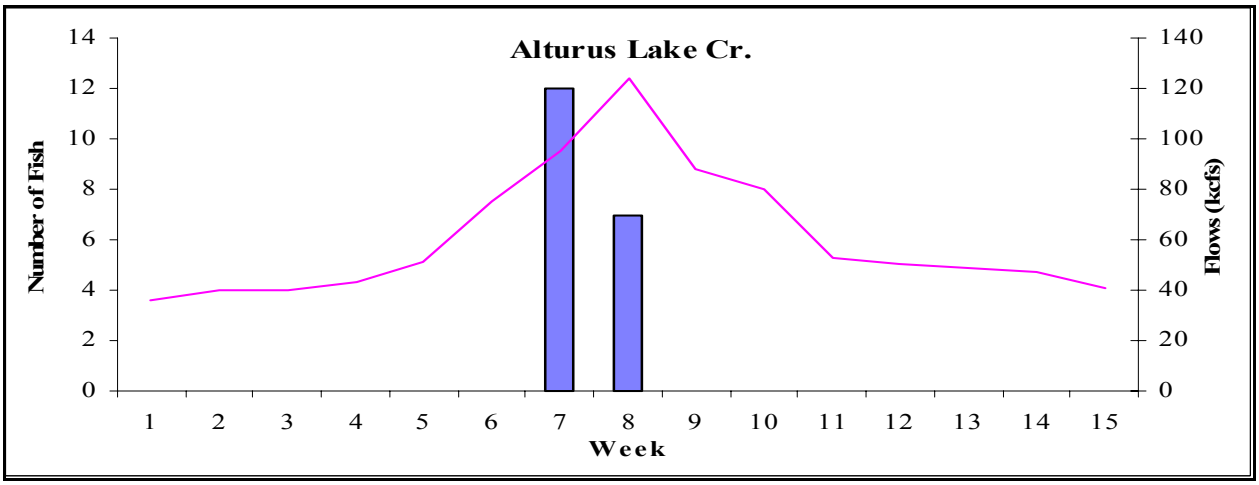

Figure 85. Number of PIT-tagged Alturus Lake Cr. wild sockeye detected by week and flows at LGR, 2005.

Coho

PIT-tagged coho detected at LGR this season were released from seven sites in 2005. Kooskia Hatchery (1,077) had the most PIT-tagged coho detected at LGR followed by Eagle Cr. National Fish Hatchery (667), Lolo Cr. (68), Big Bear Cr. (30), Eldorado Cr. (19), S. Fk. Clearwater R. (14) and O'Hara Cr (1). In 2005 peak detections for most release groups occurred earlier than those observed in previous years and occurred before the peak in flows for the season (Table 45 and Figures 86-91).

Detection rates over the last five years ranged from a low of 0.1% to a high of 53.9%. The release groups with the highest detection rates were these released in the spring as smolts and include Kooskia Hatchery (53.9%), Big Bear Cr. (22.1) and Eagle Cr. NFH in 2005. Lolo Cr. (3.5%) and Eldorado Cr. (1.9%) PIT-tagged fish were released as parr in September of 2004, and their detection rates were very low. The S. Fk. Clearwater River (0.2%) detections were from a July release in 2003. Kooskia Hatchery fish were released as smolts and had the highest detection rate at LGR in the five years examined.

Table 45. PIT-tagged coho release groups at LGR, 2001-2005.

Release Site	Peak Week	Peak Date	% Detected During the Peak Week	Total Released	Total Detected	Percent Detected
2001						
Lapwai Cr. (WNFH)	9	May 25-31	28.9	1,035	111	10.7
Eldorado Cr. (CLWH)	14	June 29-July 5	44.6	1,553	74	4.8
Potlatch R. (WNFH)	8	May 18-24	24.1	1,042	58	5.6
Lolo Cr.	14	June 29-July 5	18.2	708	22	3.1
Meadow Cr. (CLWH)	16	July 13-19	25.0	1,443	16	1.1
2002						
Kooskia Hatchery	10	May 31-June 6	77.3	994	44	4.4
Lapwai Cr. (WNFH)	10	May 31-June 6	43.8	1,050	16	1.5
Potlatch R. (WNFH)	11	June 7-13	66.7	1,049	3	0.3
Meadow Cr. (CLWH)	13	June 21-27	33.0	1,024	21	2.1
Eldorado Cr. (CLWH)	13	June 21-27	26.3	1,000	19	1.9
2003						
Kooskia Hatchery	9	May 23-29	56.0	1,000	168	16.8
Lapwai Cr. (Eagle Cr.)	10	May 30-June 5	34.3	1,000	140	14.0
S. Fk. Clearwater (CLWH)	13	June 20-26	26.7	1,990	30	1.5
Potlatch R. (Eagle Cr.)	9	May 23-29	50.0	1,000	28	2.8
Eldorado Cr. (CLWH)	13	June 20-26	21.7	1,006	23	2.3
Meadow Cr. (CLWH)	11	June 6-12	57.1	999	14	1.4
2004						
Kooskia Hatchery	8	May 21-27	58.0	1,498	745	49.7
Lapwai Cr. (Eagle Cr. Hat)	6	May 7-13	40.0	2,997	877	29.3
S. Fk. Clearwater (CLWH)	11	June 11-17	31.0	5,801	87	1.5
Potlatch R. (Eagle Cr. Hat.)	6	May 7-13	100.0	1,000	1	0.1
Eldorado Cr. (CLWH)	10	June 4-10	41.4	1,000	11	1.1
Meadow Cr. (CLWH)	8	May 21-27	45.5	1,024	2	0.2
O'Hara Cr. (CLWH)	8	May 21-27	31.0	3,124	29	0.9
2005						
Kooskia Hatchery	6	May 5-12	67.9	2,000	1077	53.9
Eagle Cr. NFH	6	May 5-12	63.1		667	
Big Bear Creek, Potlatch R.	6	May 5-12	73.3	136	30	22.1
Eldorado Cr. (CLWH)	8	May 19-26	21.1	999	19	1.9
S. Fk. Clearwater (CLWH)	7	May 12-19	28.6	5,801	14	0.2
Lolo Cr. (CLWH)	10	June 2-9	33.8	1,964	68	3.5

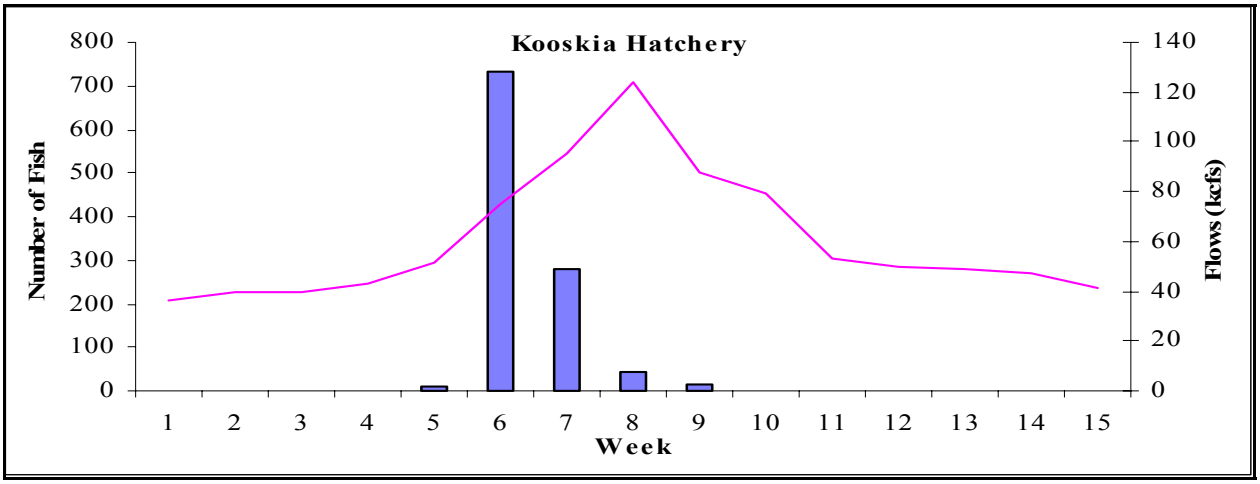

Figure 86. Number of PIT-tagged Kooskia hatchery coho detected by week and flows at LGR, 2005.

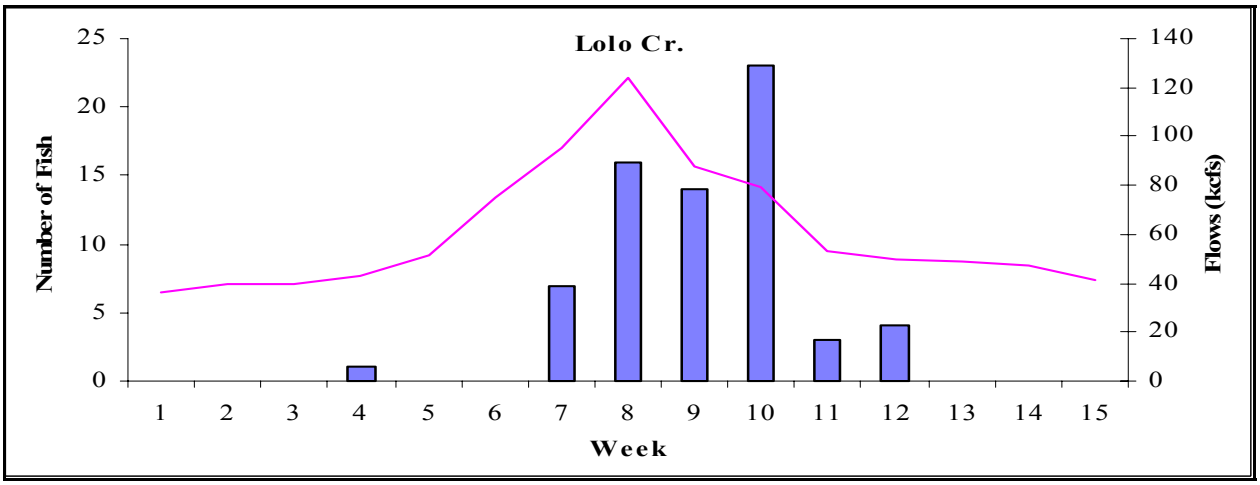

Figure 87. Number of PIT-tagged hatchery coho released into Lolo Cr. detected by week and flows at LGR, 2005.

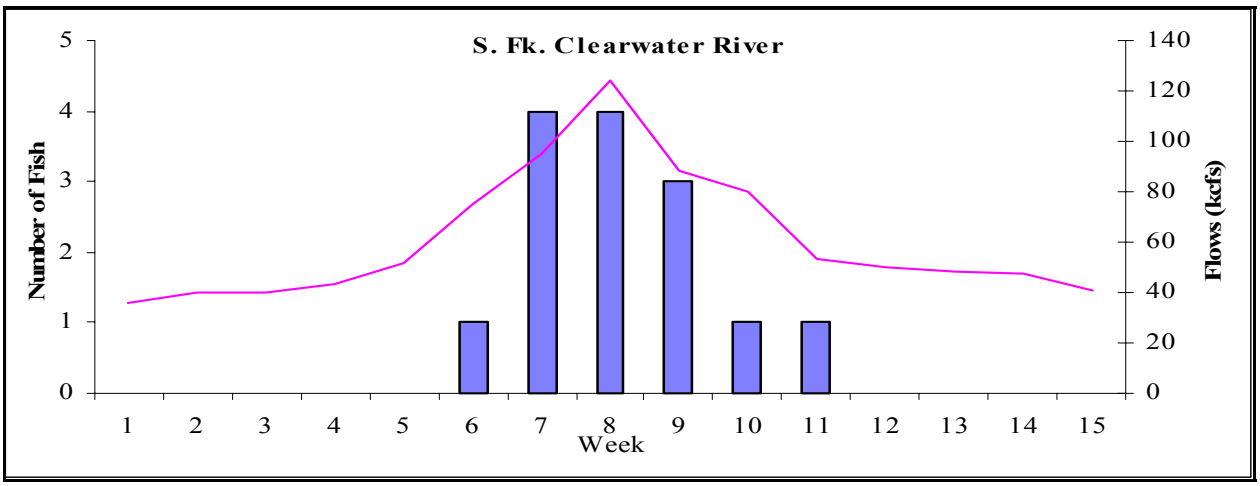

Figure 88. Number of PIT-tagged hatchery coho released into S. Fk. Clearwater R. detected by week and flows at LGR, 2005.

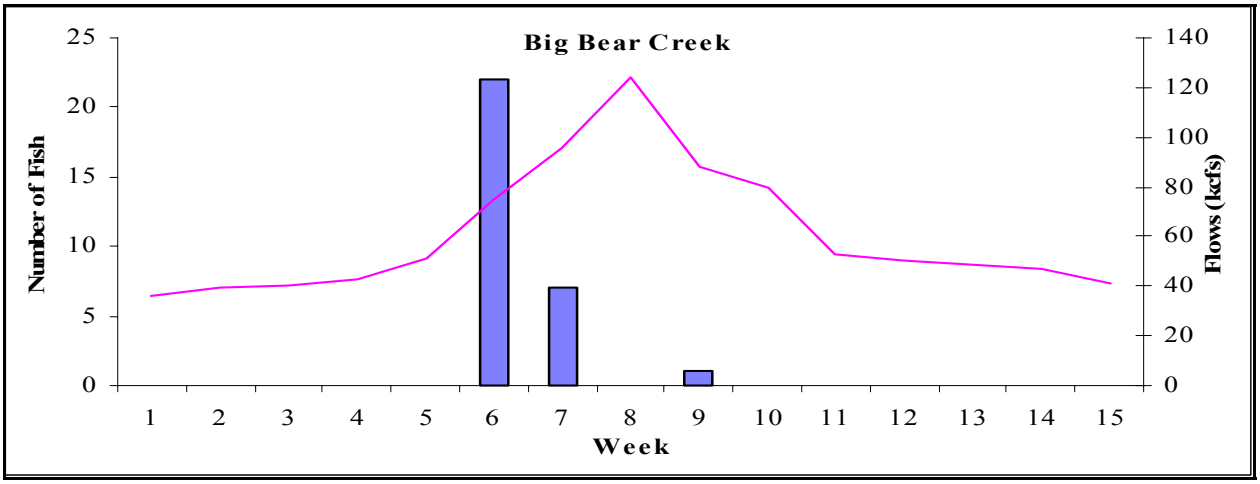

Figure 89. Number of PIT-tagged hatchery coho released into Big Bear Creek detected by week and flows at LGR, 2005.

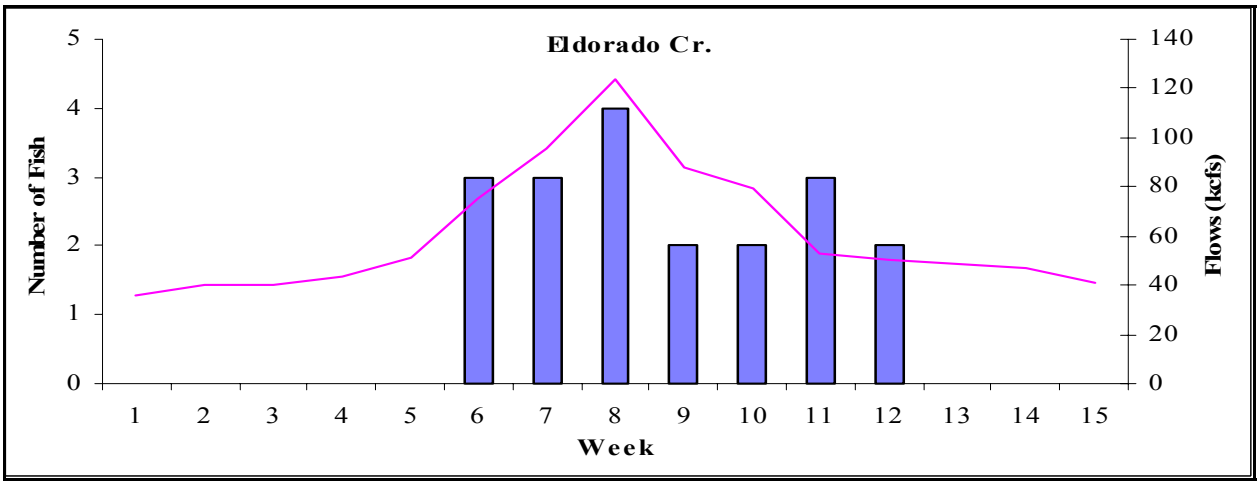

Figure 90. Number of PIT-tagged hatchery coho released into Eldorado Cr. detected by week and flows at LGR, 2005.

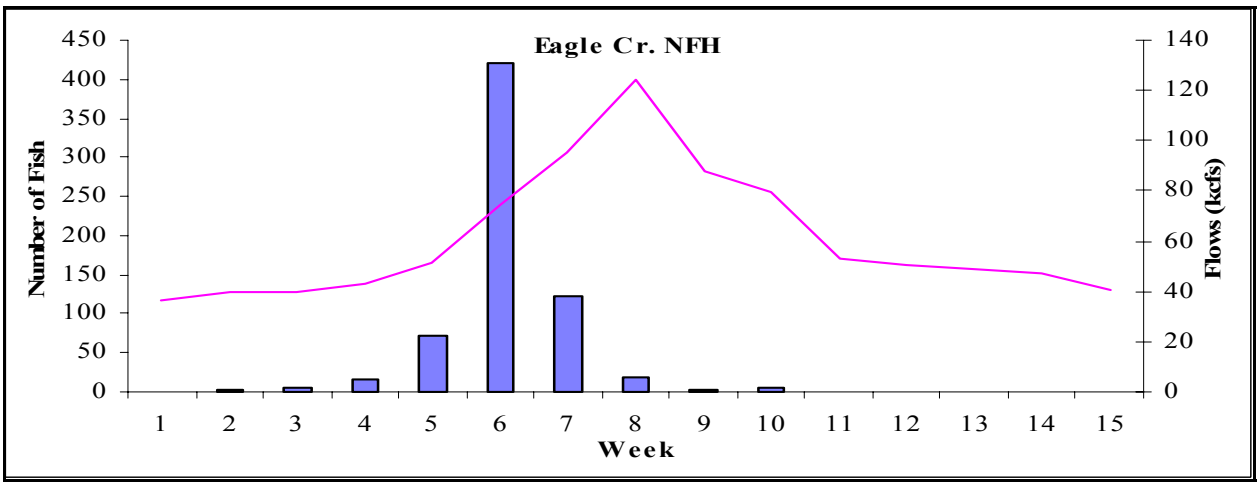

Figure 91. Number of PIT-tagged hatchery coho from Eagle Cr. NFH with no release location given, detected by week and flows at LGR, 2005.

Fish Condition

Descaling

We began looking at gradations of scale loss in smolts during 1998 to augment the standard descaling data taken from fish sampled. Standard descaling criteria identifies a fish with 20% or greater scale loss on one side of its body as descaled based on the Fish Passage Center guidelines. If scale loss is less, the fish is not considered descaled at all. Many fish have levels of scale loss that do not fit the standard descaling criteria. However, we have observed that fish with scale loss less than 20 % typically take more time to recover from exposure to MS-222 than fish with no scale loss. Therefore, we began noting, in addition to standard descaling, if a smolt was more than 5% but less than 20% descaled, and if a smolt was descaled 50% or more. Furthermore, each gradation of scale loss was characterized as patchy or scattered.

The full-sample descaling includes the sub-sample fish and fish examined by fish sorters, who report only scale loss greater than 20% on one side of a fish, whether it is patchy or scattered. The 2005 full-sample descaling rate >20% for all categories and all species combined was 2.04% (Table 47) compared to 2.85% in 2004, and 3.48% for the 1996-2003 average (Table 46).

Table 46. Full sample annual descaling rates in percent for fish sampled at LGR, 1996-2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
1996	2.71	1.49	----	9.33	6.95	1.02	3.73	18.56	2.47	6.18
1997	5.80	2.92	6.82	7.83	6.25	2.75	10.53	29.2	0.96	6.27
1998	3.07	2.27	9.86	4.73	5.32	2.23	3.04	4.35	4.72	4.45
1999	3.11	1.14	3.45	1.68	7.23	1.70	3.39	9.95	4.16	3.58
2000	3.13	0.98	----	0.63	1.78	0.86	0.00	12.04	1.26	1.30
2001	1.86	1.35	1.05	1.19	2.18	1.27	5.88	9.35	3.12	1.66
2002	2.32	1.55	0.91	1.52	4.22	2.49	1.87	7.87	2.01	2.32
2003	2.02	1.17	0.64	1.71	3.77	2.14	4.23	10.26	2.97	2.05
2004	3.65	1.75	0.96	2.27	3.05	3.54	4.35	2.71	4.68	2.85
96-03	3.00	1.61	3.79	3.58	4.71	1.81	4.08	12.70	2.71	3.48
2005	2.38	1.06	0.36	1.27	3.15	2.24	11.11	8.33	2.53	2.04

The detailed subsample in 2005 recorded 679 smolts, 2.77% of 24,484 fish examined, with greater than 20% scale loss (>20% patchy, >20% scattered and 50% or greater descaled). Unclipped sockeye exhibited the highest percentage of >20% scale loss (7.6%). The next highest specie group was clipped steelhead (4.83%) followed by clipped yearling chinook (3.24%), unclipped coho (2.47%), unclipped subyearling chinook (2.35%) and unclipped steelhead (1.98%).

Table 47. Full sample weekly descaling (>20%) rates in percent at LGR, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
3/31	*0.00	*3.75	----	----	0.00	*0.00	----	6.25	----	1.29
4/7	1.74	1.62	----	*0.00	0.34	1.10	----	*0.00	*6.90	0.81
4/14	1.21	0.85	----	*0.00	1.65	0.89	----	5.26	0.00	1.15
4/21	1.21	0.45	----	*0.00	1.38	0.72	*0.00	*15.38	*3.33	0.97
4/28	1.29	0.75	----	*0.00	1.33	0.72	----	*0.00	*1.52	1.17
5/5	1.46	1.18	----	*0.00	2.02	1.29	----	*0.00	2.38	1.60
5/12	3.03	1.54	----	0.00	3.84	2.27	*0.00	*6.25	2.96	3.12
5/19	2.05	2.26	0.95	0.37	5.29	4.10	*36.7	*10.81	2.07	4.46
5/26	5.06	1.67	0.00	0.90	6.83	3.94	*2.30	*11.90	3.77	4.70
6/2	3.02	0.60	0.29	0.85	4.25	2.67	*0.00	*0.00	*0.00	1.33
6/9	*0.00	1.09	0.19	0.32	4.57	3.25	*0.00	*0.00	*0.00	0.62
6/16	*0.00	0.00	0.07	0.19	2.36	2.35	*0.00	*0.00	*0.00	0.29
6/23	*0.00	0.84	0.34	0.45	3.77	1.41	*0.00	*0.00	*3.30	0.67
6/30	*7.69	*1.45	1.24	0.66	*1.11	*2.70	----	*0.00	*0.00	0.77
7/7	*0.00	*2.35	0.00	0.75	*4.00	*0.00	----	*0.00	*0.00	0.85
7/14	----	*33.33	*10.20	0.46	*0.00	*0.00	*0.00	----	----	0.82
7/21	----	*0.00	*0.00	0.79	*0.00	*0.00	----	*0.00	----	0.77
7/28	----	----	*0.00	0.85	25.00	*0.00	----	*0.00	----	0.93
8/4	*0.00	----	*0.00	0.34	*0.00	*0.00	----	*0.00	----	0.34
8/11	----	----	*0.00	0.18	*0.00	----	----	*33.33	*0.00	0.27
8/18	----	*0.00	*0.00	0.42	----	*0.00	----	*33.33	----	0.62
8/25	----	*0.00	*0.00	1.19	----	*0.00	----	----	----	1.17
9/1	----	----	----	1.75	----	----	----	*0.00	----	1.74
9/8	----	----	*0.00	3.03	----	----	----	----	*0.00	3.00
9/15	----	----	----	2.21	----	----	----	*100	*0.00	2.73
9/22	----	*0.00	----	9.30	----	*0.00	----	----	*0.00	8.51
9/29	----	----	*0.00	*11.90	----	----	----	*33.33	*0.00	11.83
10/6	*3.85	*0.00	----	9.52	----	*0.00	----	*50.00	----	8.86
10/13	3.94	*6.67	*14.29	4.57	----	*0.00	----	*16.67	*0.00	4.36
10/20	4.44	*0.00	*0.00	1.71	*0.00	----	----	*0.00	----	2.13
10/27	8.71	*7.69	*0.00	5.62	----	*0.00	----	*33.33	*0.00	6.42
10/31	10.54	4.17	*0.00	4.73	----	----	*0.00	*0.00	----	6.67
Totals										
# Desc'd	688	150	31	405	1,014	242	24	21	48	2,623
#Samp'd	28,862	14,097	8,618	31,874	32,192	10,786	216	252	1,896	128,793
%Desc'd	2.38	1.06	0.36	1.27	3.15	2.24	11.11	8.33	2.53	2.04

* Less than 100 fish sampled during the week.

--- No fish sampled during the week.

Injury and Disease

In addition to standard length, weight and descaling data recorded for individual smolts in the daily subsample smolts were also examined for visible injuries and symptoms of disease. With the exception of descaling and columnaris, signs of visible injuries or disease are only recorded from the detailed subsample. This season a total of 2,959 (12.08%) smolts were recorded as having head, body or predator-caused injury or symptoms of disease. The actual proportion of injured smolts is less than the rates shown because some fish have more than one visible injury. A total of 24,484 smolts were examined in the detailed sub-sample during the 2005 season (Table 49), compared to 21,407 in 2004, 18,859 in 2003, 22,372 in 2002 and 26,699 in 2001.

Table 48. Key to injury data in the detailed sub-sample at LGR.

Head		**Body**	
AB	Abrasion	BL	Bloated
EI	Eye Injury	SR	Scale Regeneration
EP	Pop" Eye	EM	Emaciated
OP	Opercula	FI	Fin Injury
JW	Mandable (Jaw)	LA	Laceration
MX	Maxillary	LE	Lesion
HD	Head Deformity	BD	Deformity

Disease		**Predator**	
FU	Fungus	PA	Angler
CY	Cyst	PB	Bird
CO	Columnaris	PL	Lamprey
DI	Digenia	MD	Moribund
GH	Gill Hyperplasia	PP	Fish Bite
HE	Hemorrhage		
KD	BKD		
PA	Parasite		
SC	Scoliosis		

Table 49. Summary of injuries and diseases recorded from the detailed sub-sample at LGR, 2005.

	Chinook Yearling		Chinook Subyearling		Steelhead		Sockeye/Kokanee		Coho	Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	**Total**
# sampled	4,599	3,376	1,228	7,101	3,957	2,929	140	211	134	809	**24,484**
Descale injury											
>P	108	47	3	136	89	35	0	10	1	16	445
>S	13	4	1	11	75	20	0	0	0	1	125
<P	101	27	8	135	63	25	2	10	3	7	381
<S	17	2	0	29	38	18	0	0	0	2	106
5P	28	18	3	20	27	3	1	6	0	3	109
Total	267	98	15	331	292	101	3	26	4	29	1,166
%	5.81%	2.90%	1.22%	4.66%	7.38%	3.45%	2.14%	12.32%	2.99%	3.58%	4.76%
Head Injury											
AB	2	1	0	7	5	3	0	0	0	0	18
EL	7	4	2	7	2	5	0	1	2	1	31
EP	3	1	1	2	0	1	1	0	0	0	9
HD	3	0	1	1	4	3	1	0	0	0	13
JW	2	1	0	1	4	1	0	0	0	0	9
MX	0	0	1	0	0	0	1	0	0	0	2
OP	11	5	1	12	44	14	1	1	0	2	91
Total	28	12	6	30	59	27	4	2	2	3	173
%	0.61%	0.36%	0.49%	0.42%	1.49%	0.92%	2.86%	0.95%	1.49%	0.37%	0.71%
Body Injury											
BL	4	1	0	2	5	3	0	0	0	1	16
SR	6	3	0	6	0	1	0	0	0	0	16
EM	3	2	1	1	10	3	0	0	1	2	23
FI	137	85	24	191	111	122	2	8	2	14	696
LA	10	1	0	15	12	7	1	0	0	0	46
LE	2	1	0	6	6	4	0	0	0	0	19
BD	4	1	0	5	7	2	0	0	1	0	20
Total	166	94	25	226	151	142	3	8	4	17	836
%	3.61%	2.78%	2.04%	3.18%	3.82%	4.85%	2.14%	3.79%	2.99%	2.10%	3.41%
Disease											
CO	1	1	0	115	0	0	0	0	0	1	118
CY	0	0	0	0	2	0	0	0	0	0	2
DI	0	3	0	0	1	19	0	1	0	0	24
FD	10	7	11	214	0	0	0	0	0	0	242
FU	28	12	2	8	25	12	1	3	0	4	95
GH	0	0	1	0	2	1	0	0	0	0	4
HE	1	2	2	40	9	2	0	0	0	0	56
KD	2	4	0	3	2	0	0	0	0	1	12
PA	5	2	2	4	7	6	0	0	0	0	26
SC	4	1	0	0	4	1	0	0	0	0	10
Total	4	1	0	0	4	1	0	0	0	0	10
%	51	32	18	384	52	41	1	4	0	6	589
Predator Injury											
MD	0	0	1	1	0	0	0	0	0	0	2
PB	15	8	2	14	53	43	0	0	1	1	137
PH	0	0	0	0	0	0	0	0	0	0	0
PL	0	2	1	9	1	3	0	0	0	0	16
PP	12	7	1	15	2	4	0	0	0	2	43
Total	27	17	5	39	56	50	0	0	1	3	198
%	0.59%	0.50%	0.41%	0.55%	1.42%	1.71%	0.00%	0.00%	0.75%	0.37%	0.81%

Table 50. Percent of fish with injuries and diseases recorded in the detailed sub-sample at LGR, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	**Total**
# Sampled	4,599	3,376	1,228	7,101	3,957	2,929	140	211	134	809	**24,484**
Descaled											
>P	2.35%	1.39%	0.24%	1.92%	2.25%	1.19%	0.00%	4.74%	0.75%	1.98%	1.82%
>S	0.28%	0.12%	0.08%	0.15%	1.90%	0.68%	0.00%	0.00%	0.00%	0.12%	0.51%
<P	2.20%	0.80%	0.65%	1.90%	1.59%	0.85%	1.43%	4.74%	2.24%	0.87%	1.56%
<S	0.37%	0.06%	0.00%	0.41%	0.96%	0.61%	0.00%	0.00%	0.00%	0.25%	0.43%
5P	0.61%	0.53%	0.24%	0.28%	0.68%	0.10%	0.71%	2.84%	0.00%	0.37%	0.45%
Total	267	98	15	331	292	101	3	26	4	29	1,166
%	5.81%	2.90%	1.22%	4.66%	7.38%	3.45%	2.14%	12.32%	2.99%	3.58%	4.76%
Head											
AB	0.04%	0.03%	0.00%	0.10%	0.13%	0.10%	0.00%	0.00%	0.00%	0.00%	0.07%
EL	0.15%	0.12%	0.16%	0.10%	0.05%	0.17%	0.00%	0.47%	1.49%	0.12%	0.13%
EP	0.07%	0.03%	0.08%	0.03%	0.00%	0.03%	0.71%	0.00%	0.00%	0.00%	0.04%
HD	0.07%	0.00%	0.08%	0.01%	0.10%	0.10%	0.71%	0.00%	0.00%	0.00%	0.05%
JW	0.04%	0.03%	0.00%	0.01%	0.10%	0.03%	0.00%	0.00%	0.00%	0.00%	0.04%
MX	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.71%	0.00%	0.00%	0.00%	0.01%
OP	0.24%	0.15%	0.08%	0.17%	1.11%	0.48%	0.71%	0.47%	0.00%	0.25%	0.37%
Total	28	12	6	30	59	27	4	2	2	3	173
%	0.61%	0.36%	0.49%	0.42%	1.49%	0.92%	2.86%	0.95%	1.49%	0.37%	0.71%
Body Injury											
BD	0.09%	0.03%	0.00%	0.03%	0.13%	0.10%	0.00%	0.00%	0.00%	0.12%	0.07%
BL	0.13%	0.09%	0.00%	0.08%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.07%
EM	0.07%	0.06%	0.08%	0.01%	0.25%	0.10%	0.00%	0.00%	0.75%	0.25%	0.09%
FI	2.98%	2.52%	1.95%	2.69%	2.81%	4.17%	1.43%	3.79%	1.49%	1.73%	2.84%
LA	0.22%	0.03%	0.00%	0.21%	0.30%	0.24%	0.71%	0.00%	0.00%	0.00%	0.19%
LE	0.04%	0.03%	0.00%	0.08%	0.15%	0.14%	0.00%	0.00%	0.00%	0.00%	0.08%
SR	0.09%	0.03%	0.00%	0.07%	0.18%	0.07%	0.00%	0.00%	0.75%	0.00%	0.08%
Total	166	94	25	226	151	142	3	8	4	17	836
%	3.61%	2.78%	2.04%	3.18%	3.82%	4.85%	2.14%	3.79%	2.99%	2.10%	3.41%
Disease											
CO	0.02%	0.03%	0.00%	1.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%	0.48%
CY	0.00%	0.00%	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
DI	0.00%	0.09%	0.00%	0.00%	0.03%	0.65%	0.00%	0.47%	0.00%	0.00%	0.10%
FD	0.22%	0.21%	0.90%	3.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.99%
FU	0.61%	0.36%	0.16%	0.11%	0.63%	0.41%	0.71%	1.42%	0.00%	0.49%	0.39%
GH	0.00%	0.00%	0.08%	0.00%	0.05%	0.03%	0.00%	0.00%	0.00%	0.00%	0.02%
HE	0.02%	0.06%	0.16%	0.56%	0.23%	0.07%	0.00%	0.00%	0.00%	0.00%	0.23%
KD	0.04%	0.12%	0.00%	0.04%	0.05%	0.00%	0.00%	0.00%	0.00%	0.12%	0.05%
PA	0.11%	0.06%	0.16%	0.06%	0.18%	0.20%	0.00%	0.00%	0.00%	0.00%	0.11%
SC	0.09%	0.03%	0.00%	0.00%	0.10%	0.03%	0.00%	0.00%	0.00%	0.00%	0.04%
Total	51	32	18	384	52	41	1	4	0	6	589
%	1.11%	0.95%	1.47%	5.41%	1.31%	1.40%	0.71%	1.90%	0.00%	0.74%	2.41%
Predator											
MD	0.00%	0.00%	0.08%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%
PB	0.33%	0.24%	0.16%	0.20%	1.34%	1.47%	0.00%	0.00%	0.75%	0.12%	0.56%
PH	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PL	0.00%	0.06%	0.08%	0.13%	0.03%	0.10%	0.00%	0.00%	0.00%	0.00%	0.07%
PP	0.26%	0.21%	0.08%	0.21%	0.05%	0.14%	0.00%	0.00%	0.00%	0.25%	0.18%
Total	27	17	5	39	56	50	0	0	1	3	198
%	0.59%	0.50%	0.41%	0.55%	1.42%	1.71%	0.00%	0.00%	0.75%	0.37%	0.81%

Head Injuries

Head injuries noted this season included head abrasions, injury to the eye, pop-eye, opercula, mandible, maxillary and head deformity. Head injuries in 2005 were recorded in 0.71%, of the smolts compared to 1.06% in 2004, 1.06% in 2003, 1.16% in 2002, 1.67% in 2001, and 3.86% of the smolts examined in 2000. Injuries to opercula and eyes comprised the majority of head injuries (70.52%). A total of 59 clipped steelhead (34.10%), 30 unclipped subyearlings (17.34%), 28 clipped yearlings (16.18%) and 27 unclipped steelhead (15.60%) were the species groups most affected with head injuries in 2005 (Table 51 and 52).

Table 51. Head injuries (%) identified in the detailed sub-sample at LGR, 2000-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
2000	2.06	1.04	----	6.69	3.48	1.94	1.47	1.45	1.68	3.86
2001	1.55	0.98	0.12	0.78	3.27	1.75	1.54	0.00	1.39	1.67
2002	1.12	0.47	0.47	1.17	1.93	1.18	0.00	1.35	0.00	1.16
2003	1.72	0.69	0.49	0.66	1.68	1.25	1.47	0.00	1.66	1.06
2004	0.88	0.46	0.46	0.67	2.09	1.88	0.00	0.36	0.43	1.06
2005	0.61	0.36	0.49	0.42	1.49	0.92	2.86	0.95	0.53	0.71

[1]Clipped subyearling fall chinook were not present in the system in year 2000.

Table 52. Specific head injuries (%) recorded in the detailed sub-sample at LGR, 2000-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
AB										
2000	0.03	0.03	----	0.76	0.13	0.02	0.00	0.24	0.15	0.32
2001	0.06	0.03	0.00	0.06	0.35	0.15	0.00	0.00	0.06	0.14
2002	0.02	0.04	0.00	0.08	0.15	0.00	0.00	0.12	0.00	0.06
2003	0.04	0.00	0.00	0.06	0.04	0.10	0.00	0.00	0.11	0.05
2004	0.00	0.03	0.00	0.06	0.16	0.04	0.00	0.00	0.00	0.06
2005	0.04	0.03	0.00	0.10	0.13	0.10	0.00	0.00	0.00	0.07
EI										
2000	0.49	0.17	----	0.26	0.64	0.26	0.00	0.00	0.30	0.36
2001	0.58	0.32	0.00	0.19	0.92	0.44	1.54	0.00	0.72	0.50
2002	0.32	0.16	0.00	0.26	0.34	0.43	0.00	0.49	0.00	0.29
2003	0.34	0.30	0.10	0.15	0.37	0.29	0.00	0.00	0.55	0.26
2004	0.22	0.20	0.00	0.15	0.18	0.15	0.00	0.00	0.32	0.18
2005	0.15	0.12	0.16	0.10	0.05	0.17	0.00	0.47	0.32	0.13
EP										
2000	0.27	0.03	----	0.13	0.03	0.05	0.00	0.00	0.15	0.11
2001	0.13	0.00	0.12	0.06	0.00	0.06	0.00	0.00	0.06	0.05
2002	0.10	0.04	0.00	0.06	0.00	0.04	0.00	0.00	0.00	0.05
2003	0.11	0.00	0.00	0.04	0.00	0.05	0.00	0.00	0.00	0.04
2004	0.31	0.03	0.00	0.07	0.03	0.08	0.00	0.00	0.00	0.09
2005	0.07	0.03	0.08	0.03	0.00	0.03	0.71	0.00	0.00	0.04
HD										
2000	0.33	0.03	----	0.06	0.80	0.69	0.00	0.00	0.08	0.34
2001	0.13	0.09	0.00	0.00	0.25	0.19	0.00	0.00	0.00	0.12
2002	0.02	0.00	0.00	0.06	0.03	0.32	0.00	0.00	0.00	0.07
2003	0.15	0.17	0.00	0.03	0.07	0.48	0.00	0.00	0.00	0.12
2004	0.09	0.03	0.00	0.04	0.42	0.54	0.00	0.00	0.00	0.17
2005	0.07	0.00	0.08	0.01	0.10	0.10	0.71	0.00	0.00	0.05

Table 52. Continued

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
JW										
2000	0.22	0.07	----	0.13	0.14	0.10	1.47	0.00	0.08	0.13
2001	0.03	0.03	0.00	0.09	0.21	0.15	0.00	0.00	0.11	0.11
2002	0.07	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.03
2003	0.04	0.09	0.10	0.01	0.07	0.00	1.47	0.00	0.11	0.05
2004	0.00	0.00	0.00	0.03	0.08	0.11	0.00	0.00	0.00	0.04
2005	0.04	0.03	0.00	0.01	0.10	0.03	0.00	0.00	0.00	0.04
MX										
2000	0.05	0.07	----	0.06	0.05	0.02	0.00	0.00	0.08	0.05
2001	0.00	0.00	0.00	0.09	0.08	0.11	0.00	0.00	0.00	0.06
2002	0.00	0.00	0.00	0.05	0.03	0.00	0.00	0.00	0.00	0.02
2003	0.04	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.11	0.02
2004	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.08	0.00	0.00	0.00	0.71	0.00	0.00	0.01
OP										
2000	0.68	0.64	----	5.29	1.69	0.79	0.00	1.21	0.84	2.56
2001	0.61	0.50	0.00	0.28	1.47	0.65	0.00	0.00	0.44	0.69
2002	0.59	0.24	0.47	0.62	1.38	0.39	0.00	0.74	0.00	0.64
2003	1.01	0.13	0.30	0.34	1.12	0.34	0.00	0.00	0.44	0.52
2004	0.25	0.16	0.46	0.33	1.20	0.96	0.00	0.36	0.11	0.52
2005	0.24	0.15	0.08	0.17	1.11	0.48	0.71	0.47	0.21	0.37

[1]Clipped subyearling fall chinook were not present in the system in year 2000.

Body Injuries

The body injuries recorded this season included fin damage, lesions, scale regeneration, lacerations, emaciation and body deformities. A total of 836 (3.41%) of the smolts examined this year in the detailed subsample exhibited some visible body injury compared to 3.39% in 2004, 3.72% in 2003, 2.88% in 2002 and 4.29% in 2001 (Table 53). Fin injuries (split rays and fraying) were present in all species (696 fish) and represented 83.25% of all the body injuries. The species groups most afflicted with body injuries in 2005 were unclipped subyearling chinook (27.03 %), clipped yearling chinook (19.86%) clipped steelhead (18.06%) and clipped steelhead (16.98%) (Table 54).

Table 53. Body injuries (%) recorded from the detailed sub-sample at LGR, 2000-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
2000	4.06	3.62	----	7.31	6.76	4.76	0.00	2.91	6.25	5.92
2001	3.74	2.18	1.44	3.04	6.58	4.84	7.69	1.89	5.44	4.29
2002	2.13	1.02	1.74	3.79	3.64	3.01	5.56	2.08	0.00	2.88
2003	3.69	2.10	2.07	3.74	4.26	4.87	1.47	2.50	5.54	3.72
2004	2.14	2.37	0.46	4.19	3.05	4.52	0.00	0.36	4.72	3.39
2005	3.61	2.78	2.04	3.18	3.82	4.85	2.14	3.79	2.23	3.41

[1]Clipped subyearling fall chinook were not present in the system in year 2000.

Table 54. Major body injuries (%) recorded from the detailed sub-sample at LGR, 2000-2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
BD										
2000	0.08	0.03	----	0.06	0.24	0.05	0.00	0.00	0.00	0.09
2001	0.29	0.13	0.00	0.09	0.19	0.06	0.00	0.00	0.06	0.13
2002	0.24	0.08	0.00	0.04	0.21	0.14	0.00	0.00	0.00	0.12
2003	0.23	0.09	0.00	0.08	0.07	0.10	0.00	0.00	0.00	0.10
2004	0.03	0.03	0.00	0.03	0.26	0.04	0.00	0.00	0.11	0.07
2005	0.09	0.03	0.00	0.03	0.13	0.10	0.00	0.00	0.12	0.07
BL										
2000	0.27	0.07	----	0.09	0.00	0.02	0.00	0.00	0.00	0.08
2001	0.26	0.00	0.12	0.06	0.00	0.00	0.00	0.00	0.00	0.05
2002	0.27	0.04	0.16	0.08	0.03	0.00	0.00	0.00	0.00	0.09
2003	0.15	0.17	0.10	0.13	0.00	0.00	0.00	0.00	0.00	0.10
2004	0.06	0.07	0.00	0.06	0.00	0.00	0.00	0.36	0.00	0.04
2005	0.13	0.09	0.00	0.08	0.00	0.03	0.00	0.00	0.00	0.07
EM										
2000	0.03	0.10	----	0.05	0.46	0.19	0.00	0.00	0.30	0.17
2001	0.16	0.13	0.00	0.02	4.31	1.79	0.00	0.00	0.28	1.40
2002	0.02	0.00	0.00	0.00	0.15	0.14	0.00	0.25	0.00	0.05
2003	0.07	0.00	0.00	0.03	0.49	0.68	0.00	0.00	0.11	0.17
2004	0.00	0.07	0.00	0.01	0.18	0.23	0.00	0.00	0.11	0.08
2005	0.07	0.03	0.08	0.01	0.25	0.10	0.00	0.00	0.32	0.09
FI										
2000	3.33	3.11	----	6.76	5.48	4.21	0.00	2.66	5.86	5.21
2001	2.22	1.74	1.32	2.37	1.25	2.44	7.69	0.94	4.72	2.15
2002	1.20	0.75	1.42	2.45	2.33	2.18	4.63	1.47	0.00	1.95
2003	2.42	1.76	1.87	3.24	2.95	3.57	0.00	2.50	4.87	2.93
2004	1.79	1.98	0.46	3.92	2.22	3.75	0.00	0.00	4.51	2.93
2005	2.98	2.52	1.95	2.69	2.81	4.17	1.43	3.79	1.69	2.84
LA										
2000	0.24	0.23	----	0.11	0.22	0.24	0.00	0.00	0.00	0.17
2001	0.23	0.03	0.00	0.08	0.13	0.13	0.00	0.47	0.00	0.10
2002	0.12	0.12	0.00	0.05	0.21	0.21	0.93	0.25	0.00	0.13
2003	0.37	0.04	0.00	0.10	0.22	0.14	0.00	0.00	0.00	0.14
2004	0.13	0.16	0.00	0.11	0.21	0.23	0.00	0.00	0.00	0.14
2005	0.22	0.03	0.00	0.21	0.30	0.24	0.71	0.00	0.00	0.19
LE										
2000	0.08	0.03	----	0.12	0.18	0.05	0.00	0.24	0.00	0.10
2001	0.35	0.00	0.00	0.37	0.36	0.19	0.00	0.47	0.39	0.28
2002	0.24	0.04	0.16	0.06	0.52	0.29	0.00	0.12	0.00	0.19
2003	0.34	0.04	0.00	0.08	0.37	0.34	1.47	0.00	0.44	0.20
2004	0.03	0.07	0.00	0.03	0.13	0.19	0.00	0.00	0.00	0.07
2005	0.04	0.03	0.00	0.08	0.15	0.14	0.00	0.00	0.00	0.08
SR										
2000	0.03	0.03	----	0.13	0.18	0.00	0.00	0.00	0.08	0.10
2001	0.23	0.16	0.00	0.05	0.35	0.23	0.00	0.00	0.00	0.18
2002	0.02	0.00	0.00	0.14	0.18	0.04	0.00	0.00	0.00	0.08
2003	0.11	0.04	0.20	0.11	0.15	0.10	0.00	0.00	0.11	0.11
2004	0.09	0.00	0.00	0.04	0.05	0.08	0.00	0.00	0.00	0.05
2005	0.09	0.03	0.00	0.07	0.18	0.07	0.00	0.00	0.11	0.08

[1]Clipped subyearling fall chinook were not present in the system in year 2000.

Diseases

Total disease percent of fish recorded with disease symptoms in the detailed sub-sample has declined steadily from 10.94% in 2000 to 2.41% in 2005 (Table 55). Diseases with common external symptoms noted this season include fungus, cysts, columnaris, digenia, gill hyperplasia, hemorrhaged fin, bacterial kidney disease, parasites, scoliosis and fin discoloration, (a distinct line of color differentiation on the caudal fin) associated with cold water disease. Fin discoloration, representing 41.08% of all diseases recorded this year was observed on 242 smolts, of which 214 (88.29%) were observed on unclipped subyearling fall chinook. The percentage of smolts observed with symptoms consistent with columnaris, yellowish blemishes, lesions, and loss of skin from the snout, decreased this year to 0.48% (118 of 24,484 fish examined), compared to 1.37% in 2004, 2.56% in 2003, 3.34% in 2002, and 3.73% in 2001. This disease, caused by the bacterium Flavobacterium columnare, mainly infects summer and fall migrants because it becomes more virulent when water temperatures exceed 60 F. Warren Groberg, Fish Pathologist for Oregon Department of Fish and Wildlife, visited the Lower Granite Juvenile Fish Facility September 30, 1998 and provided additional information on external symptoms characteristic of columnaris. Groberg explained that the snout injuries (loss of protective skin tissue) and yellowish blemishes without broken skin were also symptoms of F. columnare infection. Based on this information, subyearling fall chinook were identified as being infected with columnaris.

This is the eighth year we have calculated columnaris rates based on the entire sample at LGR (detailed subsample columnaris tallies plus the general columnaris sample tallies). The 2005 columnaris infection rates were the lowest since examinations for columnaris began at LGR in 1998. A total of 115 of the 7,101 (1.62%) the unclipped subyearling fall chinook were observed with symptoms of columnaris, compared to 3.97% in 2004, 6.72% in 2003, 9.5% in 2002, 13.93% in 2001 and 14.54% in 2000. Columnaris represented 20.03% of all diseases recorded this year.

Ninety-five fish (<0.1%) were recorded with fungus, the third most common disease representing 16.12% of the diseases recorded this year. Of these 95 fish, 29.47% were clipped yearling chinook and 26.32% were clipped steelhead.

Fin hemorrhaging, characterized by redness in the ventral fin tissues, was observed in 56 smolts and represented 9.5% of the diseases observed in the detailed subsample. Of the 56 fish with fin hemorrhage, 40 were unclipped subyearling fall chinook, 71.43% of all species groups.

Gill hyperplasia, characterized by swollen or "club-shaped" gill filaments, primarily affected clipped steelhead and has been declining since 2000. In 2005, only four occurrences of gill hyperplasia were recorded. Two were in clipped steelhead (50.0%). Gill hyperplasia was recorded in <0.01% of the fish in the detailed sub-sampled and represented 0.68% of the diseases recorded this year (Table 56).

Table 55. Diseases by percent by year from the detailed sub-sample at LGR, 2000-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
2000	0.84	2.55	----	23.40	7.62	3.06	0.00	1.21	4.11	10.94
2001	1.93	0.98	1.20	15.82	3.41	4.19	1.54	1.40	5.11	6.09
2002	0.90	0.75	0.32	15.30	2.30	2.90	3.70	1.47	0.00	6.35
2003	2.37	1.13	0.79	10.88	2.11	2.46	0.00	0.00	1.37	5.26
2004	1.41	1.19	0.93	6.15	1.96	2.83	0.00	0.36	0.64	3.20
2005	1.11	0.95	1.47	5.41	1.31	1.40	0.71	1.90	0.64	2.41

[1]Clipped subyearling fall chinook were not present in the system in year 2000.

Table 56. Major diseases by percent from the detailed sub-sample at LGR, 2000-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
CO										
2000	0.08	0.44	----	14.54	0.40	0.19	0.00	0.24	1.22	5.39
2001	0.00	0.06	0.48	13.93	0.44	0.40	1.54	0.47	2.61	3.73
2002	0.07	0.04	0.00	9.50	0.06	0.04	0.00	0.12	0.00	3.34
2003	0.04	0.00	0.20	6.72	0.04	0.00	0.00	0.00	0.00	2.56
2004	0.03	0.03	0.00	3.97	0.00	0.00	0.00	0.36	0.11	1.37
2005	0.02	0.03	0.00	1.62	0.00	0.00	0.00	0.00	0.11	0.48
DI										
2000	0.03	0.07	----	0.02	0.00	0.67	0.00	0.00	0.99	0.16
2001	0.00	0.16	0.00	0.20	0.30	1.51	0.00	0.00	0.72	0.35
2002	0.02	0.24	0.00	0.00	0.00	1.68	0.00	0.00	0.00	0.24
2003	0.04	0.09	0.00	0.00	0.04	1.35	0.00	0.00	0.00	0.17
2004	0.03	0.20	0.00	0.01	0.03	1.03	0.00	0.00	0.00	0.17
2005	0.00	0.09	0.00	0.00	0.03	0.65	0.00	0.47	0.00	0.10
FD										
2005	0.22	0.21	0.90	3.01	0.00	0.00	0.00	0.00	0.00	0.99
FU										
2000	0.03	0.13	----	0.06	0.38	0.29	0.00	0.24	0.00	0.16
2001	1.00	0.35	0.00	0.00	0.46	0.74	0.00	0.94	0.22	0.42
2002	0.29	0.12	0.16	0.14	0.80	0.61	0.93	0.86	0.00	0.35
2003	1.92	0.52	0.00	0.03	0.66	0.43	0.00	0.00	0.00	0.49
2004	0.44	0.23	0.00	0.05	0.78	1.07	0.00	0.00	0.00	0.39
2005	0.61	0.36	0.16	0.11	0.63	0.41	0.71	1.42	0.42	0.39
GH										
2000	0.11	0.10	----	1.08	1.50	0.34	0.00	0.00	0.23	0.78
2001	0.00	0.06	0.00	0.02	0.19	0.08	0.00	0.00	0.00	0.07
2002	0.02	0.00	0.00	0.03	0.09	0.00	0.00	0.00	0.00	0.03
2003	0.04	0.00	0.10	0.01	0.18	0.14	0.00	0.00	0.00	0.06
2004	0.03	0.00	0.00	0.03	0.13	0.15	0.00	0.00	0.00	0.06
2005	0.00	0.00	0.08	0.00	0.05	0.03	0.00	0.00	0.00	0.02
HE										
2000	0.33	1.57	----	6.97	3.07	0.72	0.00	0.48	1.14	3.49
2001	0.16	0.13	0.12	1.64	0.66	0.80	0.00	0.00	0.67	0.78
2002	0.02	0.12	0.16	5.15	0.31	0.04	0.00	0.25	0.00	1.87
2003	0.08	0.26	0.30	3.72	0.33	0.10	0.00	0.00	0.00	1.52
2004	0.03	0.43	0.00	1.86	0.47	0.08	0.00	0.00	0.32	0.80
2005	0.02	0.06	0.16	0.56	0.23	0.07	0.00	0.00	0.00	0.23

Table 56. Continued

KD										
2000	0.11	0.07	----	0.23	0.06	0.07	0.00	0.24	0.46	0.13
2001	0.58	0.06	0.60	0.05	0.13	0.00	0.00	0.00	0.00	0.13
2002	0.17	0.04	0.00	0.09	0.06	0.00	0.93	0.00	0.00	0.08
2003	0.08	0.13	0.10	0.03	0.04	0.05	0.00	0.00	0.00	0.05
2004	0.00	0.00	0.00	0.07	0.13	0.08	0.00	0.00	0.00	0.06
2005	0.04	0.12	0.00	0.04	0.05	0.00	0.00	0.00	0.11	0.05
PA										
2000	0.11	0.13	----	0.32	2.08	0.74	0.00	0.24	0.46	0.71
2001	0.10	0.16	0.00	0.14	1.47	0.61	0.00	0.00	0.83	0.58
2002	0.29	0.20	0.00	0.37	0.89	0.54	0.00	0.25	0.00	0.41
2003	0.08	0.13	0.10	0.25	0.48	0.39	0.00	0.00	0.00	0.24
2004	0.28	0.23	0.93	0.11	0.18	0.27	0.00	0.00	0.00	0.19
2005	0.11	0.06	0.16	0.06	0.18	0.20	0.00	0.00	0.00	1.11
SC										
2000	0.05	0.00	----	0.07	0.03	0.02	0.00	0.00	0.00	0.04
2001	0.03	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.01
2002	0.00	0.00	0.00	0.01	0.09	0.00	0.00	0.00	0.00	0.02
2003	0.11	0.00	0.00	0.04	0.22	0.00	0.00	0.00	0.00	0.06
2004	0.53	0.07	0.00	0.04	0.13	0.15	0.00	0.00	0.00	0.14
2005	0.09	0.03	0.00	0.00	0.10	0.03	0.00	0.00	0.00	0.04

[1]Clipped subyearling fall chinook were not present in the system in year 2000.

Predator Injuries

Injuries associated with predator marks included wounds inflicted by anglers, birds, and lamprey. This year, as in the previous five years, birds were the primary predator causing most of the injuries. Bird predation marks in 2005, characterized by a distinct V-shaped descaling on both sides of a fish, were observed on 137 fish in the detailed sub sample and represented 69.19% of all predator injuries. The most afflicted species groups were clipped and unclipped steelhead (53 and 43 respectively observed with bird predation marks). Predatory fish marks characterized by U-shaped descaling on both sides of a fish body were observed on 43 fish in the detailed subsample and represented 21.71% of the recorded predator injuries. Of these 43 observed marks, clipped yearling chinook (12) and unclipped subyearling chinook (15) were the species groups most afflicted with predatory fish marks. Sockeye was the only species group without a recorded incidence of a predator mark (Tables 57 and 58).

Table 57. Predator injuries by percent from the detailed sub-sample at LGR, 2000-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Year										
2000	0.70	0.00	----	0.40	2.33	1.75	0.00	1.69	0.53	1.03
2001	0.68	0.00	0.60	0.37	2.34	1.83	1.54	0.47	0.44	1.10
2002	0.83	0.00	0.32	0.49	3.22	3.19	0.93	0.37	0.00	1.22
2003	0.30	0.00	0.00	0.00	0.07	0.43	0.00	0.00	0.57	0.13
2004	0.75	0.00	0.46	0.45	1.67	1.30	0.00	0.00	0.86	0.77
2005	0.59	0.50	0.41	0.55	1.42	1.72	0.00	0.00	0.42	0.81

[1]Clipped subyearling fall chinook were not present in the system in year 2000.

Table 58. Major predator injuries by percent from the detailed sub-sample at LGR, 2000-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
MD										
2000	0.03	0.00	----	0.06	0.02	0.00	0.00	0.48	0.00	0.03
2001	0.06	0.00	0.24	0.16	0.05	0.02	0.00	0.47	0.17	0.06
2002	0.05	0.00	0.16	0.09	0.00	0.00	0.00	0.25	0.00	0.05
2003	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
2004	0.19	0.00	0.00	0.03	0.03	0.04	0.00	0.00	0.00	0.05
2005	0.00	0.00	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.01
PB										
2000	0.57	0.00	----	0.15	2.25	1.68	0.00	0.73	0.46	0.88
2001	0.42	0.00	0.36	0.09	2.23	1.64	1.54	0.00	0.17	0.92
2002	0.37	0.00	0.00	0.10	1.72	0.90	0.93	0.00	0.00	0.47
2003	0.15	0.00	0.00	0.00	0.07	0.43	0.00	0.00	0.23	0.09
2004	0.41	0.00	0.46	0.11	1.49	1.11	0.00	0.00	0.43	0.52
2005	0.33	0.24	0.16	0.20	1.34	1.47	0.00	0.00	0.21	0.56
PH										
2000	0.00	0.00	----	0.00	0.03	0.02	0.00	0.00	0.00	0.01
2001	0.03	0.00	0.00	0.00	0.03	0.08	0.00	0.00	0.00	0.03
2002	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
2003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PL										
2000	0.00	0.00	----	0.03	0.00	0.00	0.00	0.00	0.00	0.01
2001	0.00	0.00	0.00	0.05	0.03	0.00	0.00	0.00	0.00	0.02
2002	0.24	0.00	0.00	0.04	1.41	2.18	0.00	0.00	0.00	0.54
2003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.01
2004	0.00	0.00	0.00	0.21	0.16	0.08	0.00	0.00	0.43	0.13
2005	0.00	0.06	0.08	0.13	0.03	0.10	0.00	0.00	0.00	0.07
PP										
2000	0.11	0.00	----	0.16	0.03	0.05	0.00	0.48	0.08	0.10
2001	0.16	0.00	0.00	0.08	0.00	0.08	0.00	0.00	0.11	0.06
2002	0.17	0.00	0.16	0.26	0.09	0.07	0.00	0.12	0.00	0.15
2003	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.02
2004	0.16	0.00	0.00	0.10	0.00	0.08	0.00	0.00	0.00	0.07
2005	0.26	0.21	0.08	0.21	0.05	0.14	0.00	0.00	0.21	0.18

[1]Clipped subyearling fall chinook were not present in the system in year 2000.

Condition Factor

Condition factor, a coefficient that relates weight to length, provides a relative measure of the general health and robustness of an individual fish and it may indicate an ability to survive their downstream migration to the ocean.

We record weights and fork lengths of individual fish from the detailed daily subsample for each species group, clipped and unclipped, yearling and subyearling chinook and steelhead. Unclipped chinook with coded-wire tags and or elastomer marks and unclipped steelhead with eroded dorsal fins were not included in the calculations for the unclipped species groups. For each fish we calculated Condition Factor (K) as:

$K = (\text{weight in grams} * 100{,}000)/(\text{Forklength})^3$.

Condition factors for the individuals in each species group were averaged to obtain a daily and weekly average. These condition factors are not specific to any stock but are a composite average for each species group as they reach LGR. They provide a single metric with which to quantify relative differences between clipped and unclipped species groups and changes in average condition throughout the migration season at LGR. Condition factors also provide a tool to look at differences and similarities among years for the different species groups.

Clipped Yearling Chinook Condition Factor

Average weekly condition factors for clipped yearling chinook throughout the spring migration period, April 1 to June 20, were generally higher than those observed in 2004 (Figure 92). The K values in 2005 were highest at the beginning of the season, declined through the peak of the migration and then increased toward the end of the spring migration. This pattern is similar to that observed in previous years (Table 59). In 2005 the lowest weekly average condition factor occurred the week after the peak of their migration which is similar to the 1999-2005 average (Figure 93).

Table 59. Clipped yearling chinook weekly average condition factor at LGR, 1999-2005.

Wk Ending	2005	2004	2003	2002	2001	2000	1999
7-Apr	1.05	1.08	1.09	1.22	1.01	0.99	1.01
14-Apr	1.06	1.07	1.05	1.18	1.01	1.05	1.06
21-Apr	1.04	1.01	1.05	1.16	1.02	1.05	1.06
28-Apr	1.02	1.01	1.00	1.11	1.01	1.07	1.04
5-May	1.00	0.96	1.00	1.09	1.02	1.01	0.99
12-May	1.01	0.97	0.98	1.07	1.02	1.01	0.98
19-May	1.01	0.98	1.01	1.10	1.11	1.05	0.99
26-May	1.05	1.05	1.01	1.13	1.16	1.08	1.04
2-Jun	1.01	0.97	1.03	1.16	1.16	1.07	1.05
9-Jun	1.02	1.04	1.01	1.17	1.18	1.08	1.08
16-Jun	1.03	1.02	1.04	1.20	1.17	1.07	1.07
20-Jun	1.03	1.01	1.02	1.20	1.14	1.07	1.08

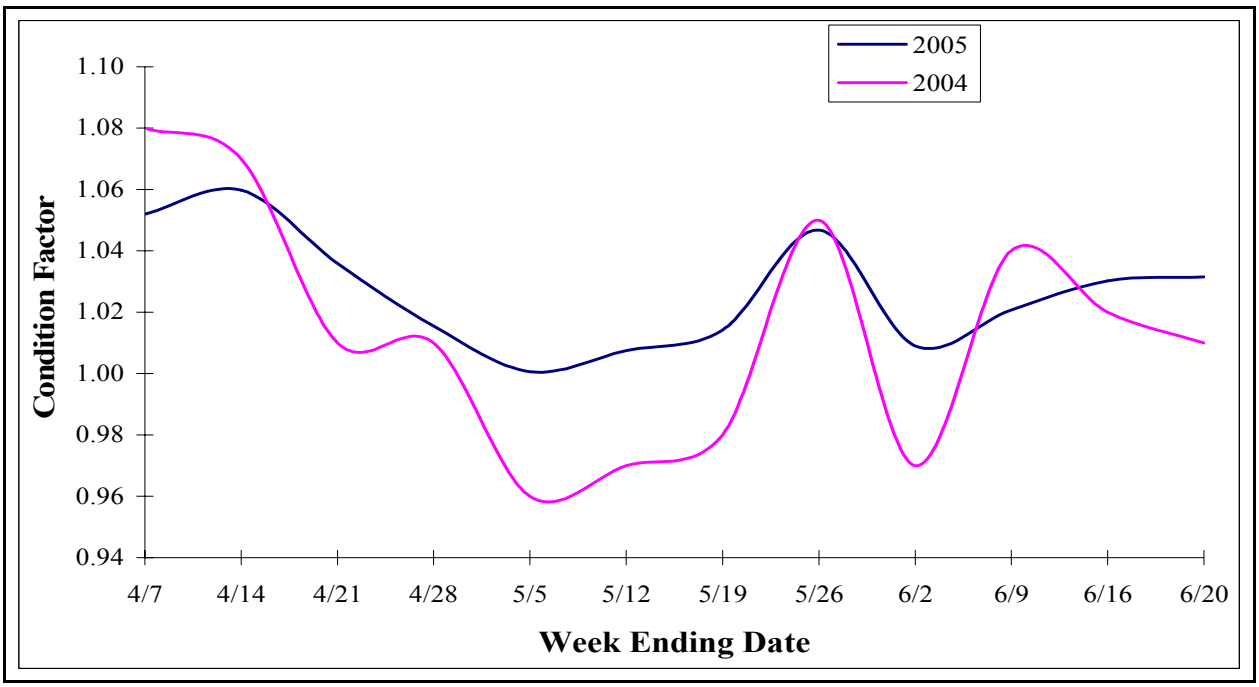

Figure 92. Clipped yearling chinook weekly average condition factor at LGR, 2004-2005.

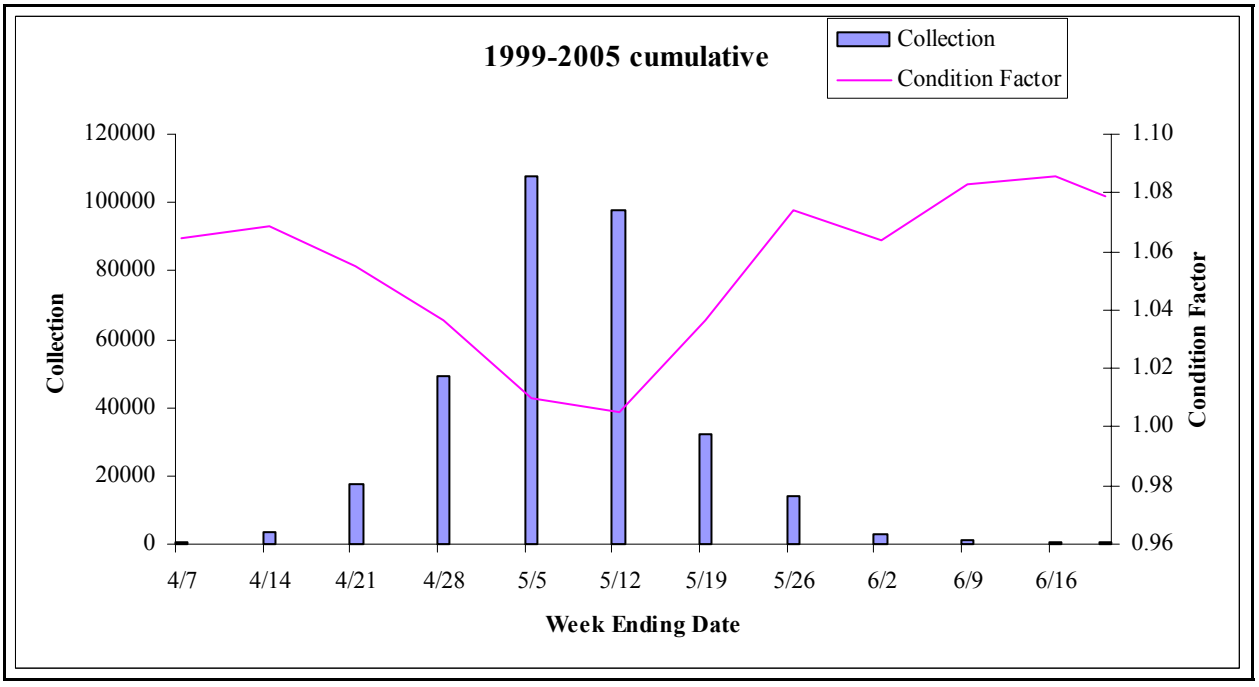

Figure 93. Clipped yearling chinook weekly average condition factor and fish collection averaged for the years 1999-2005.

Unclipped Yearling Chinook Condition Factors

Average weekly condition factors for clipped yearling chinook throughout the spring migration period, April 1 to June 20, were generally higher than those observed in 2004 (Figure 94). Similar to previous years, the K values in 2005 were high at the beginning of the season, declined through the peak of the migration and then increased toward the end of the spring migration and ended up higher than the K values observed at the start of the season. Since 1999 the K values have ended the spring migration higher than those observed at the start of the season in every year except 2003 (Table 60). In 2005 the lowest weekly average condition factor occurred the week before the peak of their migration while the trend in the 1999-2005 average is to have the lowest condition factor the same week as the peak in collection (Figure 95). Similar to previous years unclipped yearling chinook condition factor starts the season similar to clipped yearling chinook and then toward the end of April the unclipped yearling chinook K values go higher than clipped yearling chinook and stay higher for the rest of the season (Figure 96).

Table 60. Unclipped yearling chinook weekly average condition factor at LGR, 1999-2005.

Wk Ending	2005	2004	2003	2002	2001	2000	1999
7-Apr	1.06	1.07	1.10	1.20	1.04	1.10	1.06
14-Apr	1.05	1.03	1.01	1.14	1.01	1.10	1.05
21-Apr	1.02	0.98	1.04	1.16	1.02	1.14	1.03
28-Apr	1.00	1.05	0.99	1.11	1.00	1.09	1.06
5-May	1.05	0.97	1.04	1.10	1.02	1.06	1.01
12-May	1.08	1.01	1.01	1.10	1.03	1.08	1.02
19-May	1.07	1.04	1.05	1.17	1.15	1.08	1.03
26-May	1.11	1.07	1.07	1.21	1.22	1.12	1.07
2-Jun	1.03	1.10	1.11	1.26	1.21	1.13	1.14
9-Jun	1.05	1.09	1.03	1.24	1.17	1.11	1.13
16-Jun	1.05	1.05	1.07	1.24	1.18	1.1	1.12
20-Jun	1.08	1.15	1.03	1.24	1.17	1.13	1.14

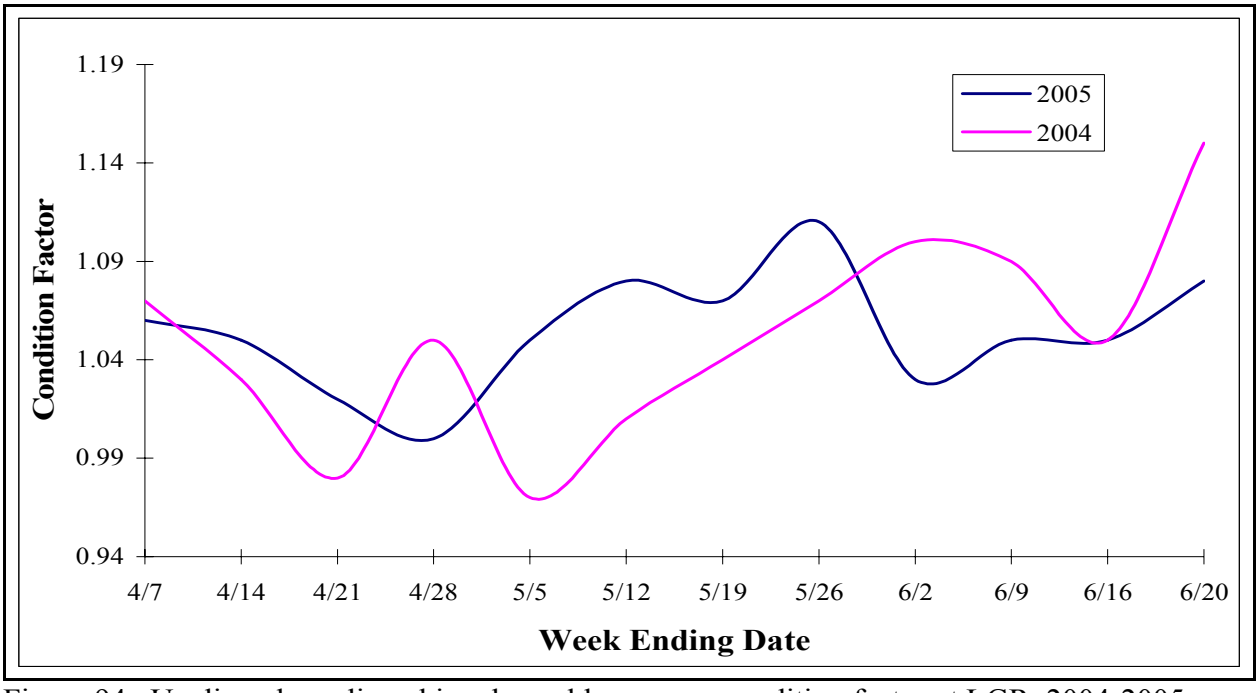

Figure 94. Unclipped yearling chinook weekly average condition factor at LGR, 2004-2005.

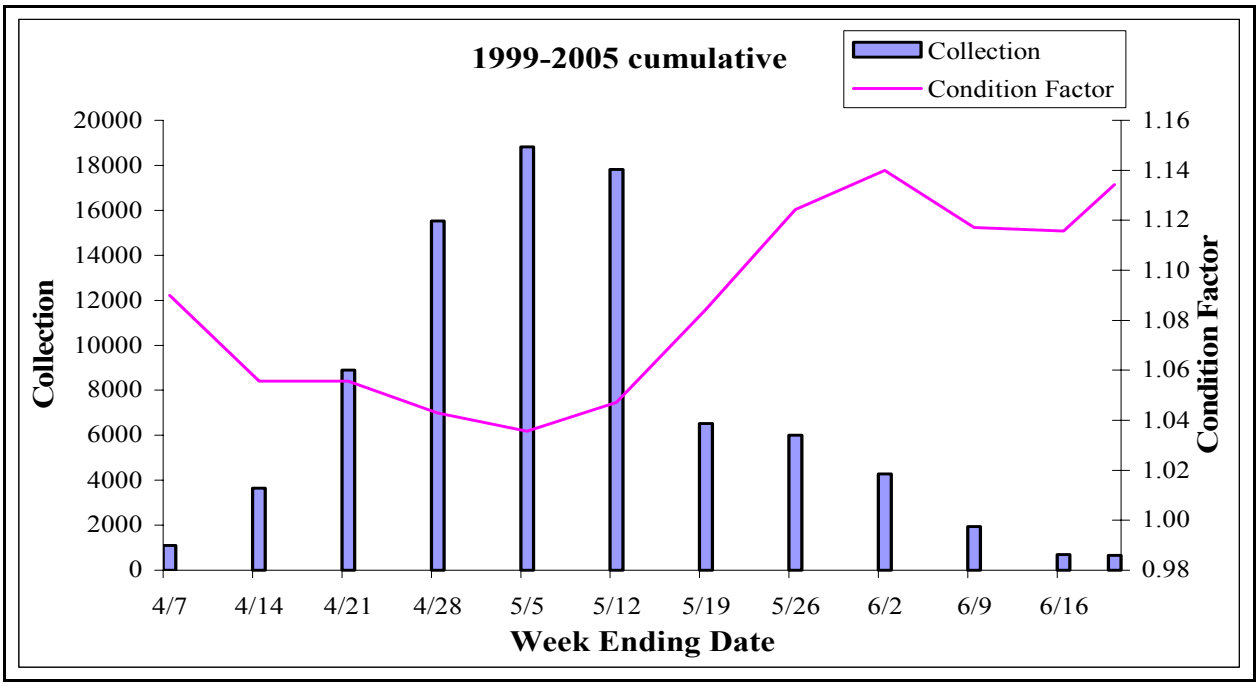

Figure 95. Unclipped yearling chinook weekly average condition factor and fish collection averaged for the years 1999-2005.

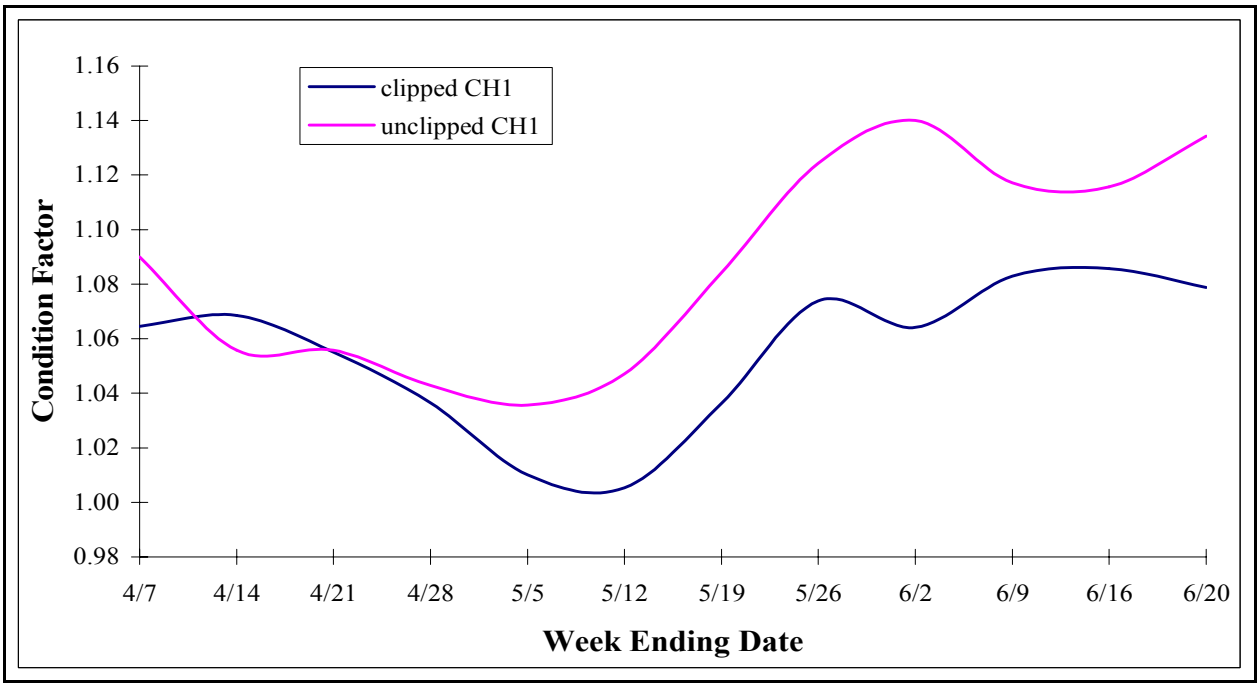

Figure 96. Clipped and unclipped yearling chinook weekly average condition factor averaged for the years 1999-2005.

Unclipped Subyearling Fall Chinook Condition Factors

In 2005, unclipped subyearling fall chinook began arriving at LGR in significant numbers in mid May which is not typical of recent years. In prior years unclipped subyearling fall chinook generally began arriving at LGR in early June. Subyearling fall chinook K values are typically higher (1.3 to 1.4 is not uncommon) than yearling chinook and steelhead. Weekly average K values for unclipped subyearling fall chinook were similar to those observed in 2004 (Figure 98). Subyearling fall chinook condition factors generally decrease during the first two weeks of the migration season and then gradually increase through the peak of the migration. After the peak of the migration has passed unclipped subyearling chinook K values increase significantly (July), and are at their highest levels during August and September and then decline during October (Table 61). This pattern has occurred in all years examined, 1999-2005 (Figure 97). The condition factors observed in 2003-2005 are lower than the condition factors observed in 1999-2001, especially during June and July.

Table 61. Unclipped subyearling fall chinook weekly average condition factors at LGR, 99-05.

Wk Ending	2005	2004	2003	2002	2001	2000	1999
3-Jun	1.08	1.12	1.12	1.38	1.31	1.16	1.50
10-Jun	1.08	1.11	1.09	1.26	1.22	1.14	1.07
17-Jun	1.05	1.05	1.09	1.28	1.21	1.11	1.18
24-Jun	1.11	1.11	1.09	1.25	1.21	1.16	1.17
1-Jul	1.14	1.09	1.12	1.29	1.25	1.16	1.17
8-Jul	1.17	1.16	1.14	1.17	1.32	1.16	1.18
15-Jul	1.18	1.11	1.16	1.16	1.38	1.16	1.23
22-Jul	1.23	1.17	1.19	1.18	1.43	1.23	1.33
29-Jul	1.23	1.28	1.24	1.24	1.49	1.31	1.27
5-Aug	1.28	1.32	1.31	1.26	1.5	1.34	1.29
12-Aug	1.27	1.29	1.28	1.29	1.47	1.36	1.20
19-Aug	1.29	1.30	1.25	1.33	1.45	1.35	1.29
26-Aug	1.27	1.29	1.26	1.37	1.48	1.33	1.20
2-Sep	1.28	1.26	1.27	1.32	1.49	1.29	1.39
9-Sep	1.27	1.25	1.26	1.33	1.46	1.28	1.39
16-Sep	1.28	1.29	1.26	1.31	1.44	1.26	1.37
23-Sep	1.27	1.29	1.31	1.31	1.43	1.27	1.33
30-Sep	1.29	1.23	1.30	1.28	1.37	1.25	1.31
7-Oct	1.26	1.22	1.31	1.25	1.36	1.24	1.29
14-Oct	1.23	1.18	1.28	1.23	1.36	1.23	1.27
21-Oct	1.20	1.15	1.26	1.22	1.35	1.20	1.24
28-Oct	1.21	1.12	1.24	1.18	1.31	1.18	1.18
31-Oct	1.17	1.14	1.24	1.17	1.31	1.18	1.40

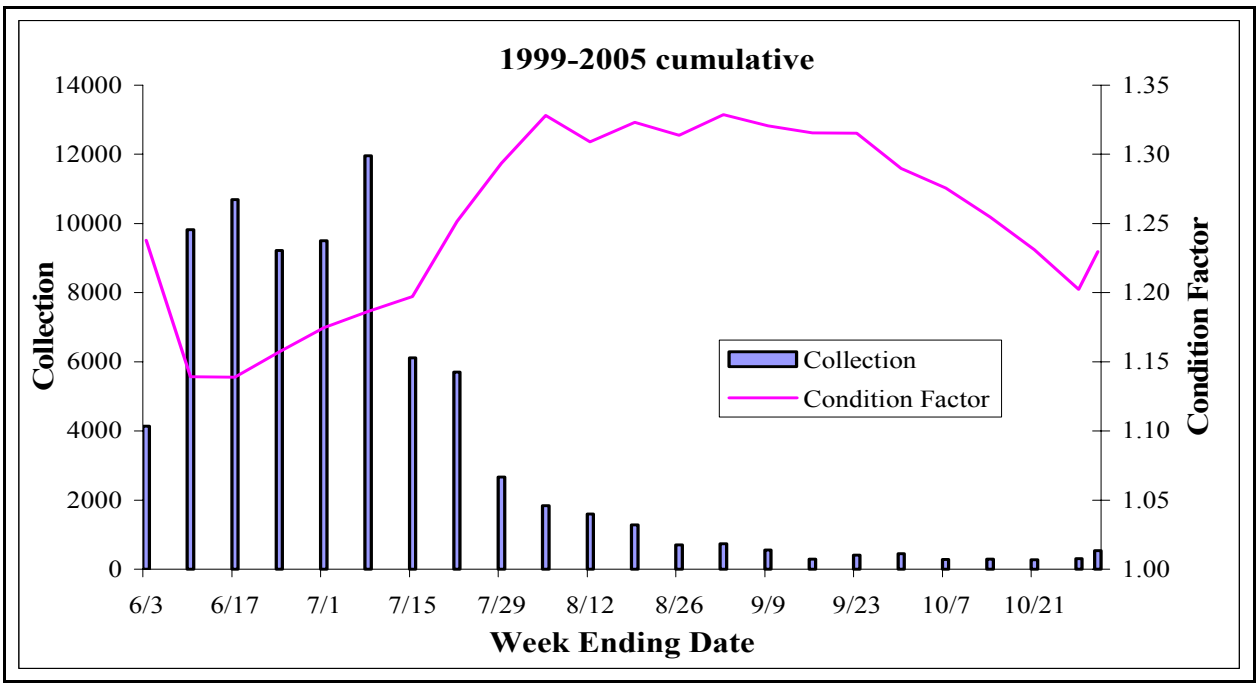

Figure 97. Unclipped subyearling chinook weekly average condition factor and fish collection averaged for the years 1999-2005.

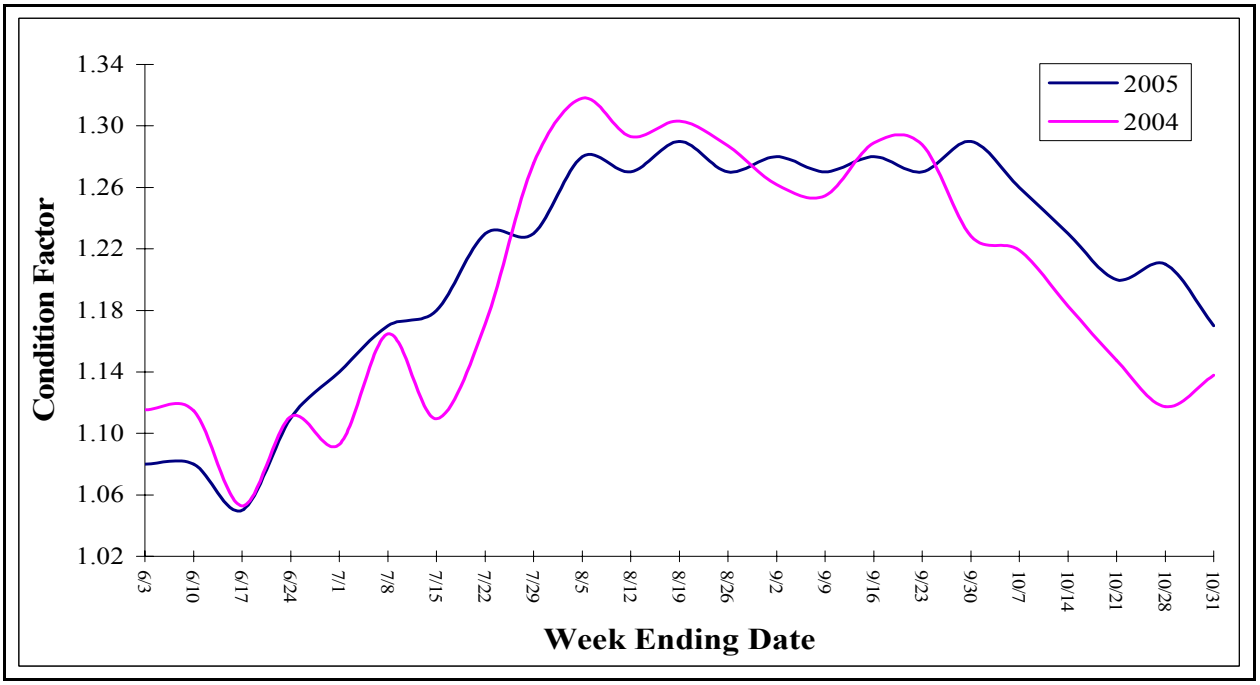

Figure 98. Unclipped subyearling chinook weekly average condition factor at LGR, 04-05.

Clipped Steelhead Condition Factors

Clipped Steelhead weekly average condition factors in 2005 were lower than those observed in 2004 for the first month of the season, higher during the peak of the migration and similar toward the end of the spring migration (Table 62). In all years examined clipped steelhead K values are highest at the beginning of the season, decline throughout the peak of their migration and increase slightly at the end of the spring migration (Figures 99 and 100). Steelhead condition factors are lower than those observed for yearling and subyearling chinook in all years examined.

Table 62. Hatchery Steelhead weekly average condition factors at LGR, 1999-2005.

Wk Ending	2005	2004	2003	2002	2001	2000	1999
7-Apr	0.97	0.99	1.03	1.11	0.97	0.96	0.97
14-Apr	0.95	0.97	1.02	1.09	0.96	0.99	0.99
21-Apr	0.94	0.95	0.96	1.08	0.94	1.02	0.93
28-Apr	0.91	0.93	0.96	1.05	0.92	0.94	0.94
5-May	0.89	0.89	0.93	1.01	0.89	0.92	0.92
12-May	0.89	0.87	0.92	1.00	0.88	0.90	0.89
19-May	0.88	0.85	0.92	1.00	0.95	0.88	0.88
26-May	0.89	0.84	0.89	1.00	0.96	0.87	0.88
2-Jun	0.88	0.88	0.86	1.00	0.91	0.86	0.89
9-Jun	0.89	0.89	0.90	0.99	0.89	0.90	0.88
16-Jun	0.90	0.89	0.87	1.02	0.92	0.90	0.88
20-Jun	0.88	0.88	0.89	1.04	0.92	0.89	0.90

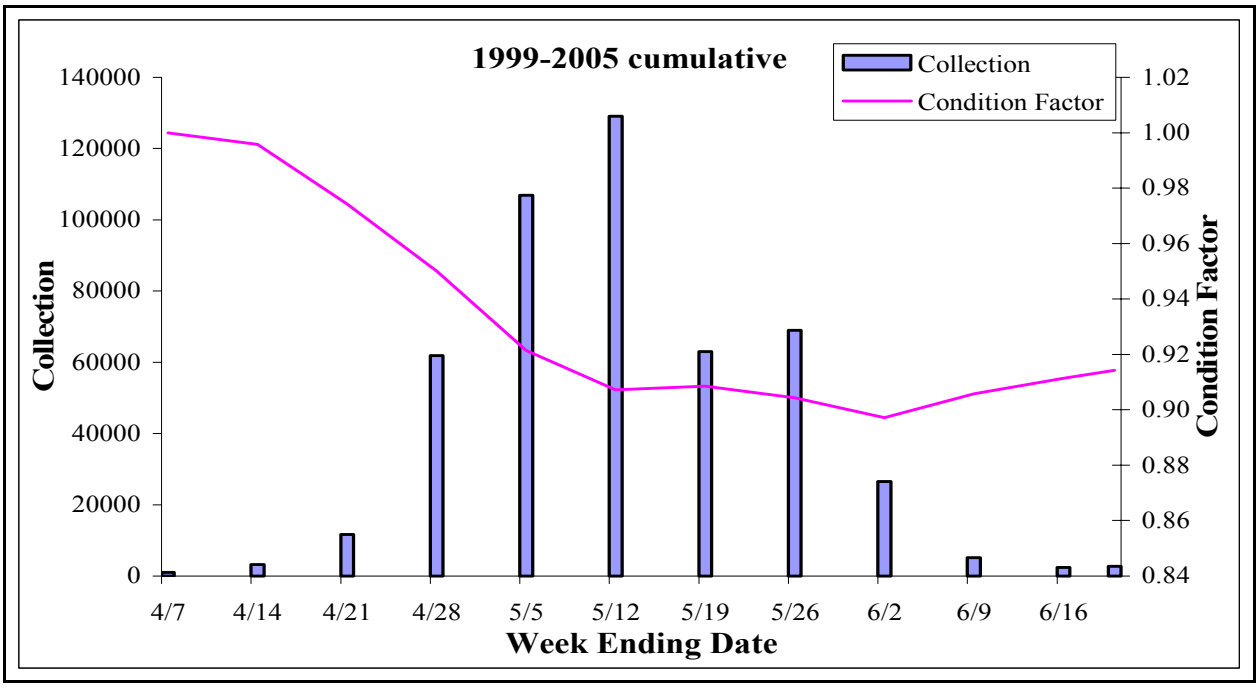

Figure 99. Hatchery steelhead weekly average condition factor and fish collection averaged for the years 1999-2005.

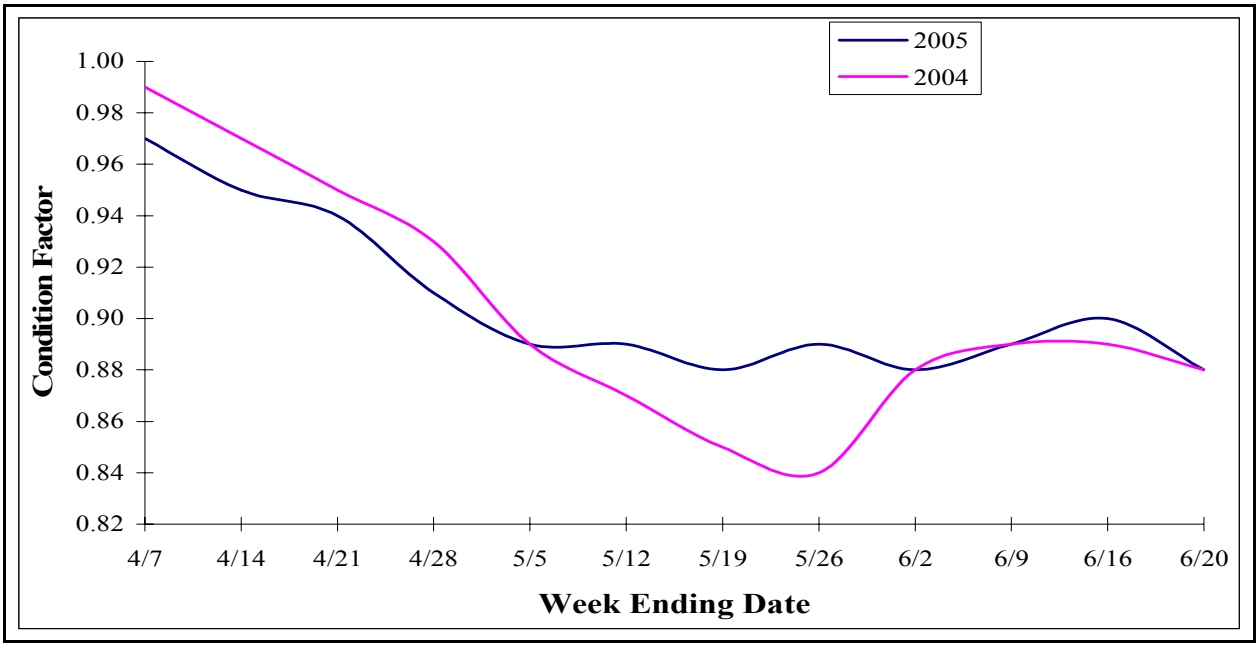

Figure 100. Hatchery steelhead weekly average condition factor at LGR, 2004-2005.

Unclipped Steelhead Condition Factors

Weekly average K values for unclipped steelhead in 2005 were higher than those observed in 2004 in every week except for two weeks that were the same (Table 63). Weekly average condition factors generally start out higher then decrease until about mid-May, which is usually the peak collection time frame, then increase until early June and then decline the last couple weeks of the spring migration (Figures 101 and 102). The K values are generally higher the first week of June than the K values at the beginning of the season. The lowest condition factors usually occur the same week as the peak in collection for the season.

In 2005 the lowest K values were observed the week before the peak in collection. Clipped steelhead condition factors started the year higher than unclipped steelhead and both groups K values decline until mid-May. Clipped steelhead K values then hover around this low level through the end of the spring migration while unclipped steelhead K values increase until the first week of June and then decline the last two weeks of the spring migration (Figure 103).

Table 63. Unclipped steelhead weekly average condition factors at LGR, 1999-2005.

Wk Ending	2005	2004	2003	2002	2001	2000	1999
7-Apr	0.94	0.93	0.95	1.06	0.94	0.89	0.93
14-Apr	0.94	0.92	0.93	1.02	0.91	0.95	0.94
21-Apr	0.91	0.91	0.90	1.00	0.87	1.00	0.93
28-Apr	0.92	0.89	0.91	0.99	0.89	0.95	0.94
5-May	0.90	0.88	0.91	0.99	0.88	0.95	0.93
12-May	0.93	0.89	0.90	0.98	0.88	0.94	0.93
19-May	0.94	0.90	0.92	1.01	0.98	0.96	0.94
26-May	0.96	0.93	0.92	1.06	1.03	0.94	0.96
2-Jun	0.94	0.94	0.98	1.07	1.01	0.94	0.97
9-Jun	0.97	0.96	0.99	1.10	0.97	0.95	1.00
16-Jun	0.94	0.93	0.96	1.08	0.96	0.95	0.98
20-Jun	0.94	0.93	0.90	1.05	0.99	0.90	1.02

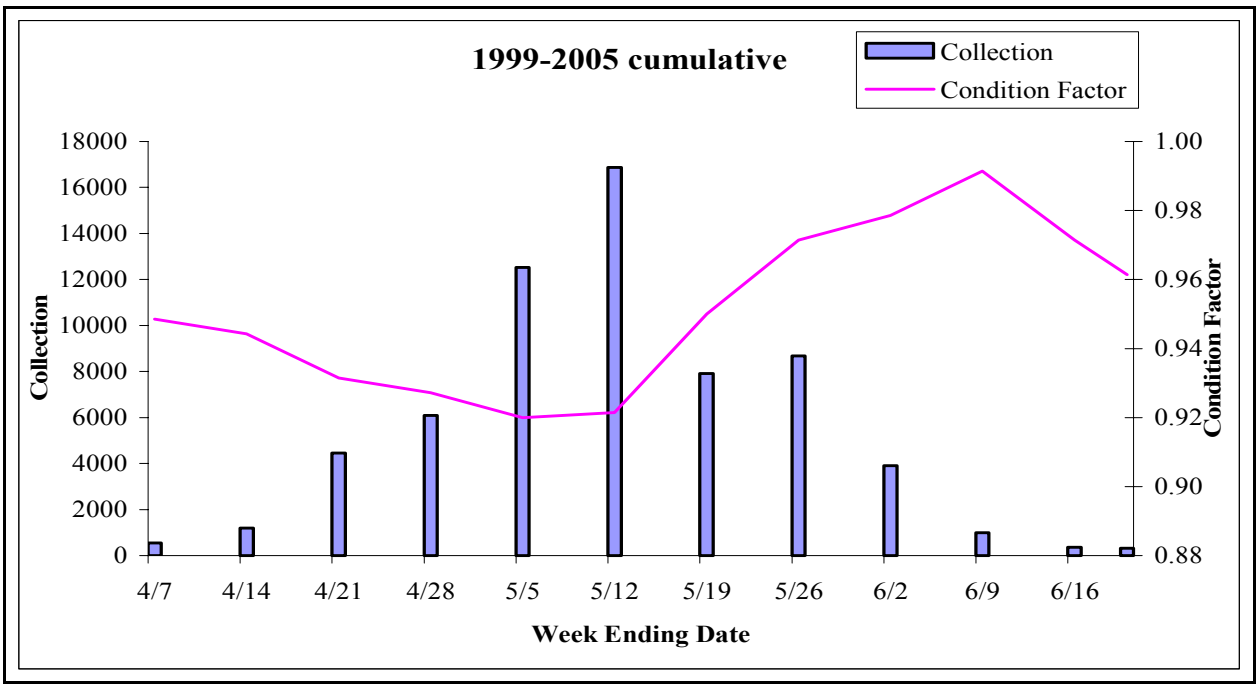

Figure 101. Unclipped steelhead weekly average condition factor and fish collection averaged for the years 1999-2005.

Figure 102. Unclipped steelhead weekly average condition factor at LGR, 2004-2005.

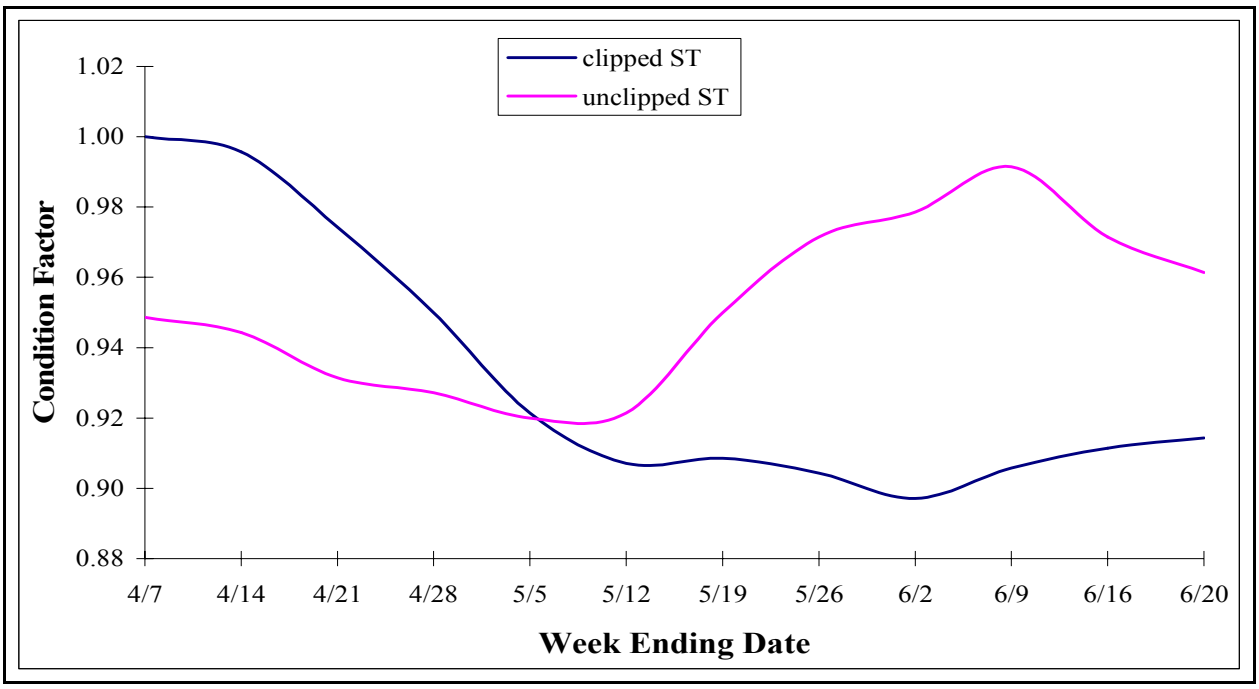

Figure 103. Clipped and unclipped steelhead weekly average condition factor averaged for the years 1999-2005.

Fish Mortality

Facility Mortality

Facility mortality included fish removed from the raceways, barges or trucks before departure, sample mortalities, recovery tank mortalities and the National Marine Fisheries Service (NMFS) mortalities attributed to handling for research studies. The overall facility mortality rate for salmonid smolts collected at LGR in 2005 was 0.26%, compared to 0.27% in 2004 and 0.24% for the 1996-2003 average (Table 64). In all, 33,515 facility mortalities were recorded from a total collection of 13,030,967 smolts. The numbers of facility mortalities and the mortality percentages of the total collected by species group included: 10,454 clipped yearling chinook (0.25%), 3,637 unclipped yearling chinook (0.26%), 5,093 clipped subyearling fall chinook (0.74%), 7,431 unclipped subyearling fall chinook (0.84), 4,031 clipped steelhead (0.09%), 1,301 unclipped steelhead (0.10%), 48 clipped sockeye/kokanee (0.33%), 310 unclipped sockeye/kokanee (1.83%) and 1,210 coho (0.42%).

Although the overall facility mortality rate for 2005 was nearly identical to that for 2004, there were differences between and among the species groups. Clipped yearling chinook facility mortality in 2005 is slightly higher than in 2001-2003 but less than in 2004 and the 1996-2003 average (Table 64). Facility mortality rates for unclipped yearling chinook closely follow their clipped counter parts from 2001-2005. Clipped subyearling chinook facility mortality in 2005 is noticeably less (60%) than the 1996-2004 average.

The unclipped subyearling fall chinook facility mortality rate for 2005 was 0.84% compared to 0.54% in 2004, and similar to the 1996-2004 average. Facility mortality rates for clipped and unclipped steelhead in 2005 were nearly identical and higher than in 2004 and higher than the 1996-2004 average. The clipped sockeye/kokanee 2005 facility mortality rate of 0.33% is slightly less than in 2004 and is 58% less than the 1996-2004 average of 0.79%, whereas the 2005 unclipped sockeye/kokanee rate of 1.83% is 49% less than in 2004 and 48% less than the 1996-2004 average. Unclipped sockeye/kokanee facility mortality rates are consistently the highest of all species groups from 1996 through 2005, although mortality rates have been decreasing since the high mark of 5.06% in 1996. The facility mortality rate for coho in 2005 of 0.42% is the second highest since 1996 (Table 64).

Table 64. Annual facility mortality in percent at LGR, 1996-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped[2]	No Clip	All	Total
1996	0.62	0.94	---	1.42	0.05	0.05	0.41	5.06	0.12	0.13
1997	0.89	0.72	2.20	3.55	0.08	0.05	2.92	3.95	0.13	0.17
1998	0.25	0.32	2.50	2.42	0.08	0.08	0.17	0.29	0.32	0.14
1999	0.60	0.55	1.20	0.84	0.03	0.04	0.84	4.67	0.25	0.28
2000	0.13	0.15	---	0.47	0.01	0.02	0.07	2.29	0.04	0.09
2001	0.22	0.19	0.38	0.52	0.04	0.07	0.00	3.12	0.25	0.13
2002	0.21	0.20	1.41	1.19	0.08	0.06	1.62	3.13	0.15	0.34
2003	0.21	0.24	2.87	1.43	0.09	0.10	1.23	1.31	0.68	0.43
2004	0.48	0.46	0.69	0.54	0.06	0.05	0.37	3.55	0.12	0.27
96-04	0.34	0.32	1.87	0.86	0.04	0.05	0.79	3.20	0.21	0.24
2005	0.25	0.26	0.74	0.84	0.09	0.10	0.33	1.83	0.42	0.26

[1]Clipped subyearling fall chinook were not present in the system in 1996 and 2000.

We maintain records of the weekly mortality rate. This mortality rate is influenced by the volume of fish entering the collection system, debris that interferes with the collection system, water temperatures and the number of fish of any single species in the sample at 100% sample rate (Table 65).

Table 65. Weekly facility mortality in percent at LGR, 2005.

Week	Yearling Chinook		Subyearling Chinook		Steelhead		Sock/Kokanee		Coho	
Ending	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped[2]	No Clip	All	Total
3/31	0.67	1.73	----	----	0.13	0.00	----	2.78	----	0.76
4/7	0.26	0.75	----	0.66	0.02	0.01	----	4.03	0.50	0.17
4/14	0.44	0.30	----	0.80	0.05	0.04	----	3.36	0.29	0.25
4/21	0.14	0.22	----	0.18	0.02	0.03	0.00	1.74	0.31	0.13
4/28	0.09	0.09	----	0.11	0.01	0.01	----	2.19	0.00	0.06
5/5	0.19	0.24	----	0.00	0.02	0.01	----	0.25	0.11	0.12
5/12	0.36	0.34	0.81	1.41	0.18	0.22	0.00	3.00	0.63	0.29
5/19	0.14	0.08	0.22	0.13	0.02	0.01	0.15	1.20	0.08	0.05
5/26	1.09	0.61	1.59	0.74	0.10	0.11	0.32	2.11	0.66	0.36
6/2	0.33	0.49	0.47	0.80	0.02	0.01	0.38	0.92	0.24	0.48
6/9	0.20	0.44	1.78	1.39	0.09	0.08	1.40	0.83	0.11	1.30
6/16	0.09	0.12	0.10	0.12	0.03	0.08	0.00	1.60	0.08	0.11
6/23	0.59	0.47	0.50	0.50	0.08	0.20	0.80	0.63	0.00	0.46
6/30	4.92	0.93	1.19	0.33	1.06	0.00	----	0.00	0.00	0.45
7/7	0.00	0.34	1.30	0.84	4.60	0.00	----	0.00	0.00	0.86
7/14	----	0.00	2.40	1.38	0.00	30.00	66.67	----	----	1.52
7/21	----	0.00	0.00	1.37	0.00	0.00	----	0.00	----	1.34
7/28	----	----	0.00	1.35	0.00	0.00	----	0.00	----	1.34
8/4	0.00	----	0.00	0.90	0.00	50.00	----	0.00	----	1.00
8/11	----	----	0.00	0.36	0.00	----	----	0.00	0.00	0.35
8/18	----	0.00	0.00	0.42	----	0.00	----	0.00	----	0.41
8/25	----	0.00	0.00	0.39	----	0.00	----	----	----	0.39
9/1	----	----	----	0.25	----	----	----	0.00	----	0.25
9/8	----	----	0.00	1.98	100	----	----	----	0.00	2.44
9/15	----	----	----	3.72	----	----	----	0.00	0.00	3.68
9/22	----	0.00	----	4.44	----	0.00	----	----	0.00	4.08
9/29	----	----	0.00	1.18	----	----	----	0.00	0.00	1.06
10/6	0.00	0.00	----	4.55	----	0.00	----	0.00	----	3.66
10/13	0.42	0.00	0.00	0.79	----	0.00	----	0.00	0.00	0.59
10/20	0.27	0.00	0.00	0.52	0.00	----	----	0.00	----	0.47
10/27	0.90	0.00	0.00	1.05	----	0.00	----	0.00	0.00	1.00
10/31	3.04	4.00	0.00	1.04	----	----	0.00	0.00	----	1.76
# Morts	10,454	3,637	5,093	7,431	4,031	1,301	48	310	1,210	33,515
#Collected	4,142,584	1,397,935	692,606	889,378	4,291,171	1,299,617	14,716	16,940	286,020	13,030,967
% Mort	0.25	0.26	0.74	0.84	0.09	0.10	0.33	1.8%	0.42	0.26

----No fish collected

Sample size for week ending September 8, through October 6, were fewer than 30 fish.

Sample Mortality

Sample mortalities include dead fish removed from the sample tank prior to sampling and those from the sorting trough in the sample lab. In 2005 a total of 1,114 sample mortalities were recorded from 129,907 fish sampled, a rate of 0.86%. The 2005 sample mortality rate is 20% less than the 1996-2004 average. This compares to 1.13% in 2004 with 1,487 mortalities, 1.41% in 2003 with 1,505 sample mortalities, 1.07% with 1,104 sample mortalities in 2002 and 0.960% in 2001 with 1,429 mortalities. The largest number of sample mortalities from 1996-2005 was 2,314 in 1998 and the lowest total was 799 smolts in 1996. The total mortalities and percent mortality by species group for 2005 included: 342 clipped yearling chinook (1.17%), 143 unclipped yearling chinook (1.00%), 139 clipped subyearling fall chinook (1.59%), 386 unclipped subyearling fall chinook (1.20%), 57 clipped steelhead (0.0.18%), 15 unclipped steelhead (0.14%), one clipped sockeye/kokanee (0.0.46%), 15 unclipped sockeye/kokanee (5.62%), and 16 coho (0.84%). Steelhead typically have the lowest sample mortality rates and unclipped sockeye/kokanee have the highest from 1996-2005 (Table 66).

Table 66. Annual sample mortality in percent at LGR, 1996-2005.

	Yearling Chinook		Subyearling[1] Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
1996	1.86	2.34	----	2.71	0.35	0.19	0.79	13.24	0.75	0.78
1997	2.49	3.15	3.89	5.66	0.41	0.45	9.35	28.19	0.98	1.65
1998	1.80	2.23	2.74	4.67	0.82	0.67	2.65	11.54	2.38	1.86
1999	1.62	1.48	0.00	1.31	0.32	0.51	1.67	9.61	0.56	1.06
2000	1.14	0.84	----	1.25	0.13	0.23	0.00	10.00	0.35	0.85
2001	0.69	0.58	1.15	1.69	0.35	0.46	0.00	13.99	1.06	0.96
2002	0.76	0.80	2.58	1.39	0.32	0.30	2.73	12.32	0.68	1.07
2003	1.07	1.01	3.99	1.83	0.43	0.62	2.74	2.50	1.06	1.41
2004	1.49	1.16	1.52	1.57	0.34	0.26	4.17	12.77	0.52	1.13
96-04	1.17	0.99	2.63	1.51	0.30	0.37	2.28	11.68	0.68	1.06
2005	1.17	1.00	1.59	1.20	0.18	0.14	0.46	5.62	0.84	0.86

[1]Clipped subyearling fall chinook were not present in the system in 1996 and 2000.

Barge Mortality

Barge mortalities (dead fish removed from barge holds after the barges departed LGR) also include mortalities from fish loaded at Little Goose, Lower Monumental and McNary Dams into barges originating at LGR. The total barge mortality rate in 2005 for all facilities combined was 0.07%, a total of 16,004 mortalities of 21,714,780 barged fish compared to 0.06% in 2004, 15,193 mortalities of 24,076,965 barged fish, and the average total barged mortalities from 1996-2004 is 7,912 from an average of 14,305,925 barged fish. The total number of smolts barged in 2005 included 12,032,623 fish from LGR, 5,618,909 from Little Goose Dam, 1,161,600 fish from Lower Monumental Dam and 2,901,648 from McNary Dam. Barge mortalities by species for 2005 include: 9,588 clipped yearling chinook, 2,935 unclipped yearling chinook, 248 clipped subyearling fall chinook, 1,055 unclipped subyearling fall chinook, 1,381 clipped steelhead, 598 unclipped steelhead, 43 clipped sockeye/kokanee, 105 unclipped sockeye/kokanee and 51 coho (Tables 67 and 68).

Table 67. Total barge mortalities from LGR, LGS, LMN and MCN Dams 1996-2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped[2]	No Clip	All	Total
1996	2,507	845	---	6	2,321	133	3	17	275	6,107
1997	1,169	354	0	3	1,389	44	0	2	37	2,998
1998	4,289	822	3	433	1,312	201	154	7	4	7,225
1999	3,808	889	---	148	773	146	118	61	236	6,179
2000	2,640	477	0	965	585	136	4	5	5	4,817
2001	1,019	467	46	266	1,575	565	3	0	5	3,946
2002	3,358	888	24	2,374	3,656	913	120	314	62	11,709
2003	3,238	1,111	638	4,808	2,290	868	5	4	249	13,211
2004	7,413	1,902	6	1,728	3,074	764	7	8	113	15,015
96-04	3,271	862	102	1,192	1,886	419	46	46	110	7,912
2005	9,588	2,935	248	1,055	1,381	598	43	105	51	16,004

Note: The 2004 barge mortality totals were incorrect in the 2004 report and have been corrected in the 2005 report.
[1]Clipped subyearling fall chinook were not present in the system in 1996 and 2000.

Table 68. Barge mortality percent from LGR, LGS, LMN and MCN Dams 1996-2005.

Year	Number of Mortalities	Number Barged	% Mortality
1996	6,107	4,990,798	0.12
1997	2,998	4,327,398	0.06
1998	7,225	6,542,402	0.11
1999	6,179	18,043,227	0.03
2000	4,817	19,168,255	0.03
2001	3,946	21,090,654	0.02
2002	11,709	13,678,513	0.09
2003	13,211	16,835,117	0.08
2004	15,015	24,076,965	0.06
96-04 avg.	7,912	14,305,925	0.06
2005	16,004	21,714,780	0.07

Note: Mortality percent for 1996-1998 calculated without including the number of fish barged from LGS, LMN, MCN.
Note: The 2004 Number of Mortalies total was incorrect in previous reports and has been corrected in the 2005 report. The 2000 Number Barged total was incorrect in previous reports and has corrected corrections.

Truck Mortality

The overall mortality rate for fish trucked from LGR in 2005 was 0.06% (39 mortalities of 66,396 fish trucked) (Table 70). This is the smallest number of fish trucked from LGR and the lowest mortality rate from 1996-2005. The number of fish trucked from LGR in 2005 is 56% less than the 1996-2004 average and the mortality rate of 0.06% is 91.6% less than the 1996-2004 average (Table 69). The truck mortality rate in 2004 was 0.41% (368 mortalities of 89,705 fish trucked), 0.24% in 2003 (232 mortalities of 96,282 fish trucked) compared to 0.20% in 2002 (147 mortalities of 72,513 fish trucked) and in 2001 it was 0.47% (618 mortalities of 131,323 fish trucked). This includes fish trucked prior to barging and fish trucked after barging during the late season ending October 31.

Total 2005 trucking mortality numbers and percent by species are: seven clipped yearling chinook (0.13%), 22 unclipped subyearling fall chinook (0.22%), seven clipped steelhead (0.02%), two unclipped steelhead (0.02%) and one unclipped sockeye/kokanee (0.19%) (Table 69).

Table 69. Annual truck mortality in percent at LGR, 1996-2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
Year	Clipped	No Clip	Clipped	No Clip[1]	Clipped	No Clip[1]	Clipped	No Clip[1]	All	Total
1996	1.22	0.97	0.00	0.44	0.31	0.37	0.11	0.02	2.90	0.41
1997	0.79	0.26	0.26	0.45	0.13	0.04	1.25	0.00	0.00	0.19
1998	0.43	0.52	0.00	0.61	0.47	0.27	0.00	0.00	0.34	0.50
1999	0.39	0.18	0.00	0.23	0.46	0.09	0.63	0.30	0.26	0.25
2000	0.47	0.48	0.00	0.15	0.41	0.52	0.00	0.40	0.00	0.19
2001	0.10	0.10	0.75	0.44	0.67	0.54	0.00	0.00	0.00	0.47
2002	0.19	0.05	0.00	0.22	0.13	0.00	0.00	0.16	0.00	0.20
2003	0.34	0.13	1.39	0.35	0.23	0.05	4.76	0.00	0.52	0.24
2004	0.02	0.04	0.00	1.22	0.07	0.04	0.00	0.00	0.00	0.41
96-04	0.33	0.22	0.26	0.34	0.30	0.21	0.39	0.10	0.79	0.31
2005	0.13	0.00	0.00	0.22	0.02	0.02	0.00	0.19	0.00	0.06

Note: The 2004 mortalities, number of fish trucked and the mortality percent were incorrect in the 2004 report and have been corrected in the 2005 report.

Table 70. Annual truck mortality numbers and percent at LGR, 1996-2005.

Year	Number of Mortalities	Number Trucked	% Mortality
1996	525	126,887	0.41
1997	464	248,078	0.23
1998	930	187,305	0.50
1999	584	234,144	0.25
2000	331	171,795	0.19
2001	618	131,323	0.47
2002	147	72,513	0.20
2003	232	96,282	0.24
2004	368	89,705	0.41
96-04 avg.	467	150,892	0.31
2005	39	66,396	0.06

Note: The 2004 mortalities, number of fish trucked and the mortality percent were incorrect in the 2004 report and have been corrected in the 2005 report.

Incidental Fish

Incidental species

An estimated 45,919 non-salmonid incidental fish entered the fish facility at LGR in 2005 (Table 71). This represents an increase of 36.6% in incidentals over the 2004 total of 33,614. Approximately 41,184 (89.7%) of this season's incidental fish were counted prior to July 15 when the sample rate was set at 100%.

Juvenile Lamprey was the most abundant incidental specie with 16,528 collected. This is 36.0% of the total incidentals collected in 2005 and represents a 297.2% increase over the 4,161 collected in 2004. In 2003, 31,918 lamprey were collected compared to 63,492 in 2002 and 20,572 in 2001. A total of 11,564 Peamouth comprised 25.2% of the total incidentals in the collection in 2005 and represents a 37.0% increase from the 8,443 collected in 2004.

Sucker was the third most abundant incidental specie with 5,236 collected, a 17.0% increase from the 4,477 collected in 2004. Other incidentals present in significant numbers in the collection included whitefish (3,564), Ammocete (non-eyed) lamprey (2,562), smallmouth bass (1,338), crappie (1,130) and juvenile shad (1,109). All sampled incidental fish counts were expanded based on daily sample rates to estimate the total collection.

Siberian Prawns (Exopalaemon modestus) were observed for the first time in daily samples in 2005. Samples of this introduced species were sent to the USGS-BRD laboratory at Cook, Washington to confirm specie identification.

Twenty-eight incidental species were identified in the collection at Lower Granite this season, including 18 Siberian Prawns (Table 71). In the past five years including 2005, four specie groups, juvenile Pacific Lamprey (eyed), Peamouth, Mountain Whitefish, and Suckers consistently ranked in the top five in abundance (Table 72). Prior to 2000, with only one exception, Crappie were consistently in the top five. Pacific Lamprey juvenile abundance ranked between fifth and eighth prior to 2000. However, four of the past five years have now become the most abundant incidental species observed at Lower Granite. Incidental species abundance by year is ranked in Table 72.

Table 71. Estimated collection of incidental fish species at LGR, 2005.

Common Name	Scientific Name	Separator	Expanded Sample	Total Collection[1]
Pacific Lamprey (Adult)	Entosphenus tridentatus	7	19	26
Pacific Lamprey (Juvenile)	E. tridentatus	0	16,528	16,528
Pacific Lamprey (Ammocete)	E. tridentatus	0	2,562	2,562
American Shad (Adult)	Alosa sapidissima	62	72	134
American Shad (Juvenile)	Alosa. sapidissima	0	1,109	1,109
Banded Killifish	Fundulus diaphanus	0	1	1
Smallmouth Bass	Micropterus dolomieui	3	1,335	1,338
Largemouth Bass	Micropterus salmoides	0	0	0
Bull Trout	Salvelinus Malma	1	0	1
Bullhead (misc.)	Amierus sp.	0	28	28
Common carp	Cyprinus carpio	81	147	228
Channel catfish	Ictalurus punctatus	88	59	147
Chiselmouth	Acrocheilus alutaceus	0	366	366
Crappie (misc)	Pomoxis sp.	11	1,119	1,130
Crayfish	Astacidae		30	30
Cutthroat Trout	Oncorhynchus clarkii	0	0	0
Flathead Catfish	Pylodictus olivaris	0	0	0
Kokanee2	Oncorhynchus nerka	0	103	103
Longnose dace	Rhinichthys cataractae	0	3	3
Northern Pikeminnow	Ptychocheilus oregonensis	28	232	260
Peamouth	Mylocheilus caurinus	74	11,490	11,564
Rainbow Trout3	Oncorhynchus mykiss	3	911	914
Redside shiner	Richardsonius balteatus	0	0	0
Sand Roller	Percopsis transmontana	0	305	305
Sculpin	Cottus sp.	0	12	12
Siberian Prawn	Exopalaemon modestus	0	73	73
Sucker (misc.)	Catostomus sp.	2,388	2,848	5,236
Sunfish (misc.)	Lepomis sp.	0	33	33
Whitefish	Prosopium sp.	12	3,552	3,564
White sturgeon	Acipenser transmontanus	19	0	19
Yellow perch	Perca flavescens	5	200	205
Total		**2,782**	**43,137**	**45,919**

[1]Incidental species collection estimated based on numbers sampled, sample rates, and separator counts.
[2]Kokanee in the sample are classified as any sockeye juvenile over 200 mm in length.
[3]Rainbow trout are classified by morphological characteristics.

Table 72. Incidental Ranking.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
*Peamouth	3	2	1	3	1	2	2	5	2	1	2
*Lamprey, Pacific (eyed)	8	7	7	8	5	1	1	1	1	2	1
Shad (juvenile)	-----	-----	23	15	*18	6	10	7	12	3	8
*Whitefish, Mountain	2	4	6	4	4	3	4	4	4	4	4
*Rainbow Trout***										5	9
Crappie	1	1	4	1	7	4	8	6	5	6	7
*Sucker, (spp)	4	6	3	2	2	8	3	3	6	7	3
Shad (adult)	16	*17	22	19	17	10	7	10	8	8	16
Bass, Smallmouth	6	9	12	12	9	12	12	9	7	9	6
*Lamprey, Pacific (non-eyed)	5	3	2	6	3	5	5	2	3	10	5
Northern Pikeminnow	12	8	8	9	10	17	11	17	19	11	12
Sand Roller										12	11
Bluegill	15	12	15	10	14	11	17	14	11	13	19
*Chiselmouth	7	5	5	7	6	7	*9	12	15	14	10
Catfish, Channel	11	10	9	5	8	9	*9	15	10	15	15
Bullhead, (spp)	13	15	16	*11	12	15	13	11	16	16	
*Lamprey, Pacific (adult)**	-----	*17	18	16	19	20	21	21	18	17	
Carp, Common	18	16	17	*11	*18	18	14	16	14	18	13
Kokanee										19	17
*Sculpin, (spp)	14	13	11	13	15	16	16	19	17	20	
Yellow Perch											14
Siberian Prawn											18
Crayfish											20
Total	173,113	48,225	52,637	31,766	53,257	22,183	48,930	86,871	54,857	33,614	45,831

*species native to the Columbia-Snake River Basin

**Eyed and non-eyed lamprey not distinguished prior to 1995.

*** Rainbow trout are classified by morphological characteristics.

Adult Fallbacks

A total of 9,105 adult salmonids were removed from the Lower Granite separator in 2005 compared to 13,002 in 2004, a decrease of 30.0% (Table 73). This included 183 clipped adult chinook, 100 unclipped adult chinook, 34 clipped jack chinook, 38 unclipped jack chinook, 3,894 clipped steelhead, 4,852 unclipped steelhead and four coho. Unclipped steelhead were the most abundant adult salmonid removed from the separator and made up 53.3% of the total salmonid fallbacks during 2005. Clipped steelhead were second in abundance and made up 42.8% of the fallbacks. As is typical at LGR, April and May were the months of highest fallback counts for clipped and unclipped steelhead while adult and jack chinook fallback counts were highest in October (Table 74).

Table 73. Annual totals of adult fallbacks released from the separator at LGR, 1997-2005.

	Adult Chinook		Jack chinook		Steelhead		Coho		
	Clipped	No clip	Clipped	No clip	Clipped	No clip	Sockeye	All	Totals
1997	309	161	10	9	1,944	6,609		0	9,042
1998	121	105	131	32	2,043	4,340		0	6,772
1999	67	118	60	35	2,167	4,381		0	6,828
2000	187	81	160	42	2,693	3,349	1	0	6,513
2001	386	238	263	62	6,193	9,881	1	0	17,024
2002	284	144	127	56	4,553	7,437	1	0	12,602
2003	205	179	207	56	3,878	4,205		1	8,731
2004	420	292	230	56	4,744	7,233	0	27	13,002
97-04 avg.	247	165	149	44	3,527	5,929	1	4	10,064
2005	183	100	34	38	3,894	4,852	0	4	9,105

Table 74. Monthly totals of adult fallbacks released from the separator at LGR, 2005.

	Adult Chinook		Jack chinook		Steelhead				Totals
Month	Clipped	No clip	Clipped	No clip	Clipped	No clip	Sockeye	Coho	
*April	2	0	0	0	1,495	1,894	0	0	3,391
May	40	27	1	1	1,751	2,437	0	0	4,257
June	27	15	2	3	91	351	0	0	489
July	8	8	1	0	16	8	0	0	41
August	0	0	1	0	69	37	0	0	107
September	17	15	7	13	200	57	0	1	310
October	89	35	22	21	272	68	0	3	510
Totals	183	100	34	38	3,894	4,852	0	4	9,105

*Includes March 26-31

All fallback salmonids in 2005 were superficially examined for condition while being released off the separator and were classified as good, fair, poor or dead. In 2005, 86.6 % of all adult salmonids were classified in good or fair condition by the COE separator technician (Table 75).

Table 75. Condition of adult falbacks released from the separator at LGR, 1997-2005.

	Adult Chinook		Jack chinook		Steelhead			Coho	
	Clipped	No clip	Clipped	No clip	Clipped	No Clip	Sockeye	All	Totals
Good									
1997	260	137	9	1,806	9	4,813		0	7,034
1998	85	85	122	1,786	32	3,435		0	5,545
1999	51	100	56	1,782	33	3,439		0	5,461
2000	161	67	158	2,161	39	2,548		0	5,134
2001	310	191	248	5,146	53	7,508		0	13,456
2002	205	105	119	3,385	52	4,845		0	8,711
2003	156	133	198	2,771	54	2,573		1	5,886
2004	377	274	225	56	3,485	5,428	0	27	9,872
97-04 avg.	201	137	142	2,362	470	4,324	0	4	7,637
2005	163	89	34	38	2,554	3,330	0	4	6,212
Fair									
1997	26	13	1	103	0	1,236		0	1,379
1998	26	14	9	197	0	679		0	925
1999	11	9	4	271	2	3,129		0	3,426
2000	21	14	1	449	2	610		0	1,097
2001	41	31	11	792	4	1,639		0	2,518
2002	45	26	4	787	3	1,632		0	2,497
2003	17	28	7	700	1	882		0	1,635
2004	35	13	4	0	715	985	0	0	1,752
97-04 avg.	28	19	5	412	91	1,349	0	0	1,904
2005	16	6	0	0	792	855	0	0	1,669
Poor									
1997	10	5	0	19	0	402		0	436
1998	7	3	0	54	0	167		0	231
1999	4	4	0	42	0	154		0	204
2000	4	0	1	78	1	171		0	255
2001	20	12	4	230	5	600		0	871
2002	25	9	3	327	0	777		0	1,141
2003	17	11	2	275	1	476		0	782
2004	4	4	1	0	401	632	0	0	1,042
97-04 avg.	11	6	1	128	51	422	0	0	620
2005	1	4	0	0	438	515	0	0	958
Dead									
1997	13	6	0	16	0	158		0	193
1998	3	3	0	6	0	59		0	71
1999	1	5	0	7	0	22		0	35
2000	1	0	0	12	0	8		0	21
2001	15	4	0	25	0	134		0	178
2002	9	4	1	54	1	183		0	252
2003	15	7	0	132	0	274		0	428
2004	4	1	0	0	143	188	0	0	336
97-04 avg.	8	4	0	32	18	128	0	0	189
2005	3	1	0	0	110	152	0	0	266

Research

Two agencies conducted eight research projects that impacted a total of 398,360 smolts. Of the smolts taken from the collection, 289,201 (72.60%) were anesthetized and handled and transported but not utilized for research purposes. Researchers PIT-tagged 108,736 smolts, radio-tagged or acoustic-tagged 4,965 smolts, sacrificed 137, handled, examined and returned 19 to the separator, handled and transported 289,201 and reported 267 incidental smolt mortalities (Table 76).

Table 76. Research fish used at Lower Granite Dam, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	49,175	6,885	444	1,768	18,965	5,840	0	0	0	83,077
Tagged, transported	4	12,629	2	2,549	0	10,475	0	0	0	25,659
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	19,429	19,826	3,698	73,014	135,258	17,742	1,952	879	17,403	289,201
Sacrificed	87	0	9	41	0	0	0	0	0	137
Examined	2	3	0	0	5	7	1	0	1	19
Mortalities	124	13	10	67	25	5	2	4	17	267
Totals	68,821	39,356	4,163	77,439	154,253	34,069	1,955	883	17,421	398,360

National Marine Fisheries Service (NMFS): A Study to Compare the Adult Returns of In-river Migrating versus Barged Juvenile Anadromous Salmonids (Transportation Study)

NMFS marking crews impacted 120,977 smolts for this study in 2005 (Table 77). The fish tagged are part of an ongoing transportation evaluation study conducted during the spring and summer migration between April 12 and July 11, 2005. The NMFS crew PIT-tagged and transported a total of 23,104 smolts. After tagging, these fish were allowed to recover from anesthesia in a raceway prior to being transported.

Fish tagged prior to transport included 12,629 unclipped yearling chinook and 10,475 unclipped steelhead. A total of 97,812 smolts were handled and transported but not tagged: 10,265 clipped yearling chinook, 2,925 unclipped yearling chinook, 352 yearling fall chinook, 62,993 clipped subyearling fall chinook, 16,755 clipped steelhead, 1,580 unclipped steelhead, 744 clipped sockeye/kokanee, 361 unclipped sockeye/kokanee and 1,837 coho (clipped and unclipped). Mortalities removed from raceways in which smolts were collected and held for tagging and those removed from raceways holding tagged fish for transportation were included with facility raceway mortalities and not research mortalities. Recovered mortalities totaled 61 smolts, including: 16 clipped yearling chinook, five unclipped yearling chinook, 33 unclipped subyearling fall chinook, four clipped steelhead, one unclipped steelhead and two clipped sockeye/kokanee. Most of the smolts handled and tagged for this study were collected in the east raceways and tagged in the NMFS marking trailer adjacent to the east raceways.

Table 77. NMFS Transportation Evaluation, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	0	0	0	0	0	0	0	0	0	0
Tagged, transported	0	12,629	0	0	0	10,475	0	0	0	23,104
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	10,265	2,925	352	62,993	16,755	1,580	744	361	1,837	97,812
Sacrificed	0	0	0	0	0	0	0	0	0	0
Mortalities	16	5	0	33	4	1	2	0	0	61
Totals	10,281	15,559	352	63,026	16,759	12,056	746	361	1,837	120,977

NMFS: A Study to Estimate Juvenile Reach Survival

This is an ongoing study conducted to evaluate survival of juvenile salmonids from the LGR tailrace to Little Goose Dam. This year a total of 30,649 fish were tagged and bypassed to the river after a 24-hour recovery period. Bypassed fish included 6,885 unclipped yearling chinook, 18,445 clipped steelhead and 5,319 unclipped steelhead (Table 78). This study was done in conjunction with the NMFS Transportation Evaluation study.

Table 78. NMFS Reach Survival, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	0	6,885	0	0	18,445	5,319	0	0	0	30,649
Tagged, transported	0	0	0	0	0	0	0	0	0	0
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	0	0	0	0	0	0	0	0	0	0
Sacrificed	0	0	0	0	0	0	0	0	0	0
Mortalities	0	0	0	0	0	0	0	0	0	0
Totals	0	6,885	0	0	18,445	5,319	0	0	0	30,649

NMFS: Extra Mortality Evaluation, 2005

This study was conducted to evaluate what the effect is on fish that encounter Little Goose, Lower Monumental and Ice Harbor Dams on the Lower Snake River compared to fish that do not encounter these dams. Fish were collected at LGR and divided among three treatment groups. The first treatment group was PIT-tagged, trucked and released below Ice Harbor Dam. The second group was PIT-tagged and trucked for the same period of time, but released below LGR in the tailrace. The third group was PIT-tagged, not trucked and released below LGR to evaluate the trucking effects on the first two groups.

A total of 47,525 clipped yearling chinook were PIT-tagged and bypassed (Table 79). Of these, 13,583 were tagged, trucked and released below LGR, 10,923 were tagged, trucked and released below Ice Harbor Dam and 23,019 were tagged, not trucked and released below LGR. A total of 190,232 fish were handled and transported but not tagged: 8,886 clipped yearling chinook (includes 1,554 yearling fall chinook), 16,884 unclipped yearling chinook, 3,223 clipped subyearling chinook, 9,663 unclipped subyearling chinook, 118,255 clipped steelhead, 16,033 unclipped steelhead, 1,207 clipped sockeye/kokanee, 517 unclipped sockeye/kokanee and 15,564 coho (clipped and unclipped). Recovery mortalities totaled 144 smolts, including 92 clipped yearling chinook, eight unclipped yearling chinook, one unclipped subyearling chinook, 20 clipped steelhead, two unclipped steelhead, four unclipped sockeye/kokanee and 17 coho.

Table 79. NMFS Extra Mortality Evaluation, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	47,525	0	0	0	0	0	0	0	0	47,525
Tagged, transported	0	0	0	0	0	0	0	0	0	0
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	8,886[1]	16,884	3,223	9,663	118,255	16,033	1,207	517	15,564	190,232
Sacrificed	0	0	0	0	0	0	0	0	0	0
Mortalities	92	8	0	1	20	2	0	4	17	144
Totals	56,503	16,892	3,223	9,664	118,275	16,035	1,207	521	15,581	237,901

[1]Includes 1,554 yearling fall chinook.

NMFS: Subyearling Fall Chinook Transportation Evaluation Study

The objective of this study is to assess the survival and returns of late-season transported subyearling fall chinook. A total of 2,549 unclipped subyearling fall chinook, four clipped yearling chinook and two clipped subyearling fall chinook were taken from daily samples, PIT-tagged and transported by truck and released below Bonneville Dam (Table 80).

Table 80. NMFS Subyearling Fall Chinook Transportation Evaluation, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	0	0	0	0	0	0	0	0	0	0
Tagged, transported	4	0	2	2,549	0	0	0	0	0	2,555
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	0	0	0	0	0	0	0	0	0	0
Sacrificed	0	0	0	0	0	0	0	0	0	0
Mortalities	0	0	0	0	0	0	0	0	0	0
Totals	4	0	2	2,549	0	0	0	0	0	2,555

NMFS: Potential Neurobehavioral Mechanisms of Latent Mortality Among Salmon Smolts Migrating Through the Columbia River Hydro system

This study is to determine whether conventional fish passage operations damage sensory systems that are required by salmon for migration, orientation, predator detection, and predator avoidance when they enter the estuary below Bonneville Dam.

The study team collected a total of 283 smolts, 31 from the separator and 252 from raceways (Table 81). The 31 fish taken from the separator included 14 clipped yearling chinook, three unclipped yearling chinook, five clipped steelhead, seven unclipped steelhead, one clipped sockeye/kokanee and one coho. Nineteen of these fish were returned to the separator after examination and 12 clipped yearling chinook were sacrificed.

The 252 fish taken from raceways included 27 clipped yearling chinook, 17 unclipped yearling chinook, five clipped subyearling chinook, 10 unclipped subyearling chinook, 151 clipped steelhead, 38 unclipped steelhead, one clipped sockeye/kokanee, one unclipped sockeye/kokanee and two coho. All of these fish were returned to raceways after examination except 25 clipped yearling chinook, which were sacrificed.

Table 81. NMFS Neurobehavior Mechanics Evaluation, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	0	0	0	0	0	0	0	0	0	0
Tagged, transported	0	0	0	0	0	0	0	0	0	0
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	2	17	5	10	151	38	1	1	2	227
Sacrificed	37	0	0	0	0	0	0	0	0	37
Examined	2	3	0	0	5	7	1	0	1	19
Mortalities	0	0	0	0	0	0	0	0	0	0
Totals	41	20	5	10	156	45	2	1	3	283

United States Geological Service, Biological Resources Division: Effects of Flow Augmentation on the Migrational Behavior and Survival of Juvenile Snake River Fall Chinook Salmon

This is part of an ongoing study to better determine the relationship between water velocity and fish migration rates and to determine if cooler, augmented Clearwater River water alters fish behavior or causes migratory delay. USGS-BRD collected a total of 172 unclipped subyearling fall chinook between May 15 and July 25 from daily samples at the LGR Juvenile Fish Facility (Table 82). They surgically implanted radio-tags and bypassed 117 unclipped subyearling fall chinook. In addition, 53 unclipped subyearling fall chinook were handled and transported without being tagged, and two of the tagged smolts were recorded as mortalities. These tagged fish were held for 24 hours after tagging before their release into the free flowing Snake River at one or more sites in the upper reaches of the Lower Granite Reservoir. Radio-tagged fish were detected using fixed-site antenna/receiver arrays in the free-flowing Snake River and in the Lower Granite Reservoir and by limited mobile tracking.

Table 82. USGS-BRD Flow Augmentation, Migration and Survival of Subyearling Fall Chinook, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	0	0	0	117	0	0	0	0	0	117
Tagged, transported	0	0	0	0	0	0	0	0	0	0
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	0	0	0	53	0	0	0	0	0	53
Sacrificed	0	0	0	0	0	0	0	0	0	0
Mortalities	0	0	0	2	0	0	0	0	0	2
Totals	0	0	0	172	0	0	0	0	0	172

United States Geological Service, Biological Resources Division: Migrational Characteristics of Yearling Chinook Salmon, Subyearling Chinook Salmon and Juvenile Steelhead in the Forebay of LGR Relative to Removable Spillway Weir and Behavioral Guidance Structure Tests.

The objectives of this study are:

1.) Determine the timing and route of passage for yearling chinook, subyearling fall chinook and steelhead at LGR relative to spill, powerhouse, removable spillway weir and behavioral guidance structure operations.
2.) Estimate survival of yearling chinook, subyearling fall chinook and steelhead passage through the removable spillway weir at LGR.

USGS-BRD tagging crew collected a total of 3,224 clipped yearling chinook, clipped steelhead and unclipped steelhead during the spring migration between April 20 and May 25, from daily samples at the Juvenile Fish Facility at LGR (Table 83). Of these, the USGS-BRD team surgically implanted radio-tags and bypassed 1,650 clipped yearling chinook, 520 clipped steelhead and 521 unclipped steelhead. Handled, transported and not used for research purposes were 276 clipped yearling chinook, 97 clipped steelhead and 91 unclipped steelhead. Fifty clipped yearling chinook were sacrificed. There were 16 clipped yearling chinook, one clipped steelhead and two unclipped steelhead tagging mortalities.

Table 83. USGS-BRD Radio Telemetry Spring Migration Evaluation, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	1,650	0	0	0	520	521	0	0	0	2,691
Tagged, transported	0	0	0	0	0	0	0	0	0	0
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	276	0	0	0	97	91	0	0	0	464
Sacrificed	50	0	0	0	0	0	0	0	0	50
Mortalities	16	0	0	0	1	2	0	0	0	19
Totals	1,992	0	0	0	618	614	0	0	0	3,224

USGS-BRD tagging crews collected 2,599 clipped and unclipped subyearling chinook during the summer/fall migration between June 16 and July 17, from daily samples at the LGR Juvenile Fish Facility (Table 84). Of these, the USGS-BRD team surgically implanted radio-tags and bypassed 444 clipped subyearling fall chinook and 1,651 unclipped subyearling fall chinook. Handled, transported and not used for research purposes were 118 clipped subyearling fall chinook and 295 unclipped subyearling fall chinook. Nine clipped subyearling fall chinook and 41 unclipped subyearling fall chinook were sacrificed. Also, there were 10 clipped subyearling fall chinook and 31 unclipped subyearling fall chinook tagging mortalities.

Table 84. USGS-BRD Subyearling Fall Chinook Radio Telemetry Evaluation, 2005.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	
	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip	All	Total
Tagged, bypassed	0	0	444	1,651	0	0	0	0	0	2,095
Tagged, transported	0	0	0	0	0	0	0	0	0	0
Handled, bypassed	0	0	0	0	0	0	0	0	0	0
Handled, transported	0	0	118	295	0	0	0	0	0	413
Sacrificed	0	0	9	41	0	0	0	0	0	50
Mortalities	0	0	10	31	0	0	0	0	0	41
Totals	0	0	581	2,018	0	0	0	0	0	2,599

References

NMFS. 2000. Endangered Species Act Section 7 Reinitiation of Consultation regarding 1994-1998 Operation of the Federal Columbia River System and Juvenile Transportation Program in 1994 and Future Years. Available from: NMFS, Northwest Region, 7600 Sand Pont Way N.E., BIN C15700 Bldg. 1, Seattle, Washington 98115.

Appendix 1

Table 1. Daily Smolt Collection Counts, 2005

Page 1.

Daily Number of Fish Collected

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
26-Mar	0	0	40	0	0	0	0	10	0	0	30	0	0	0	80
27-Mar	30	20	40	0	0	0	0	60	10	0	40	0	0	0	200
28-Mar	30	0	50	0	0	0	0	40	10	0	40	0	0	0	170
29-Mar	90	110	90	0	0	0	0	120	30	0	30	0	0	0	470
30-Mar	190	50	240	0	0	0	0	360	40	0	30	0	0	0	910
31-Mar	110	60	110	0	0	0	0	970	50	0	10	0	0	0	1310
1-Apr	140	120	190	0	0	0	0	520	30	0	0	0	0	0	1000
2-Apr	103	0	530	0	0	0	0	6392	1311	0	147	0	29	0	8512
3-Apr	220	120	460	0	0	0	60	3680	1320	0	40	0	0	60	5960
4-Apr	240	120	520	0	0	0	20	4880	1320	0	40	20	40	180	7380
5-Apr	340	0	700	0	0	0	0	8640	2380	0	20	20	80	20	12200
6-Apr	1360	300	3080	0	0	0	400	10360	2840	0	100	180	160	180	18960
7-Apr	1075	75	2500	0	0	0	275	5525	1550	0	100	25	50	150	11325
8-Apr	1725	125	3425	0	0	0	150	6900	1775	0	150	25	25	150	14450
9-Apr	1775	225	6250	0	0	0	0	3750	1000	0	25	50	100	50	13225
10-Apr	2350	125	4625	0	0	0	100	9575	2075	0	25	75	25	50	19025
11-Apr	3860	540	6100	0	0	0	100	5740	2700	0	40	40	40	160	19320
12-Apr	6700	1550	10775	0	0	0	125	8550	3250	0	100	0	25	50	31125
13-Apr	10000	2350	15300	0	0	0	225	4850	3600	0	75	300	200	375	37275
14-Apr	7500	1200	10700	0	0	0	300	3100	3700	0	150	150	50	150	27000
15-Apr	8850	2150	9400	0	0	0	100	3400	3700	0	100	50	50	200	28000
16-Apr	12650	3200	10850	0	0	0	800	3100	3200	0	50	50	100	50	34050
17-Apr	10450	2550	6800	0	0	0	0	1950	3400	0	150	0	50	50	25400
18-Apr	9350	1350	9450	0	0	0	50	3750	3550	0	100	0	0	0	27600
19-Apr	23525	4100	17800	0	0	0	0	13625	8850	0	125	0	75	125	68225
20-Apr	40850	3350	24350	0	0	0	100	19350	7250	50	0	0	0	150	95450
21-Apr	41050	6350	22600	0	0	0	50	24550	9650	0	50	0	100	250	104650
22-Apr	46200	11000	20600	0	0	0	200	42200	11400	0	0	100	400	100	132200
23-Apr	36866	6269	19254	0	0	0	299	36567	13284	0	0	299	746	299	113883
24-Apr	34030	4478	12537	0	0	0	896	49552	11343	0	149	149	149	597	113880
25-Apr	39100	4100	12300	0	0	0	300	67400	6900	0	100	0	100	100	130400
26-Apr	52600	5300	29100	0	0	0	0	96500	11500	0	300	200	0	400	195900
27-Apr	122388	5672	62537	0	0	0	0	104925	12686	0	0	149	1194	597	310148
28-Apr	219403	4328	80597	0	0	0	149	129851	21791	0	0	0	597	2985	459701
29-Apr	295400	3800	51000	0	0	0	0	116400	27000	0	0	600	1200	3200	498600
30-Apr	295800	3000	47200	0	0	0	200	224800	53200	0	0	3800	1600	8800	638400
1-May	114800	1000	26000	0	0	0	0	238800	68000	0	0	800	400	2800	452600
2-May	349000	2200	59000	0	0	0	0	175400	52400	0	200	800	1400	2400	642800
3-May	108200	600	25200	0	0	0	200	59200	19600	0	200	400	400	600	214600
4-May	101800	800	27000	0	0	0	0	39800	19600	0	0	600	400	400	190400
5-May	230000	1800	79200	0	0	0	600	77000	40600	0	0	600	600	1800	432200
6-May	307000	2600	91400	400	0	0	600	146200	52200	0	0	1200	1200	3400	606200
7-May	493600	3400	94200	200	0	0	200	290600	53600	0	0	2200	4200	12200	954400
8-May	326000	1400	57600	200	0	200	200	209600	50200	0	200	1800	2400	10200	660000
9-May	296200	2200	52800	1200	0	200	0	362600	76400	0	800	5400	9000	22200	829000
10-May	198400	3400	41400	6000	3200	7600	1200	521400	138200	0	600	4400	16000	23800	965600

Table 1. Daily Smolt Collection Counts, 2005

Page 2.

Daily Number of Fish Collected

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
11-May	90600	4600	35800	4200	2600	7200	600	247400	91200	0	600	2800	10400	13200	511200
12-May	57400	600	28000	3000	2400	2400	200	137800	50200	200	1000	1200	8800	7800	301000
13-May	23400	1000	12800	1400	1200	3200	2600	127200	37600	400	800	1400	6600	5000	224600
14-May	20800	200	12800	3400	3200	3000	1200	116000	47400	200	400	1000	9200	9400	228200
15-May	10800	200	4800	3600	5200	2600	0	43000	19000	0	800	200	2600	3800	96600
16-May	10800	600	4600	3000	2800	4200	0	46600	27000	600	1200	400	1200	2200	105200
17-May	6600	700	3100	900	1600	2300	400	49700	22100	0	100	300	1500	1800	91100
18-May	4100	300	2700	900	1000	1000	0	37700	21000	1300	400	100	1100	1100	72700
19-May	5100	200	7200	1650	1250	1900	0	44450	25000	2100	950	250	1550	1500	93100
20-May	7066	70	6507	1679	1329	1539	70	45617	26797	1609	490	280	1329	910	95292
21-May	4200	700	5000	1800	900	1700	0	21300	10800	1100	700	100	700	1000	50000
22-May	4450	350	5850	1550	800	2700	150	29250	13700	1000	450	150	700	750	61850
23-May	3700	100	3850	2300	1300	1900	50	17350	7800	400	500	0	400	800	40450
24-May	1850	150	3950	2900	1350	1350	50	11800	6550	200	100	0	150	450	30850
25-May	1850	250	4450	1350	750	1000	0	13500	7750	550	150	0	250	500	32350
26-May	2200	250	6400	1500	1250	1050	200	8100	4400	500	400	0	600	650	27500
27-May	1350	350	3800	1400	2450	850	250	7450	3550	350	150	0	200	300	22450
28-May	2250	800	5900	1900	2700	1550	0	11750	5650	250	50	50	250	350	33450
29-May	2400	400	7100	6150	7700	6450	350	15800	6900	300	250	50	250	350	54450
30-May	2400	200	5200	32850	16300	9850	250	15750	5750	250	350	0	650	800	90600
31-May	5000	700	13000	193700	57700	37900	500	29900	14900	1500	1000	0	900	600	357300
1-Jun	2000	400	2200	83600	22200	26000	0	13200	6800	200	400	0	200	400	157600
2-Jun	1600	1200	8000	60800	20000	29400	200	11600	4000	600	200	0	0	0	137600
3-Jun	2600	400	3400	40200	21000	36400	200	5800	2600	0	0	600	400	400	114000
4-Jun	3800	800	7000	23200	12400	29200	1000	5200	3000	200	400	200	600	0	87000
5-Jun	1400	200	4000	11600	7800	21800	0	4000	3800	0	0	0	400	1000	56000
6-Jun	1000	100	2900	12500	6500	21000	200	3800	2400	0	100	0	200	200	50900
7-Jun	1500	0	1800	17300	9200	35200	0	3100	2700	200	100	0	300	400	71800
8-Jun	1600	100	2300	23400	13000	33500	200	3200	1800	0	0	0	200	100	79400
9-Jun	600	500	2800	19400	7600	30000	300	2100	800	100	0	0	100	300	64600
10-Jun	300	100	1300	12500	4200	22200	100	1400	300	0	100	0	100	100	42700
11-Jun	100	0	400	10200	3900	14400	100	1100	600	0	100	0	100	0	31000
12-Jun	150	100	500	9800	3050	13200	0	550	500	50	50	0	0	100	28050
13-Jun	400	0	450	14200	3300	21250	50	1400	550	100	100	0	50	400	42250
14-Jun	900	50	1200	16450	5700	23100	50	2150	650	100	0	0	50	100	50500
15-Jun	200	100	700	9100	2500	12000	0	1450	650	0	0	0	0	100	26800
16-Jun	175	125	1025	6575	1875	9525	50	1900	725	50	25	0	50	50	22150
17-Jun	325	25	400	7775	2875	10300	100	1125	575	50	50	0	0	50	23650
18-Jun	250	75	250	12225	4500	18550	125	2375	850	50	0	0	25	225	39500
19-Jun	500	150	1750	9900	2350	22250	50	2950	1500	50	50	0	100	350	41950
20-Jun	350	50	875	7325	1725	14575	25	1600	700	25	0	25	50	100	27425
21-Jun	75	0	175	1975	800	3525	0	425	225	75	50	0	25	25	7375
22-Jun	20	10	50	510	170	1330	10	190	90	0	10	0	0	0	2390
23-Jun	0	0	5	330	95	795	10	95	45	0	0	0	0	0	1375
24-Jun	8	4	32	284	128	856	0	36	16	0	4	0	0	0	1368
25-Jun	4	4	0	344	120	1404	0	64	20	0	0	0	0	0	1960
26-Jun	0	4	12	236	108	1408	4	52	4	0	0	0	4	0	1832
27-Jun	0	0	0	268	120	1432	0	28	16	0	0	0	0	4	1868
28-Jun	4	4	4	176	136	1616	0	68	32	0	0	0	0	0	2040
29-Jun	40	12	36	568	272	7376	8	88	36	0	0	0	0	4	8440

Table 1. Daily Smolt Collection Counts, 2005

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Daily Number of Fish Collected

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
30-Jun	5	15	195	140	125	3198	10	40	30	0	0	0	0	0	3758
1-Jul	0	0	55	55	25	1470	5	10	20	0	0	0	0	0	1640
2-Jul	0	0	52	12	8	400	0	16	0	0	0	0	0	0	488
3-Jul	0	0	43	85	33	965	0	23	10	0	0	0	0	3	1162
4-Jul	0	0	90	65	30	1033	0	5	0	0	5	0	0	0	1228
5-Jul	3	0	235	98	40	1195	3	8	8	0	0	0	0	3	1593
6-Jul	3	0	100	30	23	1413	0	5	0	0	5	0	0	0	1579
7-Jul	0	0	8	16	20	540	0	4	0	0	0	0	0	0	588
8-Jul	0	0	0	24	12	492	0	16	0	0	0	0	0	0	544
9-Jul	0	0	0	23	5	510	0	10	0	0	0	0	0	0	548
10-Jul	0	0	3	15	5	510	5	5	0	0	0	0	0	0	543
11-Jul	0	0	0	40	8	930	3	5	8	3	0	0	0	0	997
12-Jul	0	0	0	18	3	715	3	3	0	0	0	0	0	0	742
13-Jul	0	0	5	13	25	563	0	0	0	0	0	0	0	0	606
14-Jul	0	0	0	10	5	260	3	0	0	0	0	0	0	0	278
15-Jul	0	0	0	6	1	155	0	2	2	0	0	0	0	0	166
16-Jul	0	0	0	7	4	361	1	0	0	0	0	0	0	0	373
17-Jul	0	0	0	5	3	390	0	2	0	0	0	0	0	0	400
18-Jul	0	0	0	4	2	275	0	2	1	0	0	0	0	0	284
19-Jul	0	0	0	5	1	254	0	0	0	0	1	0	0	0	261
20-Jul	0	0	1	7	1	208	1	1	0	0	0	0	0	0	219
21-Jul	0	0	0	2	5	208	0	1	0	0	0	0	0	0	216
22-Jul	0	0	0	6	1	331	0	0	0	0	1	0	0	0	339
23-Jul	0	0	0	0	0	269	0	0	0	0	1	0	0	0	270
24-Jul	0	0	0	3	3	205	0	1	1	0	0	0	0	0	213
25-Jul	0	0	0	0	0	142	0	0	0	0	0	0	0	0	142
26-Jul	0	0	0	0	0	113	0	2	0	0	0	0	0	0	115
27-Jul	0	0	0	1	0	107	0	0	0	0	0	0	0	0	108
28-Jul	0	0	0	1	0	180	0	1	1	0	0	0	0	0	183
29-Jul	0	0	0	0	2	161	0	0	1	0	0	0	0	0	164
30-Jul	0	0	0	2	2	139	0	0	0	0	0	0	0	0	143
31-Jul	1	0	0	0	2	117	0	0	1	0	1	0	0	0	122
1-Aug	0	0	0	0	0	136	0	0	0	0	0	0	0	0	136
2-Aug	0	0	0	0	0	124	0	1	1	0	0	0	0	0	126
3-Aug	0	0	0	2	1	142	0	0	0	0	0	0	0	0	145
4-Aug	0	0	0	1	0	132	0	0	0	0	0	0	0	0	133
5-Aug	0	0	0	0	1	94	0	0	0	0	0	0	0	0	95
6-Aug	0	0	0	2	0	144	0	0	0	0	1	0	0	1	148
7-Aug	0	0	0	1	0	203	0	0	0	0	0	0	0	0	204
8-Aug	0	0	0	1	1	160	0	1	0	0	0	0	0	0	163
9-Aug	0	0	0	0	0	138	0	0	0	0	0	0	0	0	138
10-Aug	0	0	0	2	0	240	0	0	0	0	0	0	0	0	242
11-Aug	0	0	0	0	0	140	0	0	0	0	1	0	0	0	141
12-Aug	0	0	0	0	0	97	0	0	0	0	1	0	0	1	99
13-Aug	0	0	1	0	0	72	0	0	0	0	0	0	0	0	73
14-Aug	0	0	0	0	0	62	0	0	0	0	1	0	0	0	63
15-Aug	0	0	0	1	1	74	0	0	0	0	0	0	0	0	76
16-Aug	0	0	0	0	0	59	0	0	0	0	0	0	0	0	59
17-Aug	0	0	0	0	0	104	0	0	1	0	1	0	0	0	106

Table 1. Daily Smolt Collection Counts, 2005

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Daily Number of Fish Collected

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
18-Aug	0	0	0	1	0	59	0	0	0	0	0	0	0	0	60
19-Aug	0	0	0	1	1	100	0	0	0	0	0	0	0	0	102
20-Aug	0	0	0	0	0	65	0	0	1	0	0	0	0	0	66
21-Aug	0	0	1	1	0	58	0	0	0	0	0	0	0	0	60
22-Aug	0	0	0	0	0	61	0	0	0	0	0	0	0	0	61
23-Aug	0	0	0	0	0	73	0	0	0	0	0	0	0	0	73
24-Aug	0	0	0	1	0	86	0	0	0	0	0	0	0	0	87
25-Aug	0	0	0	2	0	63	0	0	0	0	0	0	0	0	65
26-Aug	0	0	0	0	0	72	0	0	0	0	0	0	0	0	72
27-Aug	0	0	0	0	0	91	0	0	0	0	0	0	0	0	91
28-Aug	0	0	0	0	0	68	0	0	0	0	1	0	0	0	69
29-Aug	0	0	0	0	2	59	0	0	0	0	1	0	0	0	62
30-Aug	0	0	0	0	1	48	0	0	0	0	0	0	0	0	49
31-Aug	0	0	0	0	0	27	0	0	0	0	0	0	0	0	27
1-Sep	0	0	0	0	0	34	0	0	0	0	0	0	0	0	34
2-Sep	0	0	0	0	0	33	0	1	0	0	0	0	0	0	34
3-Sep	0	0	0	0	0	26	0	0	0	0	0	0	0	0	26
4-Sep	0	0	0	0	0	37	0	0	0	0	0	0	0	0	37
5-Sep	0	0	0	0	0	37	0	0	0	0	0	0	0	1	38
6-Sep	0	0	0	0	0	31	0	0	0	0	0	0	0	0	31
7-Sep	0	0	0	1	0	26	0	0	0	0	0	0	0	0	27
8-Sep	0	0	0	0	0	12	0	0	0	0	0	0	0	0	12
9-Sep	0	0	0	0	0	18	0	0	0	0	0	0	0	1	19
10-Sep	0	0	0	0	0	25	0	0	0	0	0	0	0	0	25
11-Sep	0	0	0	0	0	27	0	0	0	0	0	0	0	0	27
12-Sep	0	0	0	0	0	33	0	0	0	0	0	0	0	0	33
13-Sep	0	0	0	0	0	48	0	0	0	0	1	0	0	0	49
14-Sep	0	0	0	0	0	21	0	0	0	0	0	0	0	0	21
15-Sep	0	0	0	0	0	16	0	0	0	0	0	0	0	0	16
16-Sep	0	0	0	0	0	12	0	0	1	0	0	0	0	0	13
17-Sep	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7
18-Sep	0	0	0	0	0	8	0	0	0	0	0	0	0	1	9
19-Sep	0	0	0	0	0	2	0	0	0	0	0	0	0	1	3
20-Sep	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
21-Sep	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
22-Sep	0	0	1	0	0	9	0	0	0	0	0	0	0	0	10
23-Sep	0	0	0	0	0	9	0	0	0	0	0	0	0	0	9
24-Sep	0	0	0	0	0	10	0	0	0	0	0	0	0	2	12
25-Sep	0	0	0	0	0	16	0	0	0	0	0	0	0	0	16
26-Sep	0	0	0	0	0	17	0	0	0	0	0	0	0	0	17
27-Sep	0	0	0	0	0	13	0	0	0	0	0	0	0	3	16
28-Sep	0	0	0	0	0	6	0	0	0	0	1	0	0	0	7
29-Sep	0	0	0	1	0	14	0	0	0	0	2	0	0	0	17
30-Sep	0	0	0	0	0	11	0	0	0	0	1	0	0	0	12
1-Oct	0	0	0	0	0	6	0	0	1	0	0	0	0	0	7
2-Oct	1	0	0	0	0	23	0	0	0	0	0	0	0	0	24
3-Oct	0	0	0	0	0	16	0	0	0	0	1	0	0	0	17
4-Oct	1	0	0	0	0	21	0	0	0	0	0	0	0	0	22
5-Oct	6	0	0	0	0	24	0	0	0	0	0	0	0	0	30

Table 1. Daily Smolt Collection Counts, 2005

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Daily Number of Fish Collected

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
6-Oct	18	2	0	0	0	31	0	0	1	0	0	0	0	0	52
7-Oct	34	0	0	2	1	45	0	0	0	0	3	0	0	0	85
8-Oct	131	1	5	1	1	114	0	0	0	0	0	0	0	0	253
9-Oct	239	0	2	1	0	224	0	0	0	0	2	0	0	0	468
10-Oct	228	0	6	0	2	301	0	0	1	0	1	0	0	1	540
11-Oct	252	1	11	1	0	246	0	0	0	0	0	0	0	0	511
12-Oct	331	0	10	7	0	182	0	0	0	0	0	0	0	0	530
13-Oct	200	0	12	0	0	268	0	0	0	0	0	0	0	0	480
14-Oct	108	4	0	0	0	256	0	0	0	0	4	0	0	0	372
15-Oct	24	0	4	0	0	232	0	0	0	0	0	0	0	0	260
16-Oct	112	0	3	2	0	339	0	0	0	0	1	0	0	0	457
17-Oct	50	0	2	0	1	228	0	0	0	0	0	0	0	0	281
18-Oct	29	0	9	0	0	172	0	0	0	0	0	0	0	0	210
19-Oct	16	0	1	0	0	175	0	0	0	0	0	0	0	0	192
20-Oct	31	0	2	0	0	316	0	1	0	0	1	0	0	0	351
21-Oct	55	0	3	0	0	212	0	0	0	0	0	0	0	0	270
22-Oct	54	0	8	1	0	193	0	0	1	0	0	0	0	0	257
23-Oct	55	0	9	0	2	173	0	0	0	0	0	0	0	0	239
24-Oct	65	1	2	0	3	264	0	0	0	0	0	0	0	0	335
25-Oct	69	0	3	1	0	257	0	0	0	0	1	0	0	0	331
26-Oct	93	0	7	1	2	248	0	0	0	0	0	0	0	0	351
27-Oct	165	0	6	1	0	353	0	0	0	0	2	0	0	1	528
28-Oct	66	0	1	1	1	306	0	0	0	0	0	0	0	0	375
29-Oct	150	1	5	1	2	330	0	0	0	0	0	0	0	0	489
30-Oct	151	0	10	0	1	244	0	0	0	1	1	0	0	0	408
31-Oct	259	0	8	4	0	270	0	0	0	3	1	0	0	0	545
Totals	4,142,572	114,745	1,283,190	692,606	277,021	594,772	17,585	4,291,171	1,299,617	14,716	16,940	33,587	95,468	156,965	13,030,955

Table 2. Daily Number of Fish Transported from Lower Granite Dam, 2005

Page 1.

Daily Number of Fish Transported

Date	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
26-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Mar	30	20	78	0	0	0	0	70	10	0	69	0	0	0	277
28-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Mar	118	105	138	0	0	0	0	158	40	0	67	0	0	0	626
30-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31-Mar	299	107	347	0	0	0	0	1330	90	0	39	0	0	0	2212
1-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Apr	240	120	718	0	0	0	0	6911	1341	0	141	0	29	0	9500
3-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-Apr	459	234	959	0	0	0	79	8559	2640	0	73	20	40	240	13303
5-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Apr	1455	243	3213	0	0	0	325	17152	4714	0	98	167	211	164	27742
7-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Apr	2793	196	5905	0	0	0	425	12422	3325	0	248	49	75	300	25738
9-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Apr	4102	343	10834	0	0	0	100	13315	3071	0	47	125	124	98	32159
11-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Apr	10490	2079	16711	0	0	0	224	14183	5911	0	130	40	65	209	50042
13-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Apr	17448	3538	25580	0	0	0	518	7490	7233	0	220	450	249	525	63251
15-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Apr	21444	5332	20007	0	0	0	899	6374	6871	0	145	100	148	249	61569
17-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Apr	19774	3894	16238	0	0	0	50	5698	6945	0	246	0	50	50	52945
19-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Apr	64314	7447	41718	0	0	0	100	32482	16009	50	124	0	75	275	162594
21-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Apr	87109	17338	42807	0	0	0	249	65972	20968	0	50	100	500	349	235442
23-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Apr	70646	10735	31669	0	0	0	1195	85714	24575	0	140	448	895	896	226913
25-Apr	39009	4097	12288	0	0	0	300	67378	6887	0	97	0	100	100	130256
26-Apr	52526	5299	29039	0	0	0	0	95838	11474	0	300	200	0	400	195076
27-Apr	122344	5666	62397	0	0	0	0	104209	12665	0	0	149	1194	597	309221
28-Apr	219086	4327	80299	0	0	0	147	129139	21752	0	0	0	597	2985	458332
29-Apr	293745	3794	50295	0	0	0	0	115645	26948	0	0	588	1195	3194	495404
30-Apr	254957	2586	40573	0	0	0	173	193489	45878	0	0	3277	1379	7592	549904
1-May	103496	902	23453	0	0	0	0	215601	61386	0	0	722	360	2528	408448
2-May	333913	2104	56443	0	0	0	0	167913	50172	0	200	766	1341	2296	615148
3-May	54493	301	12455	0	0	0	101	29371	9768	0	92	202	202	303	107288
4-May	95737	799	26475	0	0	0	0	38898	19147	0	0	600	400	400	182456
5-May	222974	1799	78908	0	0	0	600	76289	40253	0	0	600	600	1799	423822
6-May	301685	2599	91044	400	0	0	600	145394	51833	0	0	1200	1199	3397	599351
7-May	487133	3400	93813	200	0	0	200	289810	53457	0	0	2199	4198	12196	946606
8-May	325665	1400	57557	199	0	199	198	209550	50183	0	191	1794	2398	10188	659522
9-May	295727	2200	52756	1198	0	197	0	362321	76319	0	793	5385	8988	22176	828060
10-May	89250	1626	19585	2881	1541	3650	528	250338	66423	0	278	2090	7663	11352	457205
11-May	75933	4046	31619	3716	2283	6367	489	221319	81599	0	482	2473	9228	11597	451151

Table 2. Daily Number of Fish Transported from Lower Granite Dam, 2005

Page 2.

Daily Number of Fish Transported

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
12-May	55621	599	27783	2991	2395	2387	198	137042	49975	200	995	1196	8782	7764	297928
13-May	21430	999	12668	1397	1198	3197	2599	126494	37263	400	796	1400	6599	4995	221435
14-May	19074	200	12591	3394	3194	2988	1200	115235	47039	199	393	1000	9196	9395	225098
15-May	7339	200	4797	3590	5197	2597	0	42973	18987	0	792	200	2596	3792	93060
16-May	10787	600	4596	2997	2796	4196	0	46594	26998	595	1191	399	1198	2196	105143
17-May	3894	700	2953	897	1593	2298	400	49201	21877	0	93	300	1499	1796	87501
18-May	2276	299	2557	895	1000	999	0	37156	20743	1300	389	100	1100	1099	69913
19-May	3575	198	7048	1648	1249	1900	0	43930	24750	2099	940	250	1549	1497	90633
20-May	5344	70	6358	1676	1327	1537	70	45104	26562	1605	460	279	1322	908	92622
21-May	4145	699	4975	1790	894	1689	0	20920	10627	1100	688	100	698	997	49322
22-May	4169	338	5756	1468	792	2659	149	29148	13597	994	447	144	687	731	61079
23-May	3683	100	3823	2284	1293	1895	50	17340	7798	396	494	0	397	800	40353
24-May	1747	145	3801	2860	1343	1347	50	11414	6362	197	96	0	150	450	29962
25-May	1837	250	4319	1329	744	996	0	13140	7589	550	148	0	247	499	31648
26-May	2093	247	6247	1464	1225	1035	200	7706	4212	500	398	0	596	650	26573
27-May	1334	346	3650	1357	2419	841	250	7091	3385	345	142	0	199	300	21659
28-May	2243	799	5756	1859	2665	1531	0	11396	5489	245	47	50	250	350	32680
29-May	2393	397	7073	6098	7646	6433	349	15793	6898	298	244	50	249	350	54271
30-May	2391	196	5176	32551	16023	9789	244	15745	5745	249	347	0	646	797	89899
31-May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Jun	6907	1095	14966	276506	79291	63757	500	42955	21630	1700	1398	0	1099	997	512801
2-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Jun	4198	1590	10990	99138	40177	64723	377	16890	6467	600	200	599	399	400	246748
4-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Jun	5189	993	10788	34095	19804	50203	985	8941	6735	196	397	200	1000	998	140524
6-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Jun	2498	100	4559	29617	15584	55913	195	6686	5080	199	198	0	500	599	121728
8-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Jun	2190	600	4839	42355	20318	62676	492	4955	2506	98	0	0	299	400	141728
10-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Jun	399	100	1456	22664	8077	36526	199	2076	797	0	198	0	200	100	72792
12-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Jun	550	100	949	23992	6348	34428	50	1950	1050	150	149	0	49	500	70265
14-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Jun	1099	150	1899	25524	8193	35070	50	3599	1299	100	0	0	50	200	77233
16-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Jun	499	149	1422	14325	4742	19763	150	3023	1296	99	72	0	50	100	45690
18-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Jun	745	225	1988	22016	6808	40600	174	5324	2347	100	49	0	125	575	81076
20-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Jun	422	50	1046	9127	2505	17833	25	2023	924	99	50	25	75	125	34329
22-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Jun	20	10	54	800	265	2075	20	283	133	0	10	0	0	0	3670
24-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Jun	11	8	32	565	248	2153	0	99	36	0	4	0	0	0	3156
26-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Jun	0	4	12	417	226	2696	4	78	20	0	0	0	4	4	3465
28-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Jun	42	15	38	700	408	8880	8	156	68	0	0	0	0	4	10319
30-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Jul	5	15	250	143	149	4429	15	49	50	0	0	0	0	0	5105

Table 2. Daily Number of Fish Transported from Lower Granite Dam, 2005

Page 3.

Daily Number of Fish Transported

Date	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
2-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-Jul	0	0	184	129	70	2261	0	41	10	0	5	0	0	3	2703
5-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Jul	6	0	334	119	62	2516	3	13	8	0	5	0	0	3	3069
7-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Jul	0	0	8	24	32	892	0	19	0	0	0	0	0	0	975
9-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Jul	0	0	3	15	10	799	5	15	0	0	0	0	0	0	847
11-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Jul	0	0	0	43	10	1499	6	8	7	1	0	0	0	0	1574
13-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Jul	0	0	5	21	30	736	3	0	0	0	0	0	0	0	795
15-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Jul	0	0	0	0	5	354	1	2	0	0	0	0	0	0	362
17-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Jul	0	0	0	6	5	520	0	4	1	0	0	0	0	0	536
19-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Jul	0	0	1	5	1	339	1	1	0	0	1	0	0	0	349
21-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Jul	0	0	0	8	3	531	0	1	0	0	1	0	0	0	544
23-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Jul	0	0	0	3	3	461	0	1	1	0	1	0	0	0	470
25-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Jul	0	0	0	0	0	252	0	2	0	0	0	0	0	0	254
27-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-Jul	0	0	0	2	0	283	0	1	1	0	0	0	0	0	287
29-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Jul	0	0	0	2	4	286	0	0	1	0	0	0	0	0	293
31-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Aug	1	0	0	0	2	249	0	0	1	0	1	0	0	0	254
2-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Aug	0	0	0	2	0	264	0	1	0	0	0	0	0	0	267
4-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Aug	0	0	0	1	1	224	0	0	0	0	0	0	0	0	226
6-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Aug	0	0	0	3	0	344	0	0	0	0	1	0	0	1	349
8-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Aug	0	0	0	1	1	298	0	0	0	0	0	0	0	0	300
10-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Aug	0	0	0	2	0	379	0	0	0	0	1	0	0	0	382
12-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Aug	0	0	1	0	0	168	0	0	0	0	1	0	0	1	171
14-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Aug	0	0	0	1	1	134	0	0	0	0	1	0	0	0	137
16-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Aug	0	0	0	0	0	163	0	0	1	0	1	0	0	0	165
18-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Aug	0	0	0	2	0	106	0	0	0	0	1	0	0	0	109
20-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Aug	0	0	0	1	1	165	0	0	1	0	0	0	0	0	168

Table 2. Daily Number of Fish Transported from Lower Granite Dam, 2005

Page4.

Daily Number of Fish Transported

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
22-Aug	0	0	1	1	0	117	0	0	0	0	0	0	0	0	119
23-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Aug	0	0	0	1	0	159	0	0	0	0	0	0	0	0	160
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Aug	0	0	0	2	0	134	0	0	0	0	0	0	0	0	136
27-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-Aug	0	0	0	0	0	158	0	0	0	0	1	0	0	0	159
29-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Aug	0	0	0	0	3	107	0	0	0	0	1	0	0	0	111
31-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Sep	0	0	0	0	0	61	0	0	0	0	0	0	0	0	61
2-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Sep	0	0	0	0	0	57	0	0	0	0	0	0	0	0	57
4-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Sep	0	0	0	0	0	73	0	0	0	0	0	0	0	1	74
6-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Sep	0	0	0	1	0	56	0	0	0	0	0	0	0	0	57
8-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Sep	0	0	0	0	0	30	0	0	0	0	0	0	0	1	31
10-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Sep	0	0	0	0	0	47	0	0	0	0	0	0	0	0	47
12-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Sep	0	0	0	0	0	80	0	0	0	0	1	0	0	0	81
14-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Sep	0	0	0	0	0	36	0	0	0	0	0	0	0	0	36
16-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Sep	0	0	0	0	0	18	0	0	1	0	0	0	0	0	19
18-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Sep	0	0	0	0	0	9	0	0	0	0	0	0	0	2	11
20-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Sep	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7
22-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Sep	0	0	1	0	0	18	0	0	0	0	0	0	0	0	19
24-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Sep	0	0	0	0	0	26	0	0	0	0	0	0	0	2	28
26-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Sep	0	0	0	0	0	29	0	0	0	0	0	0	0	3	32
28-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Sep	0	0	0	1	0	20	0	0	0	0	3	0	0	0	24
30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Oct	0	0	0	0	0	15	0	0	1	0	1	0	0	0	17
2-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Oct	1	0	0	0	0	37	0	0	0	0	1	0	0	0	39
4-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Oct	7	0	0	0	0	43	0	0	0	0	0	0	0	0	50
6-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Oct	52	2	0	2	1	75	0	0	1	0	3	0	0	0	136
8-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2. Daily Number of Fish Transported from Lower Granite Dam, 2005

Page 5.

Daily Number of Fish Transported

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
9-Oct	366	1	7	2	1	334	0	0	0	0	2	0	0	0	713
10-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Oct	478	1	17	1	2	541	0	0	1	0	1	0	0	1	1043
12-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Oct	531	0	22	7	0	450	0	0	0	0	0	0	0	0	1010
14-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Oct	131	4	4	0	0	487	0	0	0	0	4	0	0	0	630
16-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Oct	162	0	5	2	1	564	0	0	0	0	1	0	0	0	735
18-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Oct	45	0	10	0	0	343	0	0	0	0	0	0	0	0	398
20-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Oct	86	0	5	0	0	523	0	1	0	0	1	0	0	0	616
22-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Oct	109	0	17	1	1	363	0	0	1	0	0	0	0	0	492
24-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Oct	132	1	5	1	3	517	0	0	0	0	1	0	0	0	660
26-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Oct	255	0	13	2	2	594	0	0	0	0	2	0	0	1	869
28-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Oct	207	1	6	2	3	628	0	0	0	0	0	0	0	0	847
30-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31-Oct	400	0	17	4	1	510	0	0	0	4	2	0	0	0	938
Total	3,851,512	111,272	1,223,802	683,543	272,219	583,941	16,522	3,882,951	1,186,258	14,668	16,140	30,036	85,313	140,842	12,099,019

Table 3. Daily Total of Fish Bypassed from Lower Granite Dam, 2005

Page 1.

Daily Number of Fish Bypassed

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
26-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Mar	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
31-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Apr	242	53	548	0	0	0	71	1,842	505	0	18	32	28	32	3,371
7-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Apr	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
9-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Apr	0	0	125	0	0	0	0	101	36	0	0	0	0	0	262
13-Apr	0	0	145	0	0	0	0	281	30	0	0	0	0	0	456
14-Apr	0	0	206	0	0	0	0	176	36	0	0	0	0	0	418
15-Apr	0	0	73	0	0	0	0	58	13	0	0	0	0	0	144
16-Apr	0	0	75	0	0	0	0	64	12	0	0	0	0	0	151
17-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Apr	0	0	73	0	0	0	0	79	20	0	0	0	0	0	172
20-Apr	0	0	257	0	0	0	0	410	67	0	0	0	0	0	734
21-Apr	0	0	167	0	0	0	0	351	24	0	0	0	0	0	542
22-Apr	24	0	181	0	0	0	0	415	55	0	0	0	0	0	675
23-Apr	0	0	74	0	0	0	0	364	22	0	0	0	0	0	460
24-Apr	106	0	0	0	0	0	0	28	29	0	0	0	0	0	163
25-Apr	53	0	0	0	0	0	0	14	13	0	0	0	0	0	80
26-Apr	46	0	52	0	0	0	0	659	24	0	0	0	0	0	781
27-Apr	0	0	114	0	0	0	0	710	18	0	0	0	0	0	842
28-Apr	97	0	177	0	0	0	0	692	38	0	0	0	0	0	1,004
29-Apr	95	0	206	0	0	0	0	743	52	0	0	0	0	0	1,096
30-Apr	40,507	411	6,545	0	0	0	27	31,296	7,318	0	0	520	219	1,205	88,048
1-May	11,179	97	2,522	0	0	0	0	23,173	6,608	0	0	78	39	272	43,968
2-May	14,738	96	2,480	0	0	0	0	7,397	2,219	0	0	34	59	101	27,124
3-May	53,588	297	12,731	0	0	0	99	29,812	9,829	0	107	198	198	297	107,156
4-May	5,896	0	494	0	0	0	0	874	448	0	0	0	0	0	7,712
5-May	6,907	0	262	0	0	0	0	697	344	0	0	0	0	0	8,210
6-May	5,144	0	334	0	0	0	0	772	361	0	0	0	0	0	6,611
7-May	6,210	0	317	0	0	0	0	758	136	0	0	0	0	0	7,421
8-May	51	0	0	0	0	0	0	15	15	0	0	0	0	0	81
9-May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-May	108,038	1,763	21,682	3,111	1,659	3,940	622	271,017	71,770	0	311	2,281	8,295	12,339	506,828
11-May	10,969	417	3,384	381	236	652	54	23,125	8,606	0	54	254	942	1,196	50,270

Table 3. Daily Total of Fish Bypassed from Lower Granite Dam, 2005

Page 2.

Daily Number of Fish Bypassed

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
12-May	1,469	0	70	0	0	0	0	694	219	0	0	0	0	0	2,452
13-May	1,952	0	129	0	0	0	0	691	335	0	0	0	0	0	3,107
14-May	1,680	0	200	0	0	0	0	749	359	0	0	0	0	0	2,988
15-May	3,443	0	0	0	0	0	0	14	13	0	0	0	0	0	3,470
16-May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-May	2,693	0	141	0	0	0	0	492	221	0	0	0	0	0	3,547
18-May	1,798	0	140	0	0	0	0	537	251	0	0	0	0	0	2,726
19-May	1,509	0	145	0	0	0	0	507	250	0	0	0	0	0	2,411
20-May	1,699	0	141	0	0	0	0	506	234	0	0	0	0	0	2,580
21-May	39	0	0	0	0	0	0	349	162	0	0	0	0	0	550
22-May	95	0	0	0	0	0	0	28	30	0	0	0	0	0	153
23-May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-May	89	0	127	0	0	0	0	380	188	0	0	0	0	0	784
25-May	0	0	125	0	0	0	0	351	160	0	0	0	0	0	636
26-May	83	0	125	0	0	0	0	389	188	0	0	0	0	0	785
27-May	0	0	126	0	0	0	0	357	165	0	0	0	0	0	648
28-May	1	0	132	0	0	0	0	353	160	0	0	0	0	0	646
29-May	3	0	0	0	0	0	0	5	1	0	0	0	0	0	9
30-May	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
31-May	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1-Jun	71	0	165	0	0	0	0	142	67	0	0	0	0	0	445
2-Jun	0	0	162	0	0	0	0	198	47	0	0	0	0	0	407
3-Jun	0	0	159	0	0	0	0	298	83	0	0	0	0	0	540
4-Jun	0	0	159	0	0	0	0	252	62	0	0	0	0	0	473
5-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Jun	0	0	135	0	0	0	0	210	16	0	0	0	0	0	361
8-Jun	0	0	120	0	0	0	0	131	42	0	0	0	0	0	293
9-Jun	0	0	121	0	0	0	0	210	49	0	0	0	0	0	380
10-Jun	0	0	121	0	0	0	0	210	52	0	0	0	0	0	383
11-Jun	0	0	121	0	0	0	0	212	51	0	0	0	0	0	384
12-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Jun	0	0	0	0	0	14	0	0	0	0	0	0	0	0	14
18-Jun	0	0	0	13	0	23	0	0	0	0	0	0	0	0	36
19-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Jun	0	0	0	63	0	88	0	0	0	0	0	0	0	0	151
21-Jun	0	0	0	32	0	46	0	0	0	0	0	0	0	0	78
22-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Jun	0	0	0	32	0	40	0	0	0	0	0	0	0	0	72
24-Jun	0	0	0	52	0	97	0	0	0	0	0	0	0	0	149
25-Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Jun	0	0	0	17	0	42	0	0	0	0	0	0	0	0	59
27-Jun	0	0	0	67	0	93	0	0	0	0	0	0	0	0	160
28-Jun	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
29-Jun	0	0	0	29	0	66	0	0	0	0	0	0	0	0	95
30-Jun	0	0	0	18	0	70	0	0	0	0	0	0	0	0	88
1-Jul	0	0	0	31	0	145	0	0	0	0	0	0	0	0	176

Table 3. Daily Total of Fish Bypassed from Lower Granite Dam, 2005

Page 3.

Daily Number of Fish Bypassed

Date	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
2-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Jul	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4-Jul	0	0	0	24	0	114	0	0	0	0	0	0	0	0	138
5-Jul	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
6-Jul	0	0	0	8	0	60	0	0	0	0	0	0	0	0	68
7-Jul	0	0	0	8	0	61	0	0	0	0	0	0	0	0	69
8-Jul	0	0	0	8	0	68	0	0	0	0	0	0	0	0	76
9-Jul	0	0	0	10	0	129	0	0	0	0	0	0	0	0	139
10-Jul	0	0	0	8	0	62	0	0	0	0	0	0	0	0	70
11-Jul	0	0	0	7	0	64	0	0	0	0	0	0	0	0	71
12-Jul	0	0	0	7	1	62	0	0	0	0	0	0	0	0	70
13-Jul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
14-Jul	0	0	0	0	0	71	0	0	0	0	0	0	0	0	71
15-Jul	0	0	0	6	0	81	0	0	0	0	0	0	0	0	87
16-Jul	0	0	0	6	0	67	0	0	0	0	0	0	0	0	73
17-Jul	0	0	0	2	0	70	0	0	0	0	0	0	0	0	72
18-Jul	0	0	0	1	0	55	0	0	0	0	0	0	0	0	56
19-Jul	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
20-Jul	0	0	0	7	0	112	0	0	0	0	0	0	0	0	119
21-Jul	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
22-Jul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
23-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
24-Jul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
25-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-Jul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
29-Jul	0	0	0	0	0	10	0	0	0	0	0	0	0	0	10
30-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
31-Jul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
1-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
3-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
4-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Aug	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
9-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
16-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3. Daily Total of Fish Bypassed from Lower Granite Dam, 2005

Page 4.

Daily Number of Fish Bypassed

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
22-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
27-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3. Daily Total of Fish Bypassed from Lower Granite Dam, 2005

Page 5.

Daily Number of Fish Bypassed

Date	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
12-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Oct	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
20-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	280,515	3,134	56,090	3,951	1,901	6,417	873	404,189	112,056	0	490	3,397	9,780	15,442	898,235

Table 4. Daily Facility Mortality (raceway, NMFS, recovery tank and sample) at Lower Granite Dam, 2005

Page 1.

Daily Number of Mortalities

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
26-Mar	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
27-Mar	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
28-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Mar	2	5	2	0	0	0	0	2	0	0	3	0	0	0	14
30-Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31-Mar	1	3	2	0	0	0	0	0	0	0	1	0	0	0	7
1-Apr	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
2-Apr	0	0	2	0	0	0	0	1	0	0	6	0	0	0	9
3-Apr	1	5	17	0	0	0	0	1	0	0	4	0	0	0	28
4-Apr	0	1	4	0	0	0	1	0	0	0	3	0	0	0	9
5-Apr	1	0	9	0	0	0	0	4	0	0	2	1	0	1	18
6-Apr	2	4	10	0	0	0	4	2	1	0	2	0	1	3	29
7-Apr	2	1	12	0	0	0	0	1	0	0	1	0	0	0	17
8-Apr	5	3	7	0	0	0	0	2	0	0	1	1	0	0	19
9-Apr	15	5	13	0	0	0	0	6	4	0	1	0	0	1	45
10-Apr	8	2	28	0	0	0	0	4	0	0	2	0	1	1	46
11-Apr	18	4	23	0	0	0	1	1	1	0	2	0	0	1	51
12-Apr	52	7	16	0	0	0	0	5	2	0	8	0	0	0	90
13-Apr	21	6	19	0	0	0	6	2	0	0	2	0	0	0	56
14-Apr	31	6	50	0	0	0	1	1	1	0	3	0	1	0	94
15-Apr	34	15	69	0	0	0	1	2	3	0	1	0	2	1	128
16-Apr	22	3	26	0	0	0	0	2	1	0	4	0	0	0	58
17-Apr	17	2	7	0	0	0	0	1	3	0	2	0	0	0	32
18-Apr	9	4	5	0	0	0	0	1	2	0	2	0	0	0	23
19-Apr	13	0	19	0	0	0	0	3	0	0	1	0	0	0	36
20-Apr	48	3	83	0	0	0	0	1	4	0	0	0	0	0	139
21-Apr	58	4	28	0	0	0	1	5	0	0	0	0	0	1	97
22-Apr	59	8	17	0	0	0	0	7	3	0	0	0	0	0	94
23-Apr	55	5	19	0	0	0	0	6	1	0	0	0	0	0	86
24-Apr	89	7	29	0	0	0	0	7	0	0	9	0	0	0	141
25-Apr	37	3	12	0	0	0	0	8	0	0	3	0	0	0	63
26-Apr	14	1	9	0	0	0	0	3	2	0	0	0	0	0	29
27-Apr	44	6	26	0	0	0	0	6	3	0	0	0	0	0	85
28-Apr	220	1	121	0	0	0	2	20	1	0	0	0	0	0	365
29-Apr	1,559	6	499	0	0	0	0	12	0	0	0	12	5	6	2,099
30-Apr	336	3	82	0	0	0	0	15	4	0	0	3	2	3	448
1-May	125	1	25	0	0	0	0	26	5	0	0	0	1	0	183
2-May	349	0	77	0	0	0	0	90	9	0	0	0	0	3	528
3-May	119	2	14	0	0	0	0	17	3	0	1	0	0	0	156
4-May	167	1	31	0	0	0	0	28	5	0	0	0	0	0	232
5-May	119	1	30	0	0	0	0	14	3	0	0	0	0	1	168
6-May	155	1	22	0	0	0	0	34	6	0	0	0	1	3	222
7-May	257	0	70	0	0	0	0	32	7	0	0	1	2	4	373
8-May	284	0	43	1	0	1	2	35	2	0	9	6	2	12	397
9-May	473	0	44	2	0	3	0	279	81	0	7	15	12	24	940
10-May	1,108	11	133	8	0	10	50	45	7	0	11	29	42	109	1,563

Table 4. Daily Facility Mortality (raceway, NMFS, Recovery tank and sample) at Lower Granite Dam, 2005

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Daily Number of Mortalities

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
11-May	3,697	137	797	103	81	181	57	2,956	995	0	64	73	230	407	9,778
12-May	310	1	147	9	5	13	2	64	6	0	5	4	18	36	620
13-May	18	1	3	3	2	3	1	15	2	0	4	0	1	5	58
14-May	21	0	9	6	6	12	0	16	2	1	7	0	4	5	89
15-May	18	0	3	10	3	3	0	13	0	0	8	0	4	8	70
16-May	13	0	4	3	4	4	0	6	2	5	9	1	2	4	57
17-May	13	0	6	3	7	2	0	7	2	0	7	0	1	4	52
18-May	14	1	3	5	0	1	0	7	5	0	11	0	0	1	48
19-May	16	2	7	2	1	0	0	13	0	1	10	0	1	3	56
20-May	22	0	8	3	2	2	0	7	1	4	30	1	7	2	89
21-May	16	1	25	10	6	11	0	31	11	0	12	0	2	3	128
22-May	185	12	94	82	8	41	1	74	73	6	3	6	13	19	617
23-May	17	0	27	16	7	5	0	10	2	4	6	0	3	0	97
24-May	11	5	22	40	7	3	0	6	0	3	4	0	0	0	101
25-May	13	0	6	21	6	4	0	9	1	0	2	0	3	1	66
26-May	12	3	28	36	25	15	0	5	0	0	2	0	4	0	130
27-May	16	4	24	43	31	9	0	2	0	5	8	0	1	0	143
28-May	6	1	12	41	35	19	0	1	1	5	3	0	0	0	124
29-May	4	3	27	52	54	17	1	2	1	2	6	0	1	0	170
30-May	9	4	24	299	277	61	6	5	2	1	3	0	4	3	698
31-May	16	2	57	507	423	86	0	1	1	0	2	0	1	3	1,099
1-Jun	5	3	12	287	186	57	0	2	2	0	0	0	0	0	554
2-Jun	0	7	62	573	326	343	11	4	0	0	0	0	0	0	1,326
3-Jun	2	3	27	1,289	497	734	12	10	3	0	0	1	1	0	2,579
4-Jun	6	5	45	554	274	620	15	2	3	4	3	0	0	0	1,531
5-Jun	5	2	8	151	122	177	0	5	0	0	0	0	0	2	472
6-Jun	2	0	4	84	40	124	5	1	3	0	0	0	0	0	263
7-Jun	0	0	2	99	76	163	0	3	1	1	2	0	0	1	348
8-Jun	4	0	8	132	85	258	6	0	1	0	0	0	0	0	494
9-Jun	6	0	12	313	197	566	2	4	2	2	0	0	1	0	1,105
10-Jun	1	0	2	25	18	50	1	0	0	0	1	0	0	0	98
11-Jun	0	0	0	11	5	24	0	2	0	0	1	0	0	0	43
12-Jun	0	0	0	1	1	13	0	0	0	0	0	0	0	0	15
13-Jun	0	0	1	7	1	9	0	0	0	0	1	0	1	0	20
14-Jun	0	0	1	11	4	22	0	0	0	0	0	0	0	0	38
15-Jun	1	0	0	15	3	8	0	1	1	0	0	0	0	0	29
16-Jun	0	0	3	5	1	10	0	0	2	0	3	0	0	0	24
17-Jun	1	1	0	20	7	38	0	2	2	1	0	0	0	0	72
18-Jun	0	0	7	21	9	40	0	0	0	0	0	0	0	0	77
19-Jun	5	0	5	75	33	137	1	1	3	0	1	0	0	0	261
20-Jun	2	0	4	64	20	113	0	1	0	1	0	0	0	0	205
21-Jun	1	0	0	11	0	16	0	1	1	0	0	0	0	0	30
22-Jun	0	0	1	5	0	3	0	0	0	0	0	0	0	0	9
23-Jun	0	0	0	3	0	7	0	2	2	0	0	0	0	0	14
24-Jun	0	0	0	4	0	3	0	1	0	0	0	0	0	0	8
25-Jun	1	0	0	5	0	7	0	0	0	0	0	0	0	0	13
26-Jun	0	0	0	0	1	2	0	1	0	0	0	0	0	0	4
27-Jun	0	0	0	1	1	2	0	1	0	0	0	0	0	0	5
28-Jun	1	1	1	2	0	4	0	0	0	0	0	0	0	0	9
29-Jun	1	0	1	11	0	37	0	0	0	0	0	0	0	0	50
30-Jun	0	0	0	1	0	4	0	1	0	0	0	0	0	0	6

Table 4. Daily Facility Mortality (raceway, NMFS, Recovery tank and sample) at Lower Granite Dam, 2005

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Daily Number of Mortalities

Date	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
1-Jul	0	0	0	1	1	14	0	0	0	0	0	0	0	0	16
2-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Jul	0	0	1	1	1	6	0	2	0	0	0	0	0	0	11
4-Jul	0	0	0	3	0	10	0	1	0	0	0	0	0	0	14
5-Jul	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7
6-Jul	0	0	1	0	0	22	0	0	0	0	0	0	0	0	23
7-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Jul	0	0	0	0	0	4	0	1	0	0	0	0	0	0	5
9-Jul	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
10-Jul	0	0	0	2	0	19	0	0	0	0	0	0	0	0	21
11-Jul	0	0	0	0	0	1	0	0	1	2	0	0	0	0	4
12-Jul	0	0	0	0	0	12	0	0	0	0	0	0	0	0	12
13-Jul	0	0	0	0	0	9	0	0	0	0	0	0	0	0	9
14-Jul	0	0	0	1	0	5	0	0	0	0	0	0	0	0	6
15-Jul	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
16-Jul	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
17-Jul	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
18-Jul	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7
19-Jul	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
20-Jul	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
21-Jul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
22-Jul	0	0	0	0	0	6	0	0	0	0	0	0	0	0	6
23-Jul	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
24-Jul	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7
25-Jul	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
26-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
28-Jul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
29-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Jul	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
31-Jul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
1-Aug	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
2-Aug	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
3-Aug	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
5-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
6-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
7-Aug	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
8-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
12-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
14-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
15-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4. Daily Facility Mortality (raceway, NMFS, Recovery tank and sample) at Lower Granite Dam, 2005

Page 4.

Daily Number of Mortalities

Date	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
21-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
22-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
23-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Aug	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
28-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Sep	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
3-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
4-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
5-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
8-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Sep	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
11-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
12-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
14-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
15-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
18-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
19-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
28-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-Sep	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
1-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-Oct	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
4-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-Oct	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
6-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-Oct	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
8-Oct	2	0	0	0	0	3	0	0	0	0	0	0	0	0	5
9-Oct	2	0	0	0	0	1	0	0	0	0	0	0	0	0	3
10-Oct	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2

Table 4. Daily Facility Mortality (raceway, NMFS, Recovery tank and sample) at Lower Granite Dam, 2005

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Daily Number of Mortalities

	Yearling Chinook			Subyearling Chinook				Steelhead		Sockeye/Kokanee		Coho			Daily
Date	Clipped	No Clip, cwt	No Clip	Clipped	No Clip,cwt	No Clip	Fry	Clipped	No Clip	Clipped	No Clip	Clipped	No Clip,cwt	No Clip	Total
11-Oct	1	0	0	0	0	5	0	0	0	0	0	0	0	0	6
12-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Oct	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15-Oct	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
16-Oct	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
17-Oct	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
18-Oct	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
19-Oct	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
20-Oct	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
21-Oct	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
22-Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-Oct	0	0	0	0	1	3	0	0	0	0	0	0	0	0	4
24-Oct	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2
25-Oct	1	0	0	0	0	3	0	0	0	0	0	0	0	0	4
26-Oct	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
27-Oct	3	0	0	0	0	6	0	0	0	0	0	0	0	0	9
28-Oct	4	0	0	0	0	5	0	0	0	0	0	0	0	0	9
29-Oct	5	0	0	0	0	3	0	0	0	0	0	0	0	0	8
30-Oct	4	0	0	0	0	1	0	0	0	0	0	0	0	0	5
31-Oct	6	0	1	0	0	3	0	0	0	0	0	0	0	0	10
Total	10,454	339	3,298	5,093	2,901	4,340	190	4,031	1,301	48	310	154	375	681	33,515

Table 5. Daily Descaling in Percent at Lower Granite Dam and River Conditions, 2005

Page 1.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	Daily	River Conditions		
Date	Clipped	No clip	Clipped	No clip	Clipped	No clip	Clipped	No clip	All	Total	Total Q (kcfs)	Spill (kcfs)	Temp. (C)
26-Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.17	0	7.1
27-Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.05	23.48	0	7.5
28-Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.53	0	7.6
29-Mar	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	41.53	0	7.6
30-Mar	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	47.15	0	7.5
31-Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.5	0	7.2
1-Apr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.19	0	7.2
2-Apr	0.00	0.06	0.00	0.00	0.00	0.02	0.00	0.00	0.50	0.01	37.64	0	7.3
3-Apr	0.09	0.04	0.00	0.00	0.01	0.02	0.00	0.00	0.33	0.02	37.51	0	7.5
4-Apr	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	36.58	0	7.5
5-Apr	0.00	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	38.83	0	7.7
6-Apr	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.01	42.02	0	7.9
7-Apr	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	37.94	0	8.5
8-Apr	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	37.53	0	8.4
9-Apr	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	38.95	0	8.7
10-Apr	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.02	39.06	0	8.5
11-Apr	0.01	0.00	0.00	0.00	0.02	0.01	0.00	0.50	0.00	0.01	42.52	0	9.0
12-Apr	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	45.7	0	9.7
13-Apr	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02	36.94	0	9.8
14-Apr	0.02	0.01	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.01	36.7	0	9.5
15-Apr	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	40.58	0	9.3
16-Apr	0.01	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	38.07	0	9.5
17-Apr	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.33	0.00	0.01	36.33	0	9.4
18-Apr	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.15	0	9.0
19-Apr	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.25	0.00	0.01	44.87	0	8.9
20-Apr	0.01	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.33	0.01	44.52	0	9.0
21-Apr	0.02	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.01	41.63	0	9.8
22-Apr	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	40	0	10.1
23-Apr	0.02	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	41.34	0	10.3
24-Apr	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.17	0.01	40.25	0	10.1
25-Apr	0.02	0.02	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.02	40.82	0	10.0
26-Apr	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	48.85	0	10.2
27-Apr	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	49.15	0	12.1
28-Apr	0.01	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.01	53.56	0	11.5
29-Apr	0.01	0.02	0.00	0.00	0.02	0.04	0.00	0.00	0.04	0.01	54.28	0	11.8
30-Apr	0.03	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.04	0.02	54.85	1.33	12.2
1-May	0.04	0.04	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.03	53.9	1.37	12.0
2-May	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	50.83	0.26	11.6
3-May	0.02	0.02	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.02	45.83	3.57	11.0
4-May	0.01	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.01	45.82	0	11.0
5-May	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	54.53	0	11.4
6-May	0.00	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.01	62.2	0	11.5
7-May	0.03	0.02	0.00	0.00	0.03	0.02	0.00	0.00	0.02	0.03	71.64	0	11.8
8-May	0.02	0.01	0.00	0.00	0.03	0.04	0.00	0.00	0.01	0.02	80.41	3.11	11.6
9-May	0.05	0.02	0.00	0.00	0.05	0.04	0.00	0.00	0.06	0.05	80.45	0	11.4
10-May	0.06	0.03	0.00	0.00	0.04	0.02	0.00	0.00	0.05	0.04	80.62	6.23	11.3
11-May	0.05	0.02	0.00	0.00	0.06	0.01	0.00	0.33	0.01	0.04	94.64	9.27	11.0

Table 5. Daily Descaling in Percent at Lower Granite Dam, 2005

Page 2.

River Conditions

Date	Yearling Chinook Clipped	Yearling Chinook No clip	Subyearling Chinook Clipped	Subyearling Chinook No clip	Steelhead Clipped	Steelhead No clip	Sockeye/Kokanee Clipped	Sockeye/Kokanee No clip	Coho All	Daily Total	Total Q (kcfs)	Spill (kcfs)	Temp. (C)
12-May	0.02	0.01	0.00	0.00	0.04	0.02	0.00	0.00	0.00	0.03	98.13	12.62	10.7
13-May	0.02	0.00	0.00	0.00	0.06	0.03	0.00	0.00	0.00	0.04	86.87	3.28	10.6
14-May	0.02	0.02	0.00	0.00	0.06	0.04	0.00	0.00	0.04	0.05	84.6	0	11.0
15-May	0.02	0.00	0.00	0.00	0.06	0.04	0.00	0.33	0.03	0.04	84.42	0	11.5
16-May	0.04	0.04	0.00	0.00	0.09	0.09	0.00	0.20	0.05	0.07	83.89	0.04	11.8
17-May	0.03	0.05	0.00	0.00	0.02	0.04	0.00	0.00	0.00	0.02	98.9	14.38	11.9
18-May	0.00	0.03	0.00	0.00	0.04	0.03	0.00	0.00	0.00	0.03	130.25	43.69	11.7
19-May	0.02	0.03	0.03	0.02	0.05	0.04	0.52	0.11	0.02	0.05	117.43	31.96	11.3
20-May	0.05	0.03	0.00	0.00	0.06	0.06	0.04	0.25	0.06	0.06	123.9	38.07	11.2
21-May	0.02	0.02	0.00	0.00	0.11	0.02	0.00	0.00	0.00	0.05	139.47	53	11.5
22-May	0.09	0.03	0.00	0.00	0.08	0.04	0.05	0.11	0.03	0.06	133.2	47.14	11.5
23-May	0.05	0.03	0.00	0.02	0.10	0.06	0.00	0.20	0.04	0.07	121.24	35.52	11.8
24-May	0.03	0.00	0.00	0.02	0.04	0.02	0.00	0.50	0.00	0.02	124.92	39.22	12.0
25-May	0.06	0.01	0.00	0.03	0.01	0.01	0.00	0.00	0.14	0.02	108.7	23.15	12.0
26-May	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.02	102.48	17.07	12.2
27-May	0.04	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.01	95.8	12.01	12.6
28-May	0.00	0.01	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.02	87.11	1.74	13.0
29-May	0.06	0.01	0.00	0.01	0.06	0.05	0.00	0.00	0.00	0.03	87.66	2.68	13.5
30-May	0.04	0.00	0.00	0.01	0.08	0.00	0.00	0.00	0.00	0.02	83.66	0.00	14.2
31-May	0.02	0.00	0.00	0.01	0.03	0.03	0.00	0.00	0.00	0.01	79.78	0.00	15.3
1-Jun	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.37	4.97	15.2
2-Jun	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	90.03	11.62	15.0
3-Jun	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	89.43	7.67	15.0
4-Jun	0.00	0.00	0.00	0.00	0.04	0.07	0.00	0.00	0.00	0.01	82.05	1.48	14.0
5-Jun	0.00	0.00	0.00	0.01	0.05	0.05	0.00	0.00	0.00	0.01	75.35	0	13.6
6-Jun	0.00	0.00	0.01	0.00	0.05	0.08	0.00	0.00	0.00	0.01	73.98	0.16	13.3
7-Jun	0.00	0.00	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	73.8	15.08	13.3
8-Jun	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	72.83	12.55	13.5
9-Jun	0.00	0.06	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.01	60.96	1.5	13.6
10-Jun	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	56.52	1.42	13.9
11-Jun	0.00	0.00	0.00	0.01	0.00	0.17	0.00	0.00	0.00	0.01	53.44	0	14.2
12-Jun	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	50.11	0	14.0
13-Jun	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.01	51.46	0	14.3
14-Jun	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.91	0	14.3
15-Jun	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49	0	14.1
16-Jun	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.8	0	14.3
17-Jun	0.00	0.00	0.00	0.01	0.00	0.04	0.00	0.00	0.00	0.00	46.78	0	15.0
18-Jun	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	46.7	0	15.0
19-Jun	0.00	0.00	0.01	0.01	0.03	0.00	0.00	0.00	0.00	0.01	49.82	0	15.0
20-Jun	0.00	0.00	0.00	0.01	0.11	0.04	0.00	0.00	0.14	0.01	54.91	11.47	15.5
21-Jun	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.35	38.38	16.1
22-Jun	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.63	18.1	16.3
23-Jun	0.00	1.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.01	49.91	18.95	16.1
24-Jun	0.50	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	54.02	39.18	17.3
25-Jun	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	49.36	36.6	18.0
26-Jun	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.23	18.7	18.3
27-Jun	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.01	42.44	29.89	18.3
28-Jun	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	43.19	18.69	19.0
29-Jun	0.00	0.08	0.01	0.01	0.05	0.11	0.00	0.00	0.00	0.01	53.79	19.56	18.9
30-Jun	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.54	39.01	19.3

Table 5. Daily Descaling in Percent at Lower Granite Dam, 2005

Date	Yearling Chinook Clipped	Yearling Chinook No clip	Subyearling Chinook Clipped	Subyearling Chinook No clip	Steelhead Clipped	Steelhead No clip	Sockeye/Kokanee Clipped	Sockeye/Kokanee No clip	Coho All	Daily Total	River Conditions Total Q (kcfs)	Spill (kcfs)	Temp. (C)
1-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	54.87	39.75	18.9

2-Jul	0.00%	10.00%	0.00%	0.69%	6.45%	0.00%	0.00%	0.00%	0.00%	1.20%	48.93	19.1	18.5
3-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	48.93	19.1	18.5
4-Jul	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	43.87	31.92	18.7
5-Jul	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.48	18.35	19.1
6-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	38.94	18.78	19.8
7-Jul	0.00	0.00	0.00	0.02	0.33	0.00	0.00	0.00	0.00	0.02	45.1	32.59	19.5
8-Jul	0.00	0.00	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.01	44.7	19.02	19.2
9-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.46	34.78	19.7
10-Jul	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.01	45.16	32.82	19.7
11-Jul	0.00	0.00	0.14	0.01	0.00	0.00	0.00	0.00	0.00	0.01	37.79	18.27	20.0
12-Jul	0.00	0.50	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.01	34.28	18.58	20.0
13-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.45	25.52	20.2
14-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	39.82	27.81	19.8
15-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	38.17	18.89	19.3
16-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	39.6	25.72	20.2
17-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	35.4	18.9	19.8
18-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.98	19.14	19.5
19-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.38	23.26	19.9
20-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.68	18.43	20.0
21-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	39.83	27.37	19.6
22-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.46	18.6	19.7
23-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.65	26.7	20.2
24-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	32.64	20.51	19.3
25-Jul	0.00	0.00	0.00	0.02	0.50	0.00	0.00	0.00	0.00	0.03	34.85	22.54	19.4
26-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	28.56	16.36	19.1
27-Jul	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	28.48	16.24	19.1
28-Jul	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	32.43	20.43	19.9
29-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.39	14.66	20.1
30-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.47	20.81	19.6
31-Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.56	22.66	18.6
1-Aug	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	35.13	23.23	19.5
2-Aug	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	26.98	14.83	19.1
3-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.47	20.62	18.7
4-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.58	20.1	19.0
5-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.68	14.74	19.7
6-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.51	14.44	19.8
7-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.85	19.5	19.8
8-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.51	20.25	19.5
9-Aug	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	31.87	19.63	19.2
10-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.01	27.56	16.53	19.9
11-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.7	16.76	19.5
12-Aug	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	28.49	16.46	19.0
13-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.24	12.33	19.5
14-Aug	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	23.61	11.53	19.3
15-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.49	11.49	19.0
16-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.45	11.55	19.6
17-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.02	22.88	10.72	19.7
18-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.74	9.99	19.0
19-Aug	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	22.75	13.86	19.3

Table 5. Daily Descaling in Percent at Lower Granite Dam, 2005

Page 4.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	Daily	River Conditions		
Date	Clipped	No clip	Clipped	No clip	Clipped	No clip	Clipped	No clip	All	Total	Total Q (kcfs)	Spill (kcfs)	Temp. (C)
20-Aug	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	22	10.09	19.0
21-Aug	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	17.65	8.1	19.2
22-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.98	8.39	18.9
23-Aug	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	19.9	8.49	18.5

24-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.43	7.58	18.2
25-Aug	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03	18.66	6.8	18.7
26-Aug	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	20.3	8.55	19.3
27-Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.48	8.4	19.1
28-Aug	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03	20.55	8.4	19.1
29-Aug	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	20.59	8.74	18.9
30-Aug	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	21.8	16.28	18.4
31-Aug	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04	20.55	12.23	18.7
1-Sep	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03	19.55	9	19.2
2-Sep	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.06	18.77	3.54	19.4
3-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.06	0	19.0
4-Sep	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	22.58	0	18.6
5-Sep	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03	17.64	0	18.5
6-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.59	0	18.7
7-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.9	0	18.8
8-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.9	0	18.7
9-Sep	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.05	21.18	0	18.5
10-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.37	0	18.1
11-Sep	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04	20.64	0	18.2
12-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.87	0	18.2
13-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.02	19.33	0	18.3
14-Sep	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	21.16	0	18.1
15-Sep	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.06	15.2	0	17.8
16-Sep	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	14.16	0	17.3
17-Sep	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.17	14.61	0	17.0
18-Sep	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.25	15.5	0	17.0
19-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.54	0	17.5
20-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.88	0	16.7
21-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.39	0	16.9
22-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.5	0	17.3
23-Sep	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.44	19.27	0	16.8
24-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.19	0	16.8
25-Sep	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.06	16.36	0	16.9
26-Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.71	0	17.4
27-Sep	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.20	18.71	0	17.3
28-Sep	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.14	18.13	0	17.2
29-Sep	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.50	0.00	0.12	17.63	0	17.2
30-Sep	0.00	0.00	0.00	0.11	0.00	0.00	0.00	1.00	0.00	0.20	14.6	0	17.2
1-Oct	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.14	14.51	0	16.9
2-Oct	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.17	14.76	0	16.7
3-Oct	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.04	0	16.7
4-Oct	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.09	22.58	0	16.5
5-Oct	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.04	20.38	0	16.4
6-Oct	0.06	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.08	21.65	0	16.1
7-Oct	0.09	0.00	0.50	0.07	0.00	0.00	0.00	0.00	0.00	0.08	17.23	0	16.1
8-Oct	0.03	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.03	21.98	0	15.9

Table 5. Daily Descaling in Percent at Lower Granite Dam, 2005

Page 5.

	Yearling Chinook		Subyearling Chinook		Steelhead		Sockeye/Kokanee		Coho	Daily	River Conditions		
Date	Clipped	No clip	Clipped	No clip	Clipped	No clip	Clipped	No clip	All	Total	Total Q (kcfs)	Spill (kcfs)	Temp. (C)
9-Oct	0.03	0.50	0.00	0.04	0.00	0.00	0.00	0.50	0.00	0.04	22.77	0	15.7
10-Oct	0.03	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.04	15.02	0	15.2
11-Oct	0.04	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03	18.54	0	15.4
12-Oct	0.08	0.33	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.09	14.85	0	15.3
13-Oct	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03	13.75	0	15.3
14-Oct	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.04	17.33	0	15.2
15-Oct	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	16.59	0	15.1

16-Oct	0.06	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	13.48	0	14.8
17-Oct	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	16.77	0	15.0
18-Oct	0.03	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	17.84	0	14.9
19-Oct	0.13	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.04	14.78	0	14.8
20-Oct	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	14.48	0	14.5
21-Oct	0.05	0.33	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	15.62	0	14.6
22-Oct	0.00	0.13	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.03	20.4	0.09	14.8
23-Oct	0.04	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.03	13.79	0	14.8
24-Oct	0.09	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.07	14.85	0	14.5
25-Oct	0.13	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.08	15.76	0	14.6
26-Oct	0.13	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.07	16.22	0	14.3
27-Oct	0.10	0.17	0.00	0.10	0.00	0.00	0.00	0.50	0.00	0.10	13.86	0	14.2
28-Oct	0.06	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	16.5	0	14.1
29-Oct	0.08	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.04	15.37	0	14.0
30-Oct	0.11	0.10	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.09	15.57	0	13.8
31-Oct	0.13	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.08	17.17	0	13.7

Appendix 2

Pit-tag Tables

Table 1. Hatchery Yearling Spring Chinook PIT-tag detections by tag site detected weekly at LGR, 2005.

Org.	Tag Site	Release Site	Release Dates	WEEK 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	Total
FPC, IDFG	Rapid R. Hat.	Various	3/15-4/19/05	15	168	503	2,652	9,432	13,352	421	45	2	0	0	0	0	0	0	0	0	0	0	0	0	26,590
USFWS	Dworshak NFH	N.Fk. Dworshak R.	4/4-4/6/05	0	33	554	2,385	8,673	12,664	687	217	104	96	20	10	0	0	0	0	0	0	0	0	0	25,443
FPC, NPT, ODFW	Lookingglass Hat.	Various	3/11-4/4/05	17	173	530	2,319	6,506	4,874	163	52	56	17	2	0	0	0	0	0	0	0	0	0	0	14,709
NPT	Nez Perce Tribal Hatchery	Various	4/28/04-5/7/05	0	2	2	8	17	45	9	64	840	247	73	80	0	0	0	0	0	0	0	0	0	1,387
IDFG, NPT	Clearwater Hat.	Various	8/7/02-3/29/05	0	0	30	86	181	59	8	4	3	2	0	0	0	0	0	0	0	0	0	0	0	373
USFWS	Kooskia National Fish Hat.	Clear Cr.	4/1/05	0	0	13	66	150	110	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	341
NPT	Meadow Cr.	Meadow Cr.	9/20/04-6/7/05	1	1	0	8	16	31	22	41	862	296	75	73	2	0	0	0	0	0	0	0	0	1,428
ODFW	Grande Ronde River Trap	Grande Ronde River Trap	3/15-5/20/05	6	28	62	172	265	175	25	4	0	0	0	0	0	0	0	0	0	0	0	0	0	737
ODFW	Lostine R.	Lostine R.	3/12-5/27/05	0	1	4	31	65	53	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	158
IDFG	Sawtooth Hat.	Sawtooth Hat.	3/31/2005	0	0	0	1	23	52	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	79
NPT	Clearwater R.	Newsome Cr.	4/27/2004	1	11	15	18	20	7	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	76
IDFG	Powell Rearing Pond	Powell Rearing Pond	9/25/04-9/16/05	5	5	13	13	13	12	2	1	0	1	0	1	0	0	0	0	0	0	0	0	7	80
USGS	Lower Granite Dam	Snake R. - Pal R. to Clw R.	4/21-5/11/05	0	0	0	0	48	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
ODFW	Grande Ronde R.-Wallowa R. to hdwts	Grande Ronde R.-Wallowa R. to hdwts	3/15-3/29/05	0	1	6	12	21	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
ODFW	Catherine Cr.	Catherine Cr.	3/15-5/31/05	0	1	5	8	11	14	2	2	3	2	1	0	0	0	0	0	0	0	0	0	0	49
NPT	Newsome Cr.	Newsome Cr.	3/25-5/17/05	0	0	0	3	3	8	1	3	3	0	0	0	0	0	0	0	0	0	0	0	0	21
NPT	Lolo Cr.	Lolo Cr.	4/19-5/21/05	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3
USFWS	Clear Cr.	Clear Cr.	4/1/2005	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
																								Total	71,577

Table 2. Wild Yearling Chinook PIT-tag detections by tag site detected weekly at LGR, 2005.

Org.	Tag Site	Release Site	Release Dates	WEEK 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	Total
IDFG	Sawtooth Trap	Sawtooth Trap	5/28/04-6/5/05	0	3	8	62	84	221	227	324	156	74	32	25	1	0	0	0	0	0	0	0	0	1,217
ODFW	Grande Ronde River Trap	Grande Ronde River Trap	3/8-5/24/05	12	50	124	168	179	260	110	26	9	0	0	0	0	0	0	0	0	0	0	0	0	938
NPT	Lolo Cr.	Lolo Cr.	9/21/04-5/26/05	26	105	143	165	123	168	38	25	25	18	3	4	0	0	0	0	0	0	0	0	0	843
NPT	Meadow Cr.	Meadow Cr.	9/16/04-6/4/05	1	38	151	262	187	125	19	16	8	6	3	5	0	0	0	0	0	0	0	0	0	821
IDFG	American R.	American R.	5/12/03-6/3/05	0	8	17	50	31	81	46	53	111	140	91	55	1	0	0	0	0	0	0	0	0	684
NPT	Newsome Cr.	Newsome Cr.	9/16/04-6/3/05	3	22	67	132	62	107	35	13	42	56	24	23	0	0	0	0	0	0	0	0	0	586
IDFG	Red R. Trap	Red R. Trap	4/30/50-6/4/06	0	3	10	33	20	43	16	26	65	119	102	109	0	2	0	0	0	0	0	0	0	548
ODFW	Lostine R.	Lostine R.	8/10/04-5/27/05	3	24	59	55	72	118	17	16	17	10	2	5	0	0	0	0	0	0	0	0	0	398
IDFG	Crooked R. Trap	Crooked R. Trap	3/23/04-6/6/05	0	10	13	35	48	46	15	18	30	45	54	47	2	3	0	0	0	0	0	0	0	366
IDFG	Lemhi R. Weir	Lemhi R. Weir	8/28/04-5/29/05	1	14	41	109	102	62	21	4	1	1	1	0	0	0	0	0	0	0	0	0	0	357
ODFW	Minam R.	Minam R.	8/24/04-5/15/05	2	24	49	58	51	105	23	10	14	7	1	1	0	0	0	0	0	0	0	0	0	345
IDFG	Crooked Fk. Cr. Trap	Crooked Fk. Cr. Trap	7/28/04-5/30/05	0	9	19	50	48	93	26	14	15	33	21	7	0	0	0	0	0	0	0	0	0	335
ODFW	Grande Ronde R. - Wallowa R. to headwaters	Grande Ronde R. - Wallowa R. to headwaters	12/3/03-5/13/05	2	14	24	24	35	76	34	38	50	17	5	4	0	0	0	0	0	0	0	0	0	323
IDFG	Marsh Cr. Trap	Marsh Cr. Trap	6/5/04-5/24/05	0	1	4	26	64	118	19	24	21	17	4	6	0	0	0	0	0	0	0	0	0	304
IDFG	Red R. Trap	Red R.	9/20-10/21/04	2	7	27	42	48	58	14	6	3	14	5	2	0	0	0	0	0	0	0	0	0	228
SHOBAN	East Fk. Salmon R. Trap	East Fk. Salmon R. Trap	7/26/04-5/10/05	0	0	5	6	14	53	31	23	19	16	5	4	0	0	0	0	0	0	0	0	0	176
ODFW	Catherine Cr.	Catherine Cr.	8/2/04-5/21/05	0	1	11	11	12	32	14	18	37	28	7	3	0	0	0	0	0	0	0	0	0	174
IDFG	Colt Kill Cr.	Colt Kill Cr.	10/24/03-5/3/05	1	2	11	23	26	52	11	8	12	15	6	6	0	0	0	0	0	0	0	0	0	173
NMFS	Big Creek, M.F. Salmon River	Big Creek, M.F.Salmon River	8/11-8/18/04	0	0	2	22	26	52	4	9	8	2	0	0	0	0	0	0	0	0	0	0	0	125
NMFS	Herd Cr.	Herd Cr.	8/9-8/10/04	0	0	2	15	22	63	12	5	4	1	1	0	0	0	0	0	0	0	0	0	0	125
NMFS	Camas Cr.	Camas Cr.	8/6-8/7/04	0	1	0	10	27	50	9	11	7	5	1	1	0	0	0	0	0	0	0	0	0	122
NMFS	Loon Cr.	Loon Cr.	8/6-8/7/04	0	0	1	5	15	55	13	8	3	2	0	0	0	0	0	0	0	0	0	0	0	102
NMFS	Valley Cr.	Valley Cr.	8/2-8/5/04	0	0	0	14	15	26	4	9	8	13	4	2	0	0	0	0	0	0	0	0	0	95
NMFS	West Fk. Chamberlain Cr.	West Fk. Chamberlain Cr.	8/1-8/18/04	0	0	1	34	30	22	1	3	3	0	0	0	0	0	0	0	0	0	0	0	0	94
ODFW	Imnaha R.	Imnaha R.	9/1-9/2/04	1	4	13	13	25	23	2	2	3	3	1	0	0	0	0	0	0	0	0	0	0	90
NMFS	Marsh Cr.	Marsh Cr.	7/28-7/29/04	0	0	0	9	25	38	6	3	0	1	0	0	0	0	0	0	0	0	0	0	0	82
IDFG	Rapid R. Trap	Rapid R. Trap	9/14/04-5/6/05	1	7	8	22	16	20	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	80
SHOBAN	W. Fk. Yankee Fk.	W. Fk. Yankee Fk.	8/30/04-5/9/05	0	0	0	1	1	3	0	4	18	15	8	10	0	0	0	0	0	0	0	0	0	60
NMFS	Elk Cr.	Elk Cr.	7/23-7/27/04	0	0	1	7	13	15	5	6	8	1	1	0	0	0	0	0	0	0	0	0	0	57
NMFS	Sulfer Cr.	Sulfer Cr.	7/28-7/29/04	0	0	0	5	18	26	2	4	1	1	0	0	0	0	0	0	0	0	0	0	0	57
NMFS	Capehorn Cr.	Capehorn Cr.	7/30-7/31/04	0	1	1	4	16	19	4	6	3	0	0	0	0	0	0	0	0	0	0	0	0	54
NPT	Papoose Cr.	Papoose Cr.	7/30/2004	0	1	0	5	9	12	3	2	2	4	3	1	0	0	0	0	0	0	0	0	0	42
IDFG	Lemhi R.	Lemhi R.	6/26/04-5/17/05	0	1	6	14	9	2	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	40
NMFS	Bear Valley Cr.	Bear Valley Cr.	7/21-7/23/04	0	0	0	4	17	8	3	2	2	2	1	0	0	0	0	0	0	0	0	0	0	39
USFWS	Clear Cr.	Clear Cr.	10/29/04-5/1/05	1	0	4	11	4	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	23
IDFG	Crooked R. Trap	Crooked R.	9/20-9/21/04	0	1	3	1	2	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14
NMFS	Chamberlain Cr.	Chamberlain Cr.	8/18/2004	0	0	0	3	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
USFWS	Peshastin River	Peshastin River	8/8/2004	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
																								Total	10,129

Table 3. Hatchery Yearling Summer Chinook PIT-tag detections by tag site detected weekly at LGR, 2005.

Org.	Tag Site	Release Site	Release Dates	WEEK 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	Total
NPT,FPC	McCall Hat.	Various	3/14-3/18/05	0	3	99	1,596	6,979	19,574	2,095	1,040	329	90	29	30	0	0	0	0	0	0	0	0	0	31,864
IDFG	Pahsimeroi Pond	Pahsimeroi Pond	3/22/2005	0	0	10	44	33	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92
IDFG	Salmon Trap	Salmon Trap	4/1-5/16/05	0	0	0	1	3	22	13	5	0	0	0	0	0	0	0	0	0	0	0	0	0	44
IDFG	Snake Trap	Snake Trap	5/8/2005	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
NPT	Imnaha Trap	Imnaha Trap	4/1-5/27/05	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
																								Total	32,003

Table 4. Wild Yearling Summer Chinook PIT-tag detections by tag site detected weekly at LGR, 2005.

Org.	Tag Site	Release Site	Release Dates	WEEK 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	Total
NPT	Imnaha Trap	Imnaha R. and Trap	10/18/04-6/18/05	75	436	643	588	501	399	22	24	58	61	75	55	1	1	0	0	0	0	0	0	0	2,939
NPT	Johnson Cr. Trap	Johnson Cr. and Trap	10/27/00-6/18/05	2	25	72	269	513	889	158	220	179	70	41	39	0	0	0	0	0	0	0	0	0	2,477
IDFG	Pahsimeroi R. Trap	Pahsimeroi R. Trap	4/13/03-6/22/05	0	15	47	236	247	223	44	9	54	87	64	68	5	5	0	0	0	0	0	0	0	1,104
IDFG,NMFS	S. Fk. Salmon R. and Trap	S. Fk. Salmon R. and Trap	6/19/94-5/15/05	0	3	14	59	97	221	41	92	189	64	36	56	0	0	0	0	0	0	0	0	0	872
NPT,NMFS	Secesh R.	Secesh R.	8/29/03-5/25/05	3	18	34	120	102	75	12	13	49	18	9	10	0	0	0	0	0	0	0	0	0	463
NPT	Lake Cr.	Lake Cr.	4/18/04-5/20/05	0	5	21	85	53	60	10	12	40	16	8	7	1	0	0	0	0	0	0	0	0	318
IDFG	Lick Cr.	Lick Cr.	8/22-10/23/04	0	2	4	14	6	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
NMFS	Lake Cr.	Lake Cr.	8/27/2004	0	0	6	11	6	5	0	2	1	1	0	1	0	0	0	0	0	0	0	0	0	33
SHOBAN	East Fk. Salmon R. Trap	East Fk. Salmon R. Trap	8/17/04-4/29/05	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
																								Total	8,246

Table 5. Hatchery yearling fall chinook PIT-tag detections by release site detected weekly at LGR, 2005.

				WEEK																				
Organization	Tag Site	Release Site	Release Dates	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	Total
NPT	Big Canyon Cr. Acc. Fac.	Big Canyon Cr. Acc. Fac.	4/4-4/5/05	1	342	1,283	815	199	46	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2,689
NPT	Pittsburg Landing Acc. Fac.	Pittsburg Landing Acc. Fac.	4/13-4/14/05	0	0	0	0	420	76	3	5	7	5	2	0	0	0	0	0	0	0	0	0	0	518
																								Total	3,207

Table 6. Wild Sub-Yearling Chinook PIT-tag detections by release site detected weekly at LGR, 2005.

				WEEK																									
Organization	Tag Site	Release Site	Release Dates	1-6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
NPT	Clearwater R.	Clearwater R.	6/16-7/22/04	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
ODFW	Grande Ronde River Trap	Grande Ronde River Trap	5/10-5/24/05	0	40	87	65	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	196
NPT	Clearwater R.	Clearwater R.	5/3-7/25/05	1	0	0	0	0	5	2	1	0	0	3	2	1	1	2	0	0	1	0	0	0	1	8	7	9	4	48
																												Total		263

Table 7. Hatchery Sub-Yearling Chinook PIT-tag detections by release site detected weekly at LGR, 2005.

Org	Tag Site	Release Site	Release Dates	WEEK																											Total
				1-6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
NMFS	Dworshak NFH	Snake R. - Clearwater R. to Salmon R.	5/16-5/27/05	0	6	521	1,800	6,691	4,921	3,850	518	106	65	13	4	3	2	0	0	0	1	0	1	1	0	3	3	1	2	18,512
NMFS	Dworshak NFH	Big Canyon Acc. Fac.	6/21-7/8/05	0	0	0	0	0	0	0	0	0	28	21	33	22	43	24	22	22	14	20	7	19	17	165	210	235	170	1,072
NPT	Capt. John Rapids Acc. Pond	Capt. John Acc. Fac.	5/30/05	0	0	0	315	760	223	36	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,336
NPT	Pittsburg Landing Acc. Fac.	Pittsburg Landing Acc. Fac.	5/26/05	0	0	0	711	236	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	957
NPT	Big Canyon Cr. Acc. Fac.	Big Canyon Acc. Fac.	5/31/05	0	0	0	0	388	270	76	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	752
IDFG	Hells Canyon Dam	Snake R. - Salmon R. to Hells Canyon Dam	4/28/05	0	251	107	1,497	199	33	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,092
WDFW	Lyons Ferry Hat.	Snake R.	5/26/05	0	0	0	90	475	489	242	6	3	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1,309
IDFG	Hells Canyon Dam			481	9	7	77	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	584
USFWS	Clearwater R. to Salmon R.	Snake R. - Clearwater R. to Salmon R.	5/24/05	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
																												Total		26,615

Table 7. Hatchery Steelhead PIT-tag detections, by tag site detected weekly at LGR, 2005.

				WEEK																			
Organization	Tag Site	Release Sites	Release Dates	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	Total
IDFG, USFWS	Clearwater Hat.	Various	4/26/04-4/20/05	0	1	17	256	1289	2,779	1048	300	53	46	3	3	0	0	0	0	0	0	0	0	0	5,795
ODFW	Irrigon Hat.	Various	4/12/04-5/3/05	1	0	128	457	592	2,792	337	100	71	14	10	7	0	0	0	0	0	0	0	0	0	4,509
NPT	Imnaha Trap	Imnaha Trap	4/14-5/31/05	0	0	64	383	540	1,232	394	116	394	112	9	21	0	0	0	0	0	0	0	0	0	3,265
IDFG	Snake Trap	Snake Trap	4/12/04-6/2/05	105	101	115	305	503	594	395	143	8	4	0	0	0	0	0	0	0	0	0	0	0	2,273
IDFG	Magic Valley Hat.	Various	3/15-4/26/05	5	2	11	141	241	774	264	105	43	14	5	3	0	0	0	0	0	0	0	0	0	1,608
IDFG	Salmon Trap	Salmon Trap	3/21-5/17/05	7	17	62	151	241	689	273	55	15	0	1	0	0	0	0	0	0	0	0	0	0	1,511
USFWS	Dworshak NFH	NF Clearwater and Clearwater R.	4/18-4/22/05	0	0	0	230	342	284	24	6	2	8	2	2	0	0	0	0	0	0	0	0	0	900
ODFW	Grande Ronde River Trap	Grande Ronde River Trap	5/24/04-5/24/05	32	81	43	58	161	250	160	39	15	0	0	0	0	0	0	0	0	0	0	0	0	839
IDFG	Hagerman NFH	Various	4/4-5/4/05	0	5	42	93	127	169	199	68	28	4	3	1	0	0	0	0	0	0	0	0	0	739
IDFG	Niagara Springs Hat.	Various	3/24-4/2/05	5	14	31	48	80	224	81	40	31	10	6	0	0	0	0	0	0	0	0	0	0	570
IDFG	Squaw Cr. Acc. Pond	Squaw Cr. Acc. Pond	4/28-5/5/05	0	0	0	0	0	0	132	91	34	16	4	1	0	0	0	0	0	0	0	0	0	278
IDFG	Clearwater Trap	Clearwater Trap	5/1/05	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
IDFG	Squaw Cr. Acc. Pond			0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
																								Total	22,289

Table 8. Wild Steelhead PIT-tag detections, by tag site detected weekly at LGR, 2005.

Org	Tag Site	Release Sites	Release Dates	WEEK 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total
NPT	Imnaha Trap	Imnaha Trap	4/28/04-6/18/05	0	14	34	143	415	870	201	36	334	122	62	47	0	1	0	0	0	0	0	0	0	2,279
IDFG	Fish Cr. Trap	Fish Cr. Trap	6/19/03-5/19/05	4	21	66	108	759	571	148	27	8	5	4	1	0	0	0	0	0	0	0	0	0	1,722
IDFG	Clearwater Trap	Clearwater Trap	3/23-5/5/05	18	23	85	104	457	341	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,029
IDFG	Snake Trap	Snake Trap	4/12/04-5/22/05	15	27	24	50	137	381	183	92	2	0	0	0	0	0	0	0	0	0	0	0	0	911
IDFG	Big Bear Creek, Potlatch River	Big Bear Cr., Potlatch R.	3/5-5/8/05	6	12	18	45	33	661	88	9	9	3	2	0	0	0	0	0	0	0	0	0	0	886
WDFW	Asotin Creek, Snake River above Clarkston	Asotin Cr, Snake R above Clarkston	4/8-6/2/05	0	0	18	24	71	78	208	137	53	17	1	0	0	0	0	0	0	0	0	0	0	607
ODFW	Grande Ronde River Trap	Grande Ronde River Trap	3/30-5/24/05	2	3	2	9	83	114	249	94	11	0	0	2	0	0	0	0	0	0	0	0	0	569
CTUIR	Lookingglass Cr.	Lookingglass Cr.	7/16/03-5/16/05	11	10	8	15	65	247	60	18	7	1	1	1	0	0	0	0	0	0	0	0	0	444
IDFG	Rapid R. Trap	Rapid R. Trap	9/9/04-5/15/05	1	0	3	9	52	152	28	6	0	0	0	0	0	0	0	0	0	0	0	0	0	251
IDFG	Crooked Fk. Cr. Trap	Crooked Fk. Cr. Trap	6/29/00-5/6/05	3	3	9	18	155	27	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	220
IDFG	North Fork Moose Creek, Selway River	North Fork Moose Creek, Selway River	7/25/03-7/15/04	0	1	14	15	99	51	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	186
NPT	Johnson Cr. Trap	Johnson Cr. Trap	10/27/00-5/8/05	0	0	6	7	67	70	22	6	0	1	0	0	0	0	0	0	0	0	0	0	0	179
IDFG	Salmon Trap	Salmon Trap	3/31-5/16/05	0	1	2	9	51	67	44	3	0	0	0	0	0	0	0	0	0	0	0	0	0	177
IDFG	S. Fk. Salmon R. Trap	S. Fk. Salmon R. Trap	6/19/94-5/8/05	0	0	10	23	64	50	17	7	1	0	1	0	0	0	0	0	0	0	0	0	0	173
IDFG	Camas Cr.	Camas Cr.	8/8/03-8/7/04	0	0	8	12	69	69	11	1	0	1	0	0	0	0	0	0	0	0	0	0	0	171
ODFW	Grande Ronde River - Wallowa River to headwaters	Grande Ronde R-Wallowa R to hdwt	3/15/04-5/23/25	0	0	1	3	1	105	33	6	11	1	3	1	1	0	0	0	0	0	0	0	0	166
ODFW	Catherine Cr.	Catherine Cr.	7/15/03-6/1/05	1	0	2	8	32	77	17	5	3	2	4	0	0	0	1	0	0	0	0	0	0	152
ODFW	Lostine R.	Lostine R.	10/28/03-5/14/05	1	1	5	7	21	70	10	8	4	2	0	1	0	0	0	0	0	0	0	0	0	130
IDFG	Chamberlain Cr.	Chamberlain Cr.	7/8/03-7/11/04	0	0	1	2	40	39	20	14	2	1	0	0	0	0	0	0	0	0	0	0	0	119
IDFG	Colt Kill Cr. -	Colt Kill Cr.	7/19/02-5/27/05	0	0	3	5	76	14	5	1	1	1	0	0	0	0	0	0	0	0	0	0	0	106
IDFG	Pahsimeroi R. Trap	Pahsimeroi R. Trap	10/24/03-5/23/05	0	0	0	1	8	34	37	16	4	0	0	1	0	0	0	0	0	0	0	0	0	101
IDFG	Fish Cr.	Fish Cr.	7/13/03-4/16/05	0	1	3	9	49	34	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100
ODFW	Minam R.	Minam R.	4/12/04-6/2/05	1	0	0	3	10	46	12	1	0	0	0	1	0	0	0	0	0	0	0	0	0	74
IDFG	Marsh Cr. Trap	Marsh Cr. Trap	6/24/02-4/28/05	0	0	0	0	25	30	1	2	1	1	0	1	0	0	0	0	0	0	0	0	0	61
IDFG	Gedney Cr.	Gedney Cr.	7/28/03-7/27/04	0	0	7	10	29	5	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	59
IDFG	Sawtooth Trap	Sawtooth Trap	4/1/04-6/1/05	0	0	0	1	0	24	18	9	3	0	1	0	0	0	0	0	0	0	0	0	0	56
IDFG	Lemhi R. Weir	Lemhi R. Weir	4/7/04-6/1/05	0	0	1	3	5	15	6	8	8	2	2	0	0	0	0	0	0	0	0	0	0	50
IDFG	Yellowjacket Ck, tributary of Camas Ck, M. F. Salmon R	Yellowjacket Creek	8/8/03-7/26/04	0	0	2	2	32	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47
NPT	Secesh R.	Secesh R.	6/29/01-5/7/05	0	0	2	4	16	12	7	1	1	0	0	0	0	0	0	0	0	0	0	0	0	43
IDFG	Lick Cr.	Lick Cr.	8/14/02-10/7/04	0	0	1	1	15	13	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35

Table 8. Continued

Org	Tag Site	Release Sites	Release Dates	WEEK 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total
IDFG	Hungery Creek (Lochsa River Basin)	Hungery Creek (Lochsa R)	7/12/04	0	0	0	0	8	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
IDFG	Bargamin Cr.	Bargamin Cr.	7/11-7/12/03	0	0	0	1	3	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	12
IDFG	West Fk. Gedney Cr.	West Fk. Gedney Cr.	7/27/04	0	0	2	1	6	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
ODFW	N. Fk. Catherine Cr.	N. Fk. Catherine Cr.	6/25-7/9/04	0	0	0	1	0	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9
ODFW	S. Fk. Catherine Cr.	S. Fk. Catherine Cr.	6/25-6/30/03	0	0	0	0	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
IDFG	Big Creek, Middle Fork Salmon River	Big Cr, M. Fk Salmon R	8/15/02-8/11/04	0	0	0	0	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
IDFG	M. F. Salmon R.-Loon Creek to headwaters	M. Fk Salmon R-Loon Cr to hdwt	8/10-8/11/03	0	0	0	0	2	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
IDFG	Horse Cr.	Horse Cr.	7/14/03	0	0	0	0	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6
IDFG	Red R. Trap	Red R. Trap	3/24-6/8/04	0	0	0	0	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	6
IDFG	S. Fk. Salmon R.	S. Fk. Salmon R.	8/23/02-8/20/04	0	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
IDFG	Loon Cr.	Loon Cr.	8/8/03-8/6/04	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
IDFG	Middle Fk. Salmon R.	Middle Fk. Salmon R.	8/20/02	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
IDFG	Valley Cr.	Valley Cr.	8/6/03-8/4/04	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
NMFS	Lower Granite Dam	LGR - Release below the PIT-Tag Diversion System Gate	5/27/03-5/28/05	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	3
IDFG	Bear Valley Cr.	Bear Valley Cr.	7/25/02-7/21/04	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
IDFG	Crooked R. Trap	Crooked R. Trap	5/18-5/23/05	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
IDFG	East Fk. Salmon R.	East Fk. Salmon R.	7/5-8/17/04	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
IDFG	Elk Cr.	Elk Cr.	7/26/02-7/27/04	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
IDFG	Herd Cr.	Herd Cr.	8/11/03	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
IDFG	Lower S. Fk. Salmon R. Trap	L. S. Fk. Salmon R. Trap	8/13-10/5/02	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
IDFG	West Fk. Chamberlain Cr.	W. Fk. Chamberlain Cr.	8/20/02-8/21/03	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
NMFS	Lower Granite Dam	LGR - Release below the PIT-Tag Diversion System Gate	5/28/03	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
IDFG	American R.	American R.	4/21/05	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
IDFG	Capehorn Cr.	Capehorn Cr.	7/30/04	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
IDFG	Rush Cr.	Rush Cr.	8/22/03	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
IDFG	Whitebird Cr.	Whitebird Cr.	7/1/03	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ODFW	M. Fk. John Day R.	M. Fk. John Day R.	4/26/05	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
																								Total	11,347

Table 9. Hatchery Sockeye PIT-tag detections, by release site detected weekly at LGR, 2005.

Organization	Tag Site	Release Site	Release Dates	WEEK																				Total
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	
IDFG	Redfish Lake Cr. Trap	Redfish Lake Cr. Trap	4/29-6/9/05	0	0	0	0	0	1	7	22	69	39	29	17	0	0	0	0	0	0	0	0	0	184
IDFG	Sawtooth Hat.	Redfish Lake Cr. Trap	5/10/2005	0	0	0	0	0	0	73	72	4	0	0	0	0	0	0	0	0	0	0	0	0	149
IDFG	Sawtooth Hat.	Alturus Lake	10/5/2004	0	0	0	0	0	7	38	23	5	0	0	0	0	0	0	0	0	0	0	0	0	73
IDFG	Sawtooth Hat.	Redfish Lake	10/5/2004	0	0	0	0	0	0	0	23	33	10	2	0	0	0	0	0	0	0	0	0	0	68
IDFG	Sawtooth Hat.	Pettit Lake	10/5/2004	0	0	0	0	0	0	13	35	7	1	1	0	0	0	0	0	0	0	0	0	0	57
SHOBAN	Alturas Lake Cr.	Alturas Lake Cr.	5/10/2005	0	0	0	0	0	0	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	21
SHOBAN	Pettit Lake Cr.	Pettit Lake Cr.	5/8/01-5/10/05	0	0	0	0	0	0	3	4	6	0	0	0	0	0	0	0	0	0	0	0	0	13
IDFG	Sawtooth Hat.			0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
																								Total	566

Table 10. Wild Sockeye PIT-tag detections, by tag and release site detected weekly at LGR, 2005.

Organization	Tag Site	Release Site	Release Dates	WEEK																				Total
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	
IDFG	Redfish Lake Cr. Trap	Redfish Lake Cr. Trap	4/27-6/2/05	0	0	0	0	0	3	12	26	60	27	5	0	0	0	0	0	0	0	0	0	0	133
SHOBAN	Alturas Lake Cr.	Alturas Lake Cr.	5/10/2005	0	0	0	0	0	0	12	7	0	0	0	0	0	0	0	0	0	0	0	0	0	19
SHOBAN	Pettit Lake Cr.	Pettit Lake Cr.	5/10-5/19/05	0	0	0	0	0	0	5	15	2	0	1	0	0	0	0	0	0	0	0	0	0	23
																								Total	175

Table 11. Hatchery Coho PIT-tag detections, by release site detected weekly at LGR, 2005.

Organization	Tag Site	Release Site	Release Dates	WEEK																					
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-31	Total
NPT	Kooskia National Fish Hat.	Kooskia NFH	4/25/05	0	0	0	0	12	731	278	41	13	2	0	0	0	0	0	0	0	0	0	0	0	1077
USFWS	Eagle Cr. NFH			0	3	5	16	71	421	122	19	3	6	1	0	0	0	0	0	0	0	0	0	0	667
NPT	Clearwater Hat.	Lolo Cr.	9/28-9/29/04	0	0	0	1	0	0	7	16	14	23	3	4	0	0	0	0	0	0	0	0	0	68
IDFG	Big Bear Creek, Potlatch River	Big Bear Creek, Potlatch River	3/11-3/14/05	0	0	0	0	0	22	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	30
NPT	Clearwater Hat.	Eldorado Cr.	9/29/04	0	0	0	0	0	3	3	4	2	2	3	2	0	0	0	0	0	0	0	0	0	19
NPT	Clearwater Hat.	S. Fk. Clearwater R.	7/23-7/24/03	0	0	0	0	0	1	4	4	3	1	1	0	0	0	0	0	0	0	0	0	0	14
NPT	Clearwater Hat.	O'Hara Cr.	7/22/03	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
																								Total	1,876