



FISH PASSAGE CENTER

1827 NE 44th Ave., Suite 240, Portland, OR 97213

Phone: (503) 230-4099 Fax: (503) 230-7559

<http://www.fpc.org/>

e-mail us at fpcstaff@fpc.org

MEMORANDUM

TO: Joan Dukes, Chairperson
Fish Passage Center Oversight Committee

FROM: Michele DeHart

DATE: July 18, 2005

RE: Preliminary Review of the 2005 Spring Migration

At your request the FPC staff has been working on summarizing the information collected to-date regarding the juvenile migration characteristics observed throughout the Columbia River Basin. The volume of information we are considering is large and we have not yet completed our analyses. However, at this time we are providing a preliminary update regarding the information we have analyzed thus far. The complete analysis will be presented in our 2005 Annual Report.

Migration River Conditions for Spring 2005

The runoff volume for 2005 was approximately 74% of average at The Dalles Dam and 68% of average at Lower Granite Dam. This low runoff volume associated with 2005 resulted in two significant results: first, Biological Opinion seasonal flow targets of 85 Kcfs at Lower Granite Dam, 220 Kcfs at McNary Dam and 135 at Priest Rapids Dam were not met; and secondly, since flows were predicted to be below 85 Kcfs at Lower Granite Dam, the Biological Opinion spring spill did not occur at the transportation collector projects in the Snake River. Spill at Ice Harbor Dam occurs under any conditions according to the Biological Opinion.

The Spring Flow Objective period in the Lower Snake River began on April 3rd, 2005 and ended on June 20th, 2005. In 2005, flows averaged 66.3 Kcfs at Lower Granite Dam between April 3rd and June 20th. Flow at Lower Granite was well below 50 Kcfs throughout April, however, above average precipitation in the Snake River Basin combined with increased temperatures causing runoff resulted in flows rapidly increasing in early May to near 100 Kcfs at Lower Granite Dam and peaking at 138 Kcfs on May 21, 2005. The high flows during this time period resulted in unplanned spill at the Lower Snake projects. Flows at McNary Dam averaged 195.7 Kcfs, and flows at Priest Rapids averaged 122.7 Kcfs from April 10th through June 30.

The Biological Opinion flow targets were 220 Kcfs at McNary and 135 Kcfs at Priest Rapids, respectively.

Migration Timing for Snake River Spring Chinook and Steelhead

It appears that the Spring Migration passage duration for the middle 80% of the run in the Snake River at Lower Granite Dam in 2005 was more condensed for yearling Chinook and steelhead (Table 1) as compared to past years' migrations. The 2005 spring migration in the Snake River began later, especially for yearling chinook, with the indices well behind projected totals until the last week of April. Fish appeared to be accumulating in Lower Granite Pool under the low river flows. In early May rain events and the beginning of the freshet produced higher flows and with it yearling Chinook and steelhead passage increased very quickly. The flows, while relatively low, doubled from the last week of April to the second week of May. The increase seemed to move the fish through the system and by mid-May the indices at Lower Granite quickly fell off indicating the migration was mostly ended. For steelhead the run seemed even more condensed with high passage numbers occurring mainly in the first 2 weeks of May. The 90% passage date was about 10 days earlier than had been observed in past years' migrations. The late start date and early end date was due to a combination of flow and spill conditions, as well due to the earlier than normal release of hatchery fish this year.

Table 1. Timing of Spring Migrants at Lower Granite Dam in 2005

Species	10% Passage	50% Passage	90% Passage
Yearling Chinook	4/25	5/5	5/11
Steelhead	4/27	5/9	5/19

Spring Migrant Survival – Snake River Spring Chinook and Steelhead

The migration pattern this year resulted in most fish passing Lower Granite Dam during a more confined period. Low numbers of migrants on either side of this time period resulted in few marked fish being available to use for survival estimation. Consequently, the survival estimates for 2005 come from a confined time period during which flows were higher than observed over the whole season and unplanned spill occurred in the Snake River. It can be seen from Figure 1, that for the middle period of the Spring migration (April 22 to May 15 passage dates at LGR) in 2005 spring migrants survived at levels similar to those seen the past few years in the Lower Granite to McNary Dam reach. Again, fish that passed through the Snake River during late April and early May were provided better survival conditions by providing a period of higher flows (exceeding 100 Kcfs) and unplanned spill.

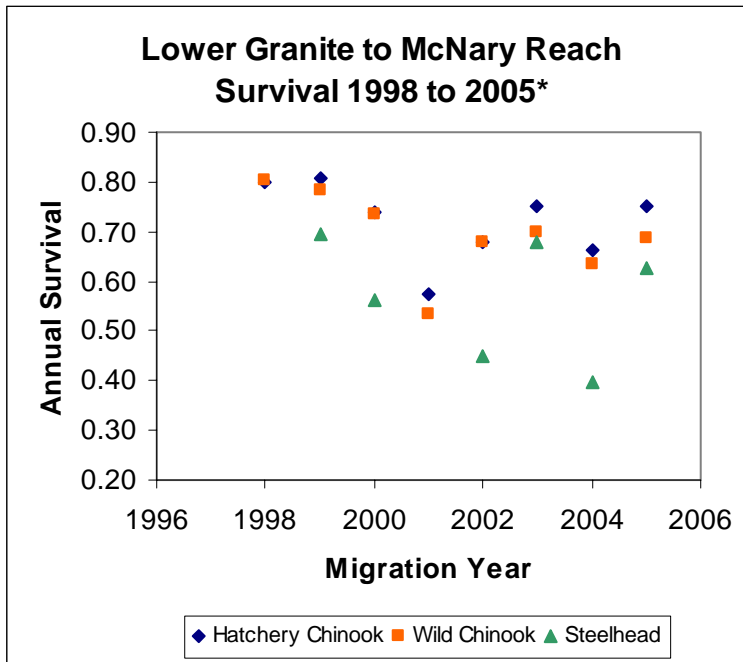


Figure 1. Comparison of 2005 survivals to other recent years.

Passage indices for yearling chinook totaled 4 million while steelhead totaled 3.8 million between April 29 to May 12 at Lower Granite Dam during the peak two weeks of the migration.

Project Operation Mishaps

At Little Goose Dam, turbine unit (4) was operated with orifices shut in slot 4B resulting in several thousand juvenile salmonid mortalities. When the orifice was opened the morning of May 9, several thousand dead fish overwhelmed the separator. The COE estimated the loss at 6,000 fish mostly hatchery steelhead, but personnel at Lyons Ferry Hatchery reported many hundreds, maybe thousands, of dead yearling chinook and steelhead floating in the river downstream of the project.

At Lower Granite Dam on May 10 approximately 31,000 juvenile salmonids were diverted to a raceway designated for research tagging. Due to a closed gate in the flume that led to the raceway, the fish were stranded inside the flume, or overflowed from the flume to the ground where they died. The overall mortality exceeded 16,000 due to operation at the juvenile fish facility at Lower Granite Dam.

On April 27 a fish barge accidentally released fish in the forebay at Bonneville Dam when a valve was incorrectly positioned, and resulted in this barge discharging the fish when the

valve system was pressurized. Although near the release site, these juvenile fish were then required to either pass through the navigation lock near their ultimate release; swim back out of the old powerhouse channel to the spill section of the dam, or potentially go through the juvenile bypass systems at the old and new powerhouses.

On the morning of April 6, 2005, a total of 718 mortalities were found in the dewatering section of the fish distribution flume just upstream of the sample holding tank at the John Day Smolt monitoring facility. At the downstream end of this dewatering section there is a slide gate used to shut off inflow while positioning the crowder. After sampling on the afternoon of 5 April, this gate was inadvertently left closed. In this condition, water and fish pile up behind the gate when the sample is being collected. This is the condition the sample collection system was in from approximately 1400 hours on the 5th through 0600 hours on the 6th. This action resulted in mortality of most of the fish shunted to the sampling tank.

Hatchery Releases

Yearling Chinook, steelhead and subyearling Chinook hatchery releases were earlier than normal this year as hatchery production managers and release coordination personnel were anticipating poor migration conditions for the juvenile fish. High precipitation events in the Snake River basin in late April and through May increased stream flows and juvenile fish began migrating rapidly downstream through the river system.

Hatchery releases were again at near record levels from the State, Federal, and Tribal facilities. The latest release numbers include about 83.8 million fish released during 2005 and including some yearling Chinook and sockeye salmon released the previous summer and fall.

Hatchery Zone Release –2005
Report

	Wednesday 29-Jun-2005			Total Release
	Snake River	Mid-Columbia	Lower Columbia	
Fall Chinook	4907703	12549219	21567139	39024061
Spring Chinook	9440350	5112676	5166138	19719164
Summer Chinook	2348012	3369490		5717502
Coho	816300	1868096	5149846	7834242
Sockeye	209046	592459		801505
Summer Steelhead	8908003	1167754	533735	10609492
Winter Steelhead			115453	115453
Total	26629414	24659694	32532311	83821419

Smolt to Adult Survival Estimates

As in 2004, adult returns of spring/summer Chinook in 2005 were lower than anticipated for the Columbia River Basin, The traditional count (starting March 15) of adult spring Chinook at Bonneville Dam was near 74,000, with the newer ending date of June 15 having greater than 90,000 in the count. Overall, the adult spring Chinook were late in arriving at Bonneville Dam and as stated above, fewer arrived and were available for the upstream spawning areas. Fewer numbers of “jack” spring/summer Chinook salmon were counted than average suggesting the trend of lower trends to continue next year.

The effect of low adult returns in 2004 and 2005 is evident in the downward trend in the wild Chinook annual estimated smolt-to-adult (SAR) survival rates (indexed from Lower Granite Dam to Lower Granite Dam) since 2001. Migration year 2003, though incomplete with only 2-salt returns available, is unlikely when completed next year to achieve an estimated annual SAR any higher than the low SARs (<0.5%) estimated in the three years prior to migration year 1997. The migration year with the highest SAR of nearly 2.5% was 1999 when both good riverine flows and good ocean conditions prevailed. The lower juvenile survival estimates observed for these years as well as poorer ocean conditions appears to be contributing to the lower SAR for migration year 2003 spring/summer Chinook.

