SYSTEM OPERATIONAL REQUEST: #2004-3

The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: U.S. Fish & Wildlife Service, NOAA Fisheries, Idaho Department of Fish and Game, Washington Department of Fish and Wildlife, Columbia River Inter Tribal Fish Commission, and the Oregon Department of Fish and Wildlife.

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FROM: **David A. Wills, Chairperson, Salmon Managers**

DATE: **April 12, 2004**

SUBJECT: Implementation of Snake River Spill Operations

SPECIFICATIONS:

1. Continue the implementation of spill at Lower Granite Dam and Little Goose dams as described in the 2000 Biological Opinion. Begin Biological Opinion spill at Lower Monumental and at Ice Harbor Dam on the evening of April 12.
2. Continue Biological Opinion spill through April 30 at Lower Granite, Little Goose and Lower Monumental dams. Continue Biological Opinion spill at Ice Harbor Dam through June 20.
3. Implement spill at all the Lower Snake River[1] projects as necessary throughout the spring period to conduct research tests scheduled for conduct in 2004.

JUSTIFICATION:

Spill was initiated at Lower Granite Dam on the evening of April 3, and at Little Goose Dam on the evening of April 7. Spill initiation was delayed at the lower Snake River projects last week by the Salmon Managers because of low fish numbers, but based on recent fish passage numbers spill at Lower Monumental and at Ice Harbor Dam should begin on the evening

[1] NOAA Fisheries does not recommend continuing research at Lower Granite Dam after April 30th.

of April 12. This is based on the fish passage numbers that increased over the weekend of April 9 through 11. Spill is being requested in accordance with the NMFS 2000 Biological Opinion. In a year when runoff volumes are predicted to produce flows that are on average less than 85 Kcfs, spill would be terminated at the collector projects. However, according to the NMFS 2000 Biological Opinion 9.6.1.3.2 language that further explains Action 40:

> "If new information shows that survival through inriver migration, including returning fish to the river, is beneficial, these data will be reviewed and discussed during the annual planning process."

and, according to Section 9.6.1.3.4 Action 51:

> "If results of Snake River studies indicate that survival of juvenile salmon and steelhead collected and transported during any segment of the juvenile migration (i.e., before May 1) is no better than the survival of juvenile salmon that migrate inriver, the Corps and BPA, in coordination with NMFS through the annual planning process, shall identify and implement appropriate measures to optimize inriver passage at the collector dams during those periods."

spill is being requested.

In the December 21, 2003 preliminary draft of the "Effects of the Federal Columbia River Power System on Salmon Populations", NOAA Fisheries presents information (summarized in Figures 14 – 19) on the temporal SARs for spring migrant fish. The temporal SARs for hatchery and wild spring-summer chinook salmon show rather dramatically that the SARs of transported fish generally increase as the season progress, with a significant increase somewhere between mid April and mid May. The inriver migrants tend to have a higher SAR during this early time period. These data are consistent with the physiological mechanisms associated with smoltification. It is assumed that transportation brings these early migrants to the estuary too quickly and they are not in a physiological state adequate for survival. The data for steelhead is more limited and inconclusive.

Given that the survival data appears more consistent for chinook than steelhead, the management objective was to choose a date when steelhead passage predominates in the collection. It is difficult to use real time, in-season data for this management action, since it necessitates predicting proportions into the future. In order to choose an appropriate date the historic passage was reviewed for the last six years. Adjusted passage indices were used to represent relative numbers of yearling chinook and steelhead at Lower Granite Dam. The average daily proportion of the annual index was averaged across years. It was then multiplied by the average total passage index to develop an average daily passage index. The index was then adjusted to a population index to account for differences in average collection efficiency of steelhead and yearling chinook. The data presented in Figure 1 are the average daily population index for the years 1998 to 2003 for all yearling chinook compared to all steelhead, while Figure 2 shows the population index for unclipped yearling chinook (without coded wire tags) and unclipped steelhead. It is likely that unclipped hatchery origin fish make up 10% to 30% of the unclipped steelhead reported in Figure 2 while unclipped hatchery origin yearling chinook fish make up less than 10% of unclipped total.

Figure 1. Adjusted Average Daily Passage Index for combined yearling chinook and combined steelhead at Lower Granite Dam 1998 to 2003.

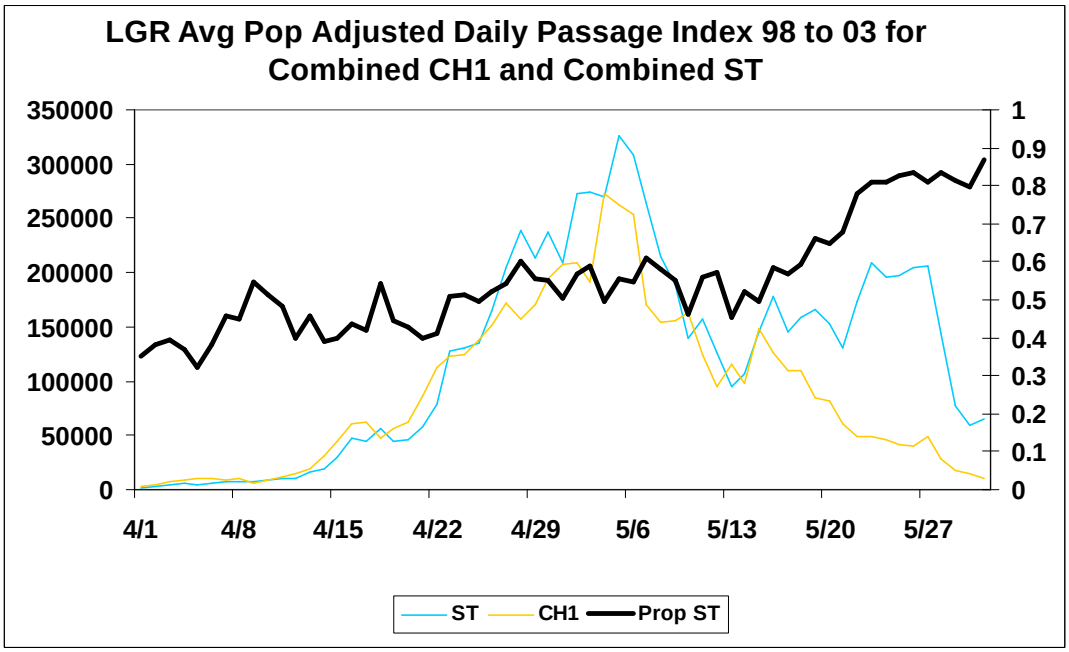
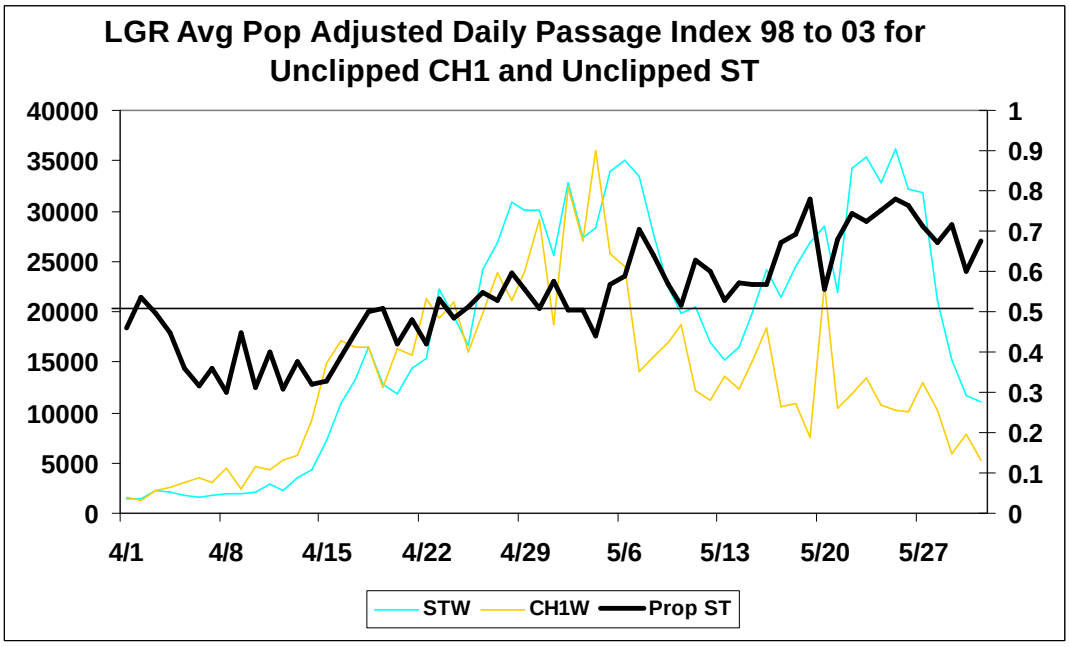


Figure 2. Adjusted Average Daily Passage Index for unclipped yearling chinook and unclipped steelhead at Lower Granite Dam 1998 to 2003.



From about April 22 on, there are near equal numbers of chinook and steelhead in the passage indices at Lower Granite Dam. It is only after the sixth of May when chinook numbers begin to decline that the steelhead clearly predominate in the passage at the project. The management objective is to delay transportation of chinook, while not missing a large portion of the steelhead migration. Therefore to be conservative, based on these data and consistent with Action 51, the Salmon Managers recommend continuing the Biological Opinion spring spill program at all the Snake River projects until May 1. This data allows the achievement of the management objective.

Research Impacts

The appropriate spill conditions should be implemented after May 1 to allow the conduct of scheduled research studies in 2004. A reduction in spring spill will have a significant impact to investments made and studies planned through the multi-agency technical Studies Review Work Group within the Corps Anadromous Fish Evaluation Program. The regional process's System Configuration Team ranked these studies for funding as top priorities in a year of reduced funding by the Congress for the Columbia River Fish Mitigation program. These studies are critical to making long-term decisions of fish passage improvements to meet survival and recovery thresholds of the Biological Opinion and will waste considerable capital improvement dollars already invested, which will have to be relocated in future budgets. The current budget level has been dramatically reduced in recent years and if spill termination results in double spending on these projects it will reduce the regions' ability to meet the thresholds described in the Biological Opinion in a timely and efficient manner.

Specific studies that will be impacted by elimination of spring spill this year include:

1. **Lower Granite RSW/BGS study**- $4.5 million to evaluate the benefits of a behavioral guidance structure (BGS) operated in conjunction with RSW and 12 kcfs training spill. The BGS is reported by the Corps to be in tenuous physical condition, expected to survive in workable condition for only one more season. There is a high likelihood that the BGS would be unusable next season.

2. **Lower Monumental Bulk Spill study**- $385K to evaluate BIOP spill in a bulk vs. even pattern.

3. **Lower Monumental Survival/Efficiency study**- $1.8 million to determine route specific survival under BIOP spill.

4. **Ice Harbor Survival/Efficiency study**- $3.1 million follow-up to the BIOP spill versus a bulk spill pattern. A significant portion of the juveniles used in this evaluation would be coming from the Lower Monumental Survival evaluation. Without these fish it will impact the Ice Harbor evaluation.

Further, several of the studies are just about to begin, or may have started, and making alterations to them now to salvage some portion of the evaluations would be difficult and would need to be coordinated through the regional process. This work represents a signification portion

of the 2004 Columbia Fish Mitigation Budget, which is currently at the $67 million dollar level. Tentative budget estimates for 2004 are already over $100 million dollars. Using the past years' budget levels as an indication of future years' funding, it is extremely unlikely that this amount of funding level will be met. Consequently, delaying the scheduled studies and incurring additional costs for these evaluations in 2005 or beyond will exacerbate an already limited budget. For biological reasons, the loss of data these studies will provide will raise the level of uncertainties in the continued development, deployment, and use of the Removable Spillway Weirs in the Lower Snake River.