

MEMO
Lewis River Acclimation Program – Release Strategy Memo to the H&S Subgroup
Prepared by PacifiCorp

June 29, 2018

Introduction

The original spring Chinook acclimation program called for 100,000 juvenile spring Chinook salmon to be released at acclimation sites upstream of Swift Dam. Due to poor performance of the acclimation facilities combined with substantial damage sustained during recent high water events, all sites are in the process of being decommissioned. The primary purpose of acclimating spring Chinook juveniles to the upper basin above Swift Dam was to promote the distribution of returning adults spawners throughout the available spawning habitat upstream of Swift Dam. As naïve spring Chinook adults transported above Swift Dam in 2017 spawned widely across the available habitat (throughout the upper Lewis River, Muddy River watershed, and Swift Reservoir tributaries), it appears that acclimation of juvenile spring Chinook may not be necessary to accomplish this primary acclimation goal. Therefore the ACC H&S Subgroup recommended releasing the 100,000 juvenile spring Chinook salmon (formerly allocated for the upper basin acclimation sites) downstream of Merwin Dam in 2018 and into the near future. The purpose of this draft memorandum is to briefly describe potential approaches for the spring Chinook supplementation program over the next 5 years (2019 – 2024) and provide a starting point for discussion at the May 31, 2018 H&S Subgroup meeting. It is intended that the subgroup will make a final discussion at the meeting regarding the reallocation of the upper basin juvenile spring Chinook acclimation fish to being released below Merwin Dam, evaluation of juvenile release and tagging strategy, and ongoing monitoring programs for adult spawning distribution and juvenile production.

Proposed 2018 Release Strategy

The 100,000 juvenile spring Chinook currently being held at Speelyai Hatchery for 2018 release have not been tagged and still have adipose-fins intact. The original intent was for these fish to be direct-released throughout the upper basin in July and August 2018. The target size for fish at release was set at approximately 52 fish to the pound.

Given their projected size this fall, two potential release strategies for the 2018 fish release include: 1) incorporating them into the October release already developed and outlined in the 2018 Hatchery and Supplementation Program Annual Operating Plan (AOP); or 2) releasing them independently this fall and in parallel with the observed out-migration period for spring Chinook captured upstream of Swift Dam (which generally peaks in late-November). For the first strategy, the 100,000 fish would be transported to Lewis River Hatchery and incorporated into the October release group. For releasing fish independently, the proposed release strategy consists of releasing approximately 25,000 smolts per week to the Woodland Release Ponds. The capacity of the release ponds is approximately 76,000 fish of the expected size range of spring Chinook juveniles to be released. As each batch of 25,000 smolts are released to the release ponds, they would be able to volitionally migrate out of the ponds to the North Fork Lewis River for a 6 day period. On the 7th day, they would be force released, and the new batch of 25,000 smolts would be transport from Speelyai Hatchery and added to the ponds, continuing with the 1 week volitional then force release strategy for each group. The first release would occur the first week

in November. All fish would be released by the first week of December. Under the original acclimation program (i.e. releasing the 100,000 spring Chinook upstream of Swift Dam), approximately 15% (15,000) of these fish would have received a PIT Tag to be later detected at the Swift Reservoir Floating Surface Collector to assess acclimation pond success. Because these fish will now be released below Merwin Dam, it will need to be decided whether a similar proportion of these fish will still need to be tagged and what purpose that information will serve. As returning adults, these fish would not be available to angler harvest, thus increasing the number of potential adults available for transport upstream of Swift Dam to spawn.

Proposed 2019 – 2024 Marking and Release Strategy

Option 1: Full Integration into Existing Hatchery Program (Adipose Clipped)

Under this option, the 100,000 spring Chinook, formerly allocated to the acclimation program above Swift Dam, would be completely integrated into the overall spring Chinook hatchery program releases downstream of Merwin Dam, increasing the total program production from 1.25 million to 1.35 million fish. This would remain a segregated program; any NOR adult spring Chinook that return to spawn over the next five years would be taken upstream and not used for brood stock. Marking and monitoring of the total program fish would follow the strategy outlined in the Hatchery and Supplementation Program Annual Operating Plan (AOP). The monitoring and evaluation strategy in the AOP will eventually determine the release strategy with the best survival results. This strategy minimizes logistical hurdles of segregating the 100,000 spring Chinook at the hatchery and separately marking them from other program fish releases. As some of the total program fish are adipose fin clipped and available for harvest, there would be some increased harvest of the adults produced by the addition of the 100,000 juveniles to the total program release (compared to if these fish were not marked as under the existing acclimation program or proposed 2018 release). However, the addition of these fish to the overall hatchery releases should provide additional returns to support broodstock and adult supplementation targets.

Option 2: Full Integration into Existing Hatchery Program (Adipose Intact)

Under this Option, 100,000 spring Chinook would not be adipose clipped, but releases would still be spread over the same time period as the general program releases (until monitoring under the AOP identifies the optimal release strategy). Not marking these fish would be consistent with the acclimation program strategy in that Option 2 would minimize angler harvest of the adult returns from these 100,000 fish further increasing adults available for upstream adult supplementation. Under Option 2, the program would also remain segregated; any NOR adult spring Chinook that return to spawn over the next five years would be taken upstream and not used for brood stock.

Option 3: Separated from Existing Hatchery Program (Adipose Intact yet Differentially Marked)

Under this option, a portion of the returning NOR adults would be used as parental stock to produce 100,000 spring Chinook smolts (similar to the original acclimation program), which would then be released below Merwin Dam. The 100,000 smolts would be differentially marked from other program fish so as to not be available to angler harvest and so that they could be specifically identified for transport as adults to spawn upstream of Swift Dam. This would entail segregation in the hatchery and application of a differential external mark from other program fish causing logistical constraints. As CWT and adipose fin clip combinations are already allocated to other program fish, a different external visual mark would be required. Previous studies have shown some decreased survival (below the survival

observed for adipose clip/CWT marked fish) for various salmonid species using other marks, such as ventral or pectoral fin clips, and maxillary clips (Jones and Bottomley 1997); however, Jones and Bottomley (1997) and Olson and Cates (undated) failed to detect a difference in survival between fin clip mark types in spring Chinook, though low sample size and low overall adults survival was acknowledge in both studies. Conservatively, it should be assumed that some decreased smolt to adult survival may occur under Option 3 compared to Option 1 and Option 2, by using a fin clip or maxillary clip, other than the adipose fin. However, adult returns of these (supplementation) fish could be differentiated as HOR from other unclipped (NOR) returns.

Monitoring and Adaptive Management

Ongoing Adult Spawning Distribution and Juvenile Production Monitoring

The spawn timing, distribution, and abundance of transported adult spring Chinook upstream of Swift Dam will continue to be monitored as described in Objective 15 of the current the Monitoring and Evaluation Plan for the Lewis River (as has been done since 2012 for transported anadromous fish). Juvenile spring Chinook production resulting from the spawning of these transported adult spring Chinook will continue to be evaluated by operating the screw trap at Eagle Cliff and collection at the Swift Floating Surface Collector as described in Objectives 6, 7 and 8 of the current Monitoring and Evaluation Plan for the Lewis River.

Adaptive Management

If annual spawning surveys (Objective 15) show that transported spring Chinook are not distributing throughout the available spawning habitat upstream of Swift Dam, contrary to the 2017 spawning survey results, then an acclimation release strategy for the 100,000 juvenile spring Chinook to the basin upstream of Swift Dam will be re-visited by the H&S subgroup as part of annual planning.

References

Jones, R.N., and R. Bottomley 1997. An evaluation of adipose fin clip versus left ventral fin clip as mass marks for hatchery spring Chinook salmon at Kooskia National Fish Hatchery, Idaho, dated May 1997.

https://www.fws.gov/lsnakecomplan/Reports/FWS_Field_Stations/Idaho%20FRO-Project%20Reports/FINCLIP.Kooskia.pdf

Olson, D.E., and B.C. Cates. Undated. Differential performance of ventral fin clipped and adipose fin clipped/coded-wire tagged spring Chinook salmon at Warm Springs National Fish Hatchery, Oregon (1987-1989 brood year).

<https://www.fws.gov/columbiariver/publications/VENTRALFINCLIP.pdf>