Grande Ronde Basin Spring Chinook Salmon Captive Broodstock Program: F1 Generation

Grande Ronde Spring Chinook Captive

Below are our responses to comments made by the ISRP regarding the presentation on the F_1 generation of the Grande Ronde Basin Spring Chinook Salmon Captive Broodstock Program. Several of the responses are needed to clarify some comments made by the ISRP.

I. INTRODUCTION

ISRP comment: *"2010 was the last year of CBS; the work transfers now to a Safety Net Program."*

Response: 2010 was not the last year of the Captive Broodstock Program. It was the last year for the Catherine Creek and Lostine River portions of the program but the Upper Grande Ronde River portion will continue until the last of the BY 2008 salmon are spawned in 2013. We are in the process of moving the Upper Grande Ronde River program to a Safety Net Program (SNP). The SNP is funded by Accord money from the Confederated Tribes of the Umatilla Indian Reservation. It is intended to insure that a sufficient number of hatchery smolts are produced in years in which an insufficient number of adults are captured for the Conventional Hatchery Program.

ISRP comment: "*The Captive Brood Program in the Grande Ronde subbasin was designed to increase survival of hatchery-spawned parr*"

Response: The Captive Broodstock Program was designed to increase survival of the naturally-spawned (not hatchery-spawned, as was stated in the ISRP review) parr from capture to adulthood and their offspring from egg to smolt.

II. DATA

ISRP comment: "*It is not clear if genetic analyses will be included.*"

Response: Yes, genetic analyses were always part of the plan for the Captive Broodstock Program. However, they were not funded until FY 2011. We have begun to examine the relatedness of the natural parr collected for the captive broodstock and the spawning success of the Captive Broodstock F_1 generation in nature. The latter study is being done in collaboration with NOAA Fisheries.

ISRP comment: "*Methods were not described in detail but summary reports provided a description of methods, which may also be found elsewhere (a reference is required).*"

Response: Methods for the Captive Broodstock Program can be found in annual reports and annual operating plans submitted to BPA and in the program's 1995-2002 status report (Hoffnagle et al. 2003. Grande Ronde Basin Spring Chinook Salmon Captive Broodstock Program, 1995 - 2002 Project Status Report, Fish Research and Development Project, Oregon. Northeast Region, Oregon Department of Fish and Wildlife, La Grande.). Methods for monitoring and evaluating the F_1 and F_2 generations can be found in annual reports and annual operating plans submitted to LSRCP.

III. KEY FINDINGS

ISRP comment: "*F1 fish showed an overall lower than expected percentage of older fish. F1 fertility and eyed egg-smolt survival were slightly lower than expected, but the main problem was a much lower SAR than assumed (0.1% versus 0.35%).*"

Response: The ISRP got the target and actual SAR values reversed. The target SAR for the Captive Broodstock F_1s is 0.1%. We exceeded that in the program, having a mean of 0.35%. However, this was well below the LSRCP SAR goal of 0.65%.

ISRP comment: "*Of particular note were BKD (impact was not excessive)...*"

Response: BKD caused over half of the mortalities for 8/10 brood years (1994-2003) and killed more than half of the total fish collected for two of those years. It was, by far, the greatest source of mortality in the program.

ISRP comment: "*Table 1. Please provide SD or SE along with mean survival and an indication of the number of years that data is available.*"

Response: We're not sure to which table this comment is referring – all results were provided in figures and the survival figures did contain standard deviation. We agree that this information is useful to readers and will be sure to continue to provide it in the future.

ISRP comment: "*Growth was 35% smaller — was this for same age of fish, or does this value reflect earlier age at maturation?*"

Response: This was a growth comparison of fish of the same age.

ISRP comment: "*Table 2. The low fecundity in the captive fish, especially among the older age fish is an interesting finding. There was no mention of whether eggs were smaller or larger than natural or conventional hatchery fish.*"

Response: We do not know what "Table 2" refers to. The dramatically lower fecundity of the Captive Broodstock fish was mostly due to the smaller size (see the comment above) of the females reared in captivity. Egg weight of CBS females was similar to that of natural salmon from these populations.

ISRP comment: "*There was good comparison of smolt-to-LGD survival among natural, CBS and CHP smolts. It appears survival was very low (~40%), and it is not clear from the report(s) why was survival of fish from the Lostine River higher than from Catherine and Upper Grande Ronde.*"

Response: See Monzyk et al. 2009. Migration characteristics of hatchery and natural spring Chinook salmon from the Grande Ronde River Basin, Oregon, to Lower Granite Dam on the Snake River. TAFS 138:1093-1108. Smolts from the Upper Grande Ronde River and Catherine Creek have to negotiate a long stretch of slow moving water through the Grande Ronde Valley, which the Lostine River salmon do not.

IV. OUTLOOK AND RECOMMENDATIONS

ISRP comment: "*The test that is needed is a comparison of NOR vs. CBS relative reproductive success through F2 and beyond.*"

Response: We agree and hope to do that in conjunction with the Relative Reproductive Success Study being conducted by NOAA Fisheries.

ISRP comment: "*Here, as in all LSRCP projects, there is more emphasis required on the limits to production outside of the subbasin, including ocean effects and harvest.*"

Response: We agree but this is beyond the scope of our funding.

ISRP comment: "*The fecundity issue by itself seems like a problem that perhaps could be effectively addressed with a more productive feeding regimen.*"

Response: We have discussed this issue with experts in salmon feeding and nutrition, who are equally perplexed. The Salmon River (Idaho) Chinook salmon captive rearing program has similar issues with small size of captive-reared adults. We are open to suggestions on this issue and may be able to evaluate them using the Safety Net Chinook salmon.

ISRP comment: *"Although the captive program has functioned with some success at the original stages or the rebuilding process, the long-term prognosis of meeting LSRCP mitigation objectives remains less clear."*

Response: The Captive Broodstock Program was not designed to meet the LSRCP mitigation objectives. It was designed to increase the numbers of salmon returning to the program populations, at which time Conventional Hatchery Programs could be started to meet the LSRCP mitigation objectives. The CBS Program has met this objective.