Upper Grande Ronde River Spring Chinook Salmon Hatchery Supplementation Program Review

III. KEY FINDINGS

ISRP comment page 46: *"Return per spawner of natural Chinook is exceptionally low. What fraction of this low ratio is related to smolts per spawner versus adults per smolts?"*

Response: The low return per spawner for this population is a result of poor performance in both smolts per spawner and spawners per smolt. The most recent five year mean of smolts per spawner was 70, which is well below the mean for the Minam River population, which was 100 for the same time period. Smolt to adult return rates have averaged less than 0.4% for the most recently completed brood years. In contrast, the SARs for the Minam River averaged 1.4% for the same time period. Our modeling results indicate that an SAR of 1.5% is needed to achieve a spawner to spawner replacement rate of 1.0 given an average of 70 smolts per spawner. With the recently observed SARs, an increase of over 300% is needed to reach replacement productivity for the Upper Grande Ronde River Spring Chinook population.

ISRP comment page 46*: "If low smolt productivity is indicated by low smolts per spawner, what measures might be taken to improve habitat?"*

Response: We have conducted numerous limiting factors assessments as part of subbasin and ESA recovery planning processes. In all cases stream flow, temperature, and sediment have been identified as key limiting factors in the spawning and rearing areas. There have been many habitat improvement measures implemented during the past 20 years (riparian recovery, road decommissioning, flow augmentation, upslope improvements, plantings, channel and flood plain reconnections and instream structures) to decrease temperature, increase flow and improve riparian conditions. However, even with aggressive and intense protection and restoration efforts it will take many salmon generations to produce biologically significant improvements in the degraded conditions in the Upper Grande Ronde Chinook salmon populations.

ISRP comment page 46: *"What is the size of the smolts (and earlier fingerling migrants)?"*

Response: Fish that leave the upper Grande Ronde summer rearing areas in the fall and over winter in the Grande Ronde Valley have a mean size range of 69-96 mm, with significant within-year and between-year variability. Fish that remain in the upper Grande Ronde River through the winter and begin seaward migration in the spring as yearling smolts have a mean size range of 80-109 mm, with significant within-year and between-year variability.

ISRP comment page 46: *"What is the timing of juveniles leaving the watershed? Is it associated with return per spawner?"*

Response: There are two primary juvenile life history patterns exhibited in the Upper Grande Ronde River population. Spawning and summer rearing for all production occurs in the upper reaches of the Grande Ronde River watershed. Some juveniles migrate to the mid reaches of the Grande Ronde River in the Grande Ronde Valley in the fall, overwinter, and then begin seaward migration in the spring. Typically, less than 20% of the parr migrate downstream to the valley in the fall. Juveniles that do not move downstream in the fall overwinter in the upper reaches and begin seaward migration in the spring. We have observed similar survival to the smolt stage for the two different life history patterns. We have an insufficient number of PIT tagged juveniles to compare full life cycle survival of the two patterns.