

Applying the results of an evaluation of different hatchery rearing environments to improve the smolt-to-adult survival of spring Chinook salmon in the Hood River

Ryan Gerstenberger, M&E Fish Biologist

Confederated Tribes of the Warm Springs, Hood River Field Office, 6030 Dee Hwy
Mount Hood Parkdale, OR

We studied environmental effects on smolt physiology, smolt migration, and smolt to adult return (SAR) of Hood River stock spring Chinook salmon *Oncorhynchus tshawytscha* reared at three different hatchery facilities across three brood years (2008-2010). We compared the measured physiological attributes for fish reared among the sites in each year with migration pace and SAR to determine relative performance of each of the rearing groups. We also compared SARs of Hood River release groups with PIT tag derived SARs of other nearby hatchery spring Chinook programs in the Mid-Columbia region. We found that the rearing groups had significantly different migration rates and SARs and that the differences in physiological attributes among the rearing groups effectively predicted the relative SAR among these groups. Using the results of the initial three brood year study we have made changes to our Chinook production program which include improved facilities and development of a “wild fish” rearing template to better represent natural juvenile growth patterns. Initial adult returns suggest we have in fact substantially improved SARs following the adoption of these hatchery rearing reforms relative to other spring chinook programs in the region.