

Title: Comparison of Wild- and Hatchery-Origin Upper Yakima River Spring Chinook Redds

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Abstract:

In 2003, we measured redds of naturally spawning upper Yakima River hatchery-and wild-origin females constructed *in situ* (In-river) between Easton Dam and the YKFP's Easton spring chinook acclimation site and compared them to redds constructed in the CESRF spawning channel. Redd measurements included water depth, velocity and substrate characteristics; and redd width and length. In-river redds were snorkel surveyed 3 to 4 days per week between September 19 and October 6 and were associated with females of known origin by the presence (wild) or absence (hatchery) of the female's adipose fin. Channel females were individually identified by number Peterson disk tags and observed constructing redds. Redd measurements were taken once females were no longer present on a redd.

Spawner densities in the In-river study reach were low in 2003 resulting in only 24 In-river redds being monitored. Of those, 13 were unambiguously identified as hatchery- and 4 as wild-origin. There were 12 hatchery- and 12 wild-origin redds constructed in the spawning channel. There was no significant difference in fork lengths of naturally spawning hatchery and wild females or between In-river and Channel females. In comparisons of redd width and length dimensions, water depths, velocities and substrate parameters within the Channel, there were no significant hatchery or wild differences. This is similar to results found in 2002 for In-river comparisons. Because the small In-river wild-origin sample size resulted in low statistical power, we made no statistical comparisons between In-river hatchery and wild origin redds. In only one of 37 tests were redd measurements significantly correlated with female fork length and in that case female length explained only 14% of the total variation in apex water depth. This was similar to 2002 results. We found that the CESRF experimental spawning channel redds were characterized by lower velocity and shallower spawning habitat than that preferred by In-river spawning females. There were significant differences between Channel and In-river redds in almost all width, length, velocity and depth measurements. These differences resulted from a lack of preferred spawning habitat in the Channel rather than female preference.