Abundance and Distribution of Spring Chinook Salmon Redds in the Yakima River Basin Before and After Supplementation.

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Redd site selection by spawning salmon involves a complex trade off between natal site fidelity and a hierarchy of physical and environmental controls. To understand the effects of hatchery supplementation on redd distributions, we analyzed nearly three decades of spatially and temporally continuous spring Chinook salmon *Oncorhynchus tshawytshcha* redd data in the Yakima River basin. Redd numbers increased for both the supplemented (Upper Yakima R.) and unsupplemented (Naches R.) populations during the post-supplementation period, but increases were greater for the Upper Yakima R. compared to the Naches R. population. Redd distributions of both populations were spatially heterogeneous and as expected with increased total numbers, redd densities increased in 10 of 11 reaches in the Upper Yakima population and 9 of 10 reaches in the Naches population during the post supplementation period. Data showed an increase in density and proportion of Upper Yakima redds within proximity of the central hatchery in the period after the initiation of the hatchery program. Concurrent carcass survey data further indicated that the proportions of wild fish spawning in the vicinity of the central hatchery facility increased post supplementation. The proportion of wild spawners also increased in the upper Teanaway River in proximity to the acclimation facility and decreased in the Cle Elum River after supplementation.