

Title: Recent Developments in Genetic Risk Analysis

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Washington's Hatchery Scientific Review Group (HSRG) is developing system-wide recommendations for improving efficiency and decreasing risk, especially genetic risk, in hatcheries in Western Washington. One important aspect of this, which has been further developed by WDFW and NWIFC scientists working with the HSRG, is guidelines for integrated hatchery programs. Integrated programs are ones in which there is intentional gene flow between the natural and hatchery components of the population. The Yakima spring chinook program is an excellent example. The risk guidelines, based on the models of Ford (2002) and Lynch & O'Hely (2001) relate trait means at equilibrium to the proportion of natural-origin broodstock (pNOB) and the proportion of hatchery-origin fish on the spawning grounds (pHOS). Using this model, programs can be compared in terms of long-term consequences (at least in terms of trait mean values). The value of 100% natural-origin broodstock, a prominent feature of the Yakima spring chinook program is made clear by these guidelines. The guidelines can also be used to make quantitative predictions about the relative levels of domestication expected in the supplementation and HC lines in the Yakima program. The guidelines are a substantial advance, but should be viewed still as preliminary because some details have yet to be worked out, and minimal, as fitness may change at a higher rate than trait means. The "mainstreaming" of the integrated hatchery concept increases the importance the region of evaluation of the Yakima spring chinook program.