

Monitoring and Evaluation of a Production Chinook Supplementation Facility

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The Yakima/Klickitat Fisheries Program (YKFP) has designed a supplementation program to enhance the spring Chinook salmon (*Oncorhynchus tshawytscha*) in the Yakima Basin. The purpose of the YKFP is to test the assumption that new artificial production can be used to increase harvest and natural production while maintaining the long-term genetic fitness of the fish population being supplemented and keeping adverse genetic and ecological interactions with non-target species or stocks within acceptable limits.

This paper describes the design and operation of a production scale supplementation facility from broodstock collection protocols, through the factorial mating schemes, incubation, rearing experiments, and volitional release of 810,000 smolts from three acclimation sites. The experimental design includes testing new semi-natural rearing techniques (SNT) against the Optimum Conventional Treatments (OCT) of existing successful hatcheries in the Pacific Northwest. Monitoring efforts are directed at evaluation of the performance of supplementation fish in each of the following categories, and comparison with the performance of naturally reared fish.

1. The post-release survival of supplementation fish (both outmigrating smolts and returning adults).
2. The homing and reproductive success of supplemented populations.
3. The long-term fitness of supplemented populations.
4. The inter-and intra-specific interactions (including competition, predation and genetic effects) between supplemented and unsupplemented populations.

Information resulting from this research can be used by resource managers to improve the survival and performance of hatchery reared salmonids.