Title:
Monitoring Domestication in the Yakima Spring Chinook Supplementation Program

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Summary of Presentation:
Using hatcheries in a conservation/restoration role for wild salmon populations poses a risk of the population under culture becoming more adapted to a life cycle that includes hatchery rearing and less adapted to a purely wild existence. This process is called domestication. The concern is that a supplemented population could eventually become unable to sustain itself without a hatchery. Although there are good theoretical reasons to expect domestication to be a problem, and a considerable body of empirical evidence exists showing that domestication occurs, too little information is out there to predict the magnitude or permanence of domestication for any suite of culture conditions. In particular, there are no empirical data at all on the level of domestication that results from a program like the Yakima spring chinook supplementation program, which includes measures designed to reduce domestication such as thorough mixing of the natural and hatchery components of the population.

We have designed and begun to implement an extremely ambitious and comprehensive monitoring program to evaluate domestication in the Yakima spring chinook program. The program is designed to answer two questions: 1) how much domestication is occurring in the supplemented Yakima population?; and 2) how much domestication is occurring in the supplemented Yakima population relative to what would be occurring in a traditional hatchery program (where there are no risk containment measures)?. The first question will be answered by comparing the supplemented Upper Yakima spring chinook population with a wild control line. The control line will be the neighboring unsupplemented Naches spring chinook population. The second question will be answered by comparing the supplemented Upper Yakima population to a hatchery control line derived from the first generation of Upper Yakima hatchery returns. This will be closed line maintained by matings in the hatchery only; no fish from this line will be

allowed to spawn in the wild. Several traits will be monitored, encompassing all life stages.

Experimental power will be quite high, even for comparisons involving the Naches population, where concern about impacts to the population will limit the number of fish to be examined. A concern yet to be completely resolved is the extent to which precocial males from the hatchery control line may interbreed with the supplementation line and thus bias detection of domestication.