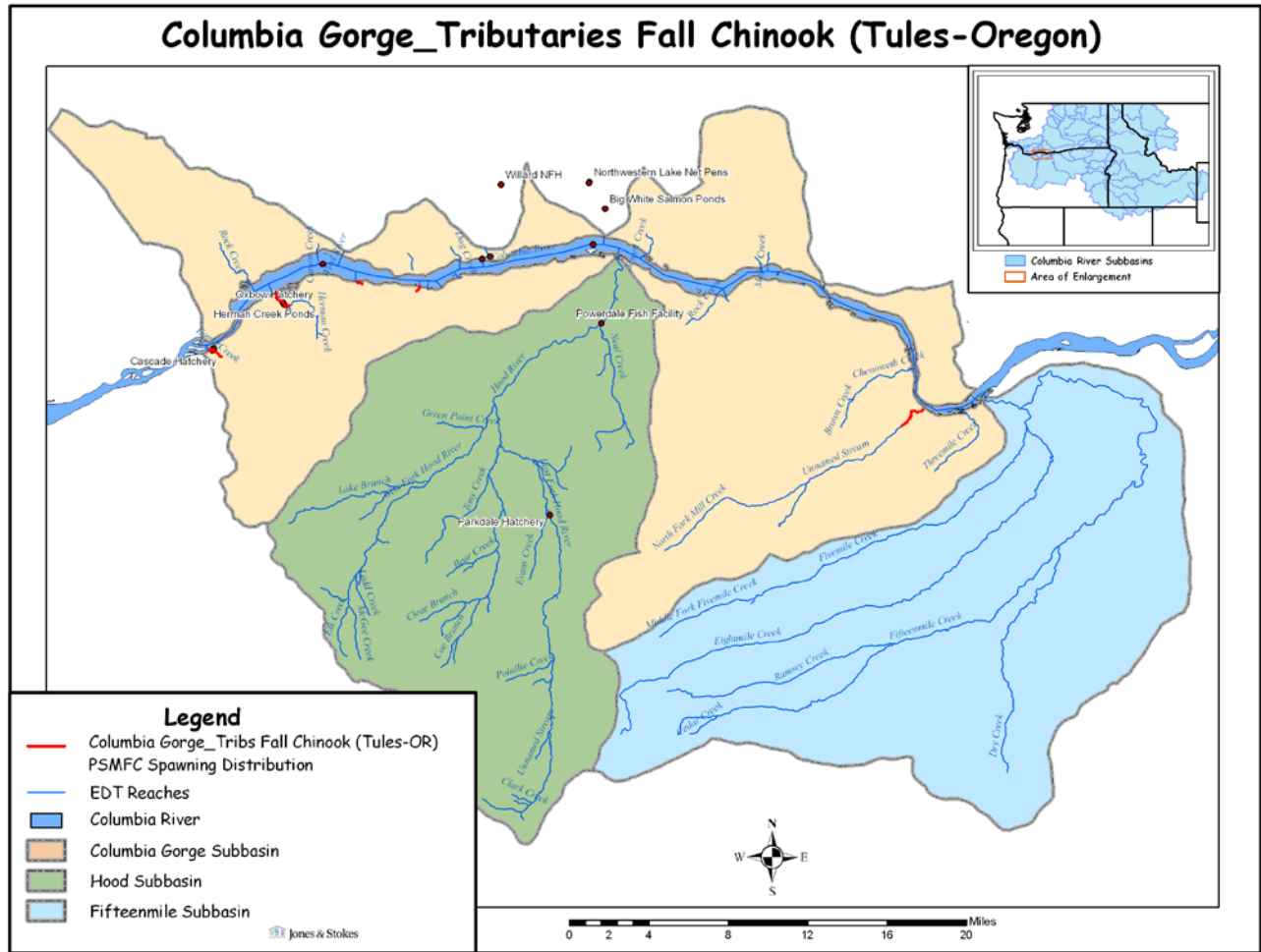


# Hatchery Scientific Review Group Review and Recommendations

## Columbia Gorge Tributaries Fall Chinook (Tules-Oregon) Population and Related Hatchery Programs

January 31, 2009



# 1 Columbia Gorge Tributaries Fall Chinook (Tule-Oregon)

This tule fall Chinook population includes mainstem Columbia River, Herman Creek, Gorton Creek, Viento Creek, Lindsey Creek and Phelps Creek Sub-populations.

Spawning in the Bonneville tributaries occurs from mid-October to late November. Natural spawning of tule fall Chinook occurs primarily in the lower reaches of Herman, Gorton, Viento, Lindsey and Phelps Creeks. Access in the early fall is dependent on mainstem Columbia and tributary flow conditions. Spawning time in the tributaries peaks in October. Smolt or juvenile population and life history data are not available for these streams. Spawning survey data is limited. A total of 892 live and 105 dead adult Chinook salmon were observed in Herman Creek during the 2002 fall surveys conducted by the CRGNSA. During years of good ocean conditions, or even most years, the number of hatchery tule chinook spawning in many of these streams likely exceeds carrying capacity. Superimposition of redds is common.

Fall Chinook in this watershed are greatly influenced by hatchery-origin fish spawning in the wild (Rod French, ODFW, pers. comm.). Fall chinook spawning in watershed streams may be hatchery strays or the progeny of hatchery strays from area fish hatcheries. Genetic analyses are not available to determine which stocks are of natural or hatchery origin.

## 2 Current Conditions

### 2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the natural population.

- ESA Status: Fall chinook spawning in the minor tributaries to the Columbia Gorge are part of the Lower Columbia Chinook ESU which was listed as threatened under the ESA in 1999. This decision was reaffirmed in 2005.
- Population Designation: Unknown, but assigned a designation as a Contributing population for the HSRG review.
- Current Viability Rating: Unknown.
- Recovery Goal for Abundance: Unknown.
- Productivity Improvement Expectation: Unknown.
- Habitat Productivity and Capacity (from EDT): Productivity 1.5; Capacity 100 (assigned for this review).

### 2.2 Current Hatchery Programs Affecting this Population

Approximately 34 adult fall Chinook from hatchery programs are estimated to stray into this system annually. Under the current scenario, pHOS is estimated at 83%. Annually, approximately 4 natural-origin adults are estimated to return to the basin.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 34 fish.

### 3 HSRG Review

The HSRG has developed guidelines for minimal conditions that must be met for each type of program as a function of the biological significance of the natural populations they affect. For populations of the highest biological significance, referred to as Primary, the proportion of effective hatchery-origin spawners (pHOS) should be less than 5% of the naturally spawning population, unless the hatchery population is integrated with the natural population. For integrated populations, the proportion of natural-origin adults in the broodstock should exceed pHOS by at least a factor of two, corresponding to a proportionate natural influence (PNI) value of 0.67 or greater. For Contributing populations, the corresponding guidelines are: pHOS less than 10% or PNI greater than 0.5. It is important to note that these represent minimal conditions, not targets. For example, the potential for fitness loss when effective pHOS is 5% is significantly greater than it would be at 3%. For Stabilizing populations, we assume the current pHOS or PNI would be maintained.

The HSRG analyzed the current condition and a range of hatchery management options for this population, including the effect of removing all hatchery influence, and arrived at one or more proposed solutions intended to address the manager's goals, consistent with the HSRG guidelines for Primary, Contributing, and Stabilizing populations. The solution included in the cumulative analysis is the last option described in the Observations and Recommendations box below.

In order to highlight the importance of the environmental context, two habitat scenarios were considered: current conditions and a hypothetical 10% habitat quality improvement.

See HSRG Observations and Recommendations in the box below for more information.

#### 3.1 Effect on Population of Removing Hatchery

The No Hatchery scenario is intended to look at the potential of the natural population absent all hatchery effects with projected improved fish passage survival in the Snake and Columbia mainstem (FCRPS Biological Opinion May 5, 2008).

Our analysis estimated adjusted productivity (with harvest and fitness factor effects from AHA) would increase from 0.1 to 0.3. Average abundance of natural-origin spawners (NOS) would decrease from approximately 4 fish to 0 fish. Harvest contribution of the natural and hatchery populations would go from approximately 17 fish to 0 fish.

#### 3.2 HSRG Observations/Recommendations

In the Observations and Recommendations box below, we describe elements of the current situation (Observations) that were important to evaluate the natural population, and where applicable, the hatchery program(s) affecting that population. We also describe a solution (Recommendations) that appeared to be consistent with manager's goals. However, this is not the only solution. In some cases, more than one solution is described.

Summary results of this analysis are presented in Table 1. The adjusted productivity values reported for each alternative incorporate all factors affecting productivity (i.e., habitat quality, hatchery fitness effects, and harvest rates).

**Observations**

This population appears to be supported by the natural spawning of hatchery strays. Hatchery strays are estimated to make up 83% of the natural spawning population. This proportion of hatchery fish on the spawning grounds would only be consistent with designation as a Stabilizing population.

**Recommendations**

The HSRG recommends that this population be managed for natural production as a Stabilizing population.

Table 1. Results of HSRG analysis of current conditions and HSRG solution for Columbia Gorge Tributaries Fall Chinook. The light green row indicates the natural population and yellow indicates the segregated hatchery population, if applicable. A 10% habitat improvement is applied to the HSRG Solution to evaluate the additional effect of improved habitat towards conservation objectives.

Alternative	Type and Purpose	Prog Size (/1000)	HOR Recapture	Additional Weir Efficiency	Effective pHOS	PNI	NOS Esc	Adj Prod	Harvest	Hatchery Surplus
Current	None None	-	0%	0%	83%	0.00	4	0.1	17	0
No Hatchery	None None	-	0%	0%	0%	1.00	0	0.3	0	-
HSRG Solution	None None	-	0%	0%	59%	0.00	8	0.4	7	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	55%	0.00	9	0.5	8	0