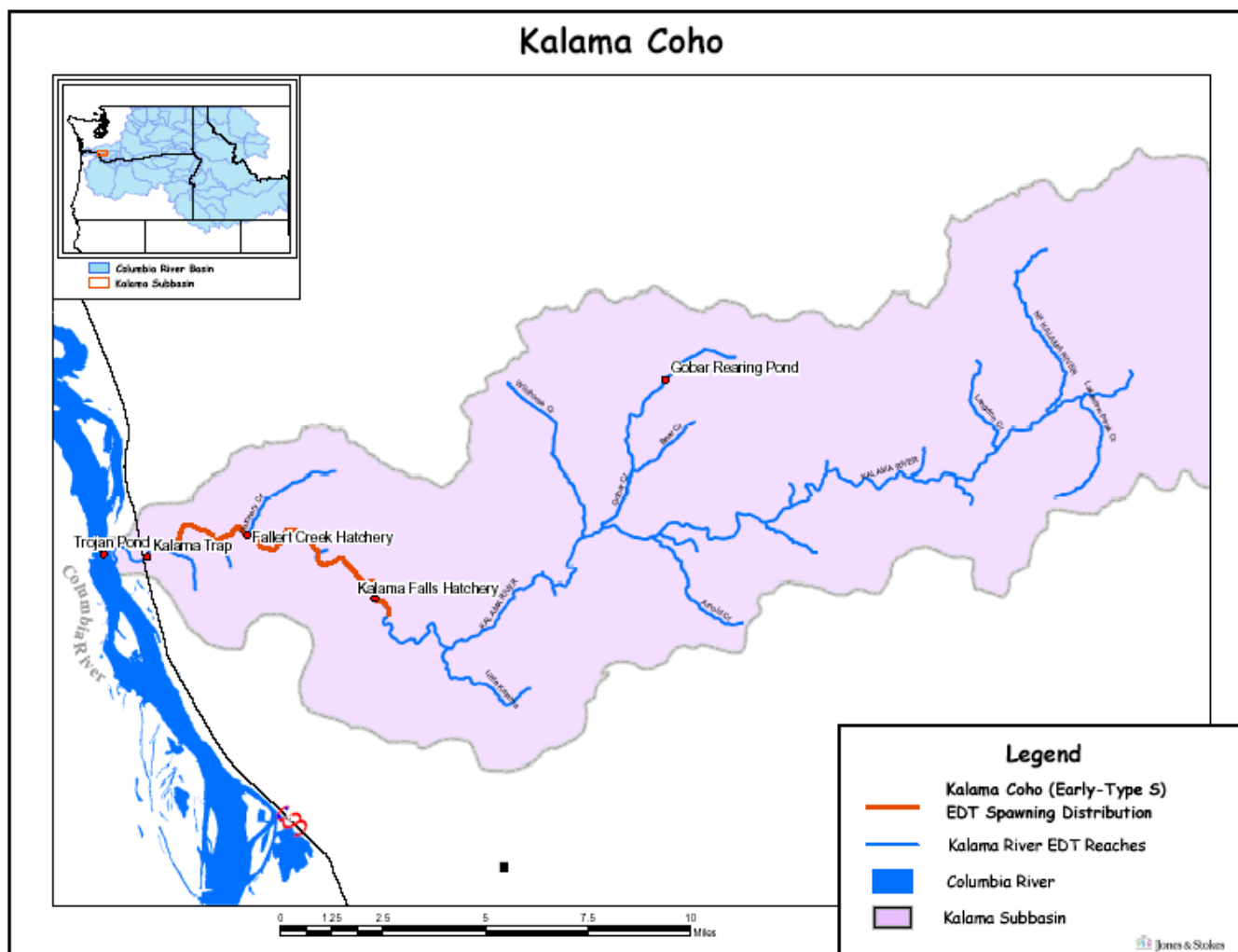


# Hatchery Scientific Review Group Review and Recommendations

## Kalama River Coho Population and Related Hatchery Programs

January 31, 2009



# 1 Kalama River Coho

The Kalama coho population is part of the threatened Lower Columbia coho ESU. It is designated as a Contributing population. There are two coho hatchery programs in the Kalama. One is based largely on broodstock originating from the Kalama and the other is based on broodstock of Toutle River origin (Type S).

Adult coho enter the Kalama from September through February. Peak spawning for the early (Type S) run is in October and for the late run is in December.

## 2 Current Conditions

### 2.1 Current Population Status and Goals

The natural coho population in the Kalama is a fraction of its historic abundance. Both early and late running coho population components were present.

- ESA Status: Kalama coho are listed as threatened and are part of the Lower Columbia Coho ESU.
- Population Description: Kalama coho is a Contributing population.
- Current Viability Rating: Low, with a goal of High
- Recovery Goal for Abundance: 600 adults. Recent escapement estimates were not available, but are significantly below this goal.
- Productivity Improvement Expectation: Habitat improvements in streams used by Kalama coho are expected to increase productivity by as much as 50% (LCRSRP; personal communication, D. Rawding, WDFW).
- Habitat Productivity and Capacity (from EDT): Productivity 3.8; Capacity 660
- Populations Affected by this Hatchery Programs Include: Kalama fall Chinook and steelhead (winter and summer)

### 2.2 Current Hatchery Programs Affecting this Population

Kalama currently has Type S (350,000 smolt release) and Type N (350,000 smolt release) coho programs and while the intent is to run the Type N coho as an integrated program, both programs currently are run as segregated programs.

Estimated number of hatchery strays affecting this program:

- Hatchery strays from in-basin integrated hatchery program: N/A
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 601 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 Recommendation 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 1.6 to 3.2. Average abundance of natural-origin spawners (NOS) would increase from 323 to 418. Harvest contribution of the natural and hatchery populations would go from 3,904 to 81.

### 3.2 HSRG Observations/Recommendations

In the Observation and Recommendation 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 incorporates all factors affecting productivity (i.e., habitat quality, hatchery fitness effects, and harvest rates).

#### **Observations**

This population is designated a Contributing population. Kalama currently has Type S and Type N coho programs and while the intent is to run the Type N coho program as an integrated program, it is currently operated as a segregated program.

In order to be consistent with its Contributing designation, it would be necessary to eliminate the two segregated programs (Type S and Type N) and develop a small integrated conservation

program (170,000 smolt release) based on the natural population in the watershed. A Contributing population designation appears inconsistent with the limited habitat potential.

**Recommendations**

Designating the population as Stabilizing would be consistent with the available habitat and current operation of a segregated Type S program releasing 350,000 fish and a segregated Type N program releasing 350,000 fish.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Kalama River Coho. 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	-	90%	0%	60%	0.00	323	1.6	62	0
	Type N Seg Harv	350.8	90%						1,915	1,869
	Type S Seg Harv	353.1	90%						1,927	1,882
No Hatchery	None None	-	0%	0%	0%	1.00	418	3.2	81	-
HSRG Solution	Int None	-	90%	0%	46%	0.00	286	1.6	56	-
	Type N Seg Harv	350.8	90%						2,371	1,459
	Type S Seg Harv	353.1	90%						3,313	634
HSRG Solution w/ Improved Habitat	Int None	-	90%	0%	43%	0.00	321	1.7	63	-
	Type N Seg Harv	350.8	90%						2,371	1,459
	Type S Seg Harv	353.1	90%						3,313	634