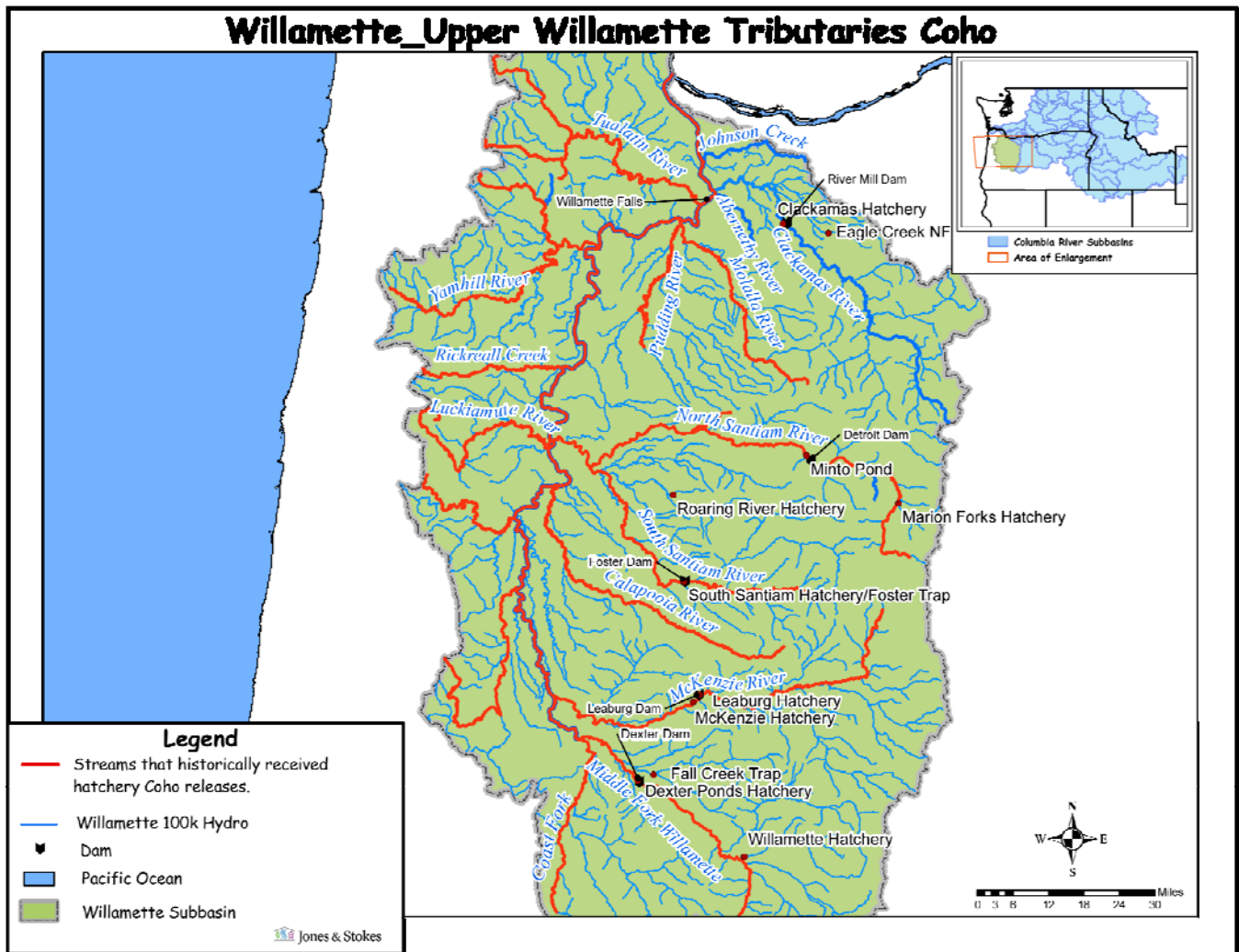


Hatchery Scientific Review Group Review and Recommendations

Upper Willamette River Tributaries Coho Salmon Population and Related Hatchery Programs

January 31, 2009



1 Upper Willamette Tributaries Coho Salmon

This natural population represents coho salmon spawning in Willamette River tributaries above Willamette Falls. Historically, self-sustaining populations of coho salmon did not occur in the upper Willamette Basin due to passage constraints at Willamette Falls. Prior to laddering of Willamette Falls (Rkm 37), passage of returning adult salmon was only possible during winter and spring high flow periods. Thus, coho were not present until hatchery introductions occurred in tributaries upstream of the falls. Summer flows in the Willamette, primarily due to releases from the 13 multipurpose USACE dams, are higher and cooler than those before the dams were constructed. When combined with passage improvements at Willamette Falls and hatchery inputs, this improved water quality has helped establish upriver runs of coho (Altman, Henson, and Waite 1997). Hatchery-origin coho are no longer released into the upper Willamette Basin. The population currently consists of a self-sustaining population originating from hatchery outplants.

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: The Upper Willamette Tributaries coho are not part of any coho salmon ESU.
- Population Description: The Upper Willamette Tributaries coho population is not designated as a population in the Lower Columbia Salmon Recovery and Subbasin Plan (LCSR&SP 2004).
- Recovery Goal for Abundance: NA
- Productivity Improvement Expectation: NA
- Habitat Productivity and Capacity: Unknown

2.2 Current Hatchery Programs Affecting this Population

- Currently, there are no coho hatchery programs in the Upper Willamette River basin.
- While there are many coho hatchery programs in the lower Columbia River and at Eagle Creek NFH in the Clackamas subbasin, it is assumed that few coho from these programs stray into the upper Willamette Basin.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 4 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 0.6 to 1.3. Average abundance of natural-origin spawners (NOS) would increase from approximately 6 to 17 fish. Harvest contribution of the natural and hatchery populations would go from 1 fish to 3 fish.

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

Currently, there are no coho hatchery programs in the Upper Willamette River basin. Coho observed passing upstream of Willamette Falls are thought to be naturalized progeny of hatchery plants.

Recommendations

The HSRG has no specific recommendations for this population.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Upper Willamette River Tributaries 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	-	0%	0%	36%	0.00	6	0.6	1	0
No Hatchery	None None	-	0%	0%	0%	1.00	17	1.3	3	-
HSRG Solution	None None	-	0%	0%	36%	0.00	5	0.6	1	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	31%	0.00	6	0.7	1	0