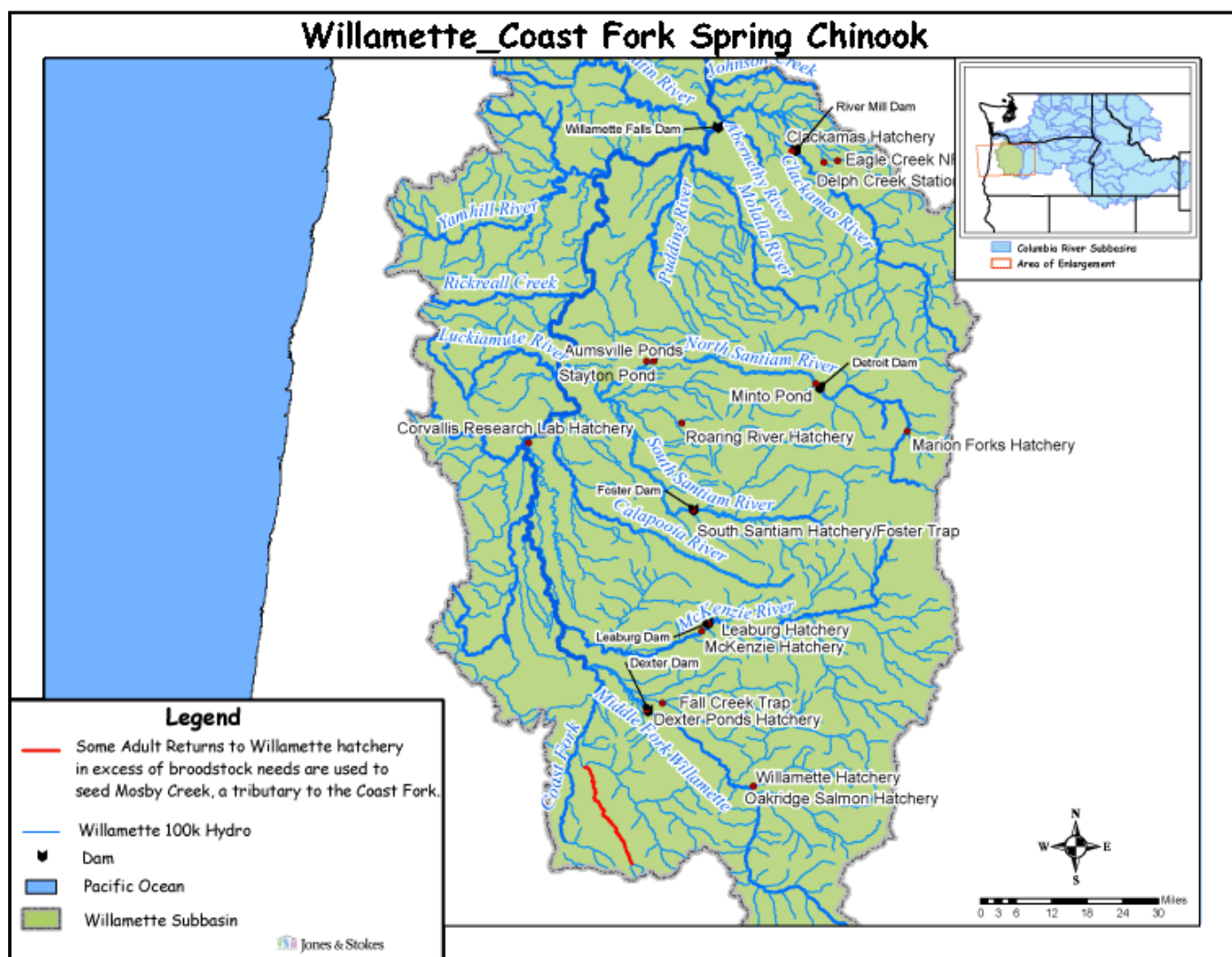


# Hatchery Scientific Review Group Review and Recommendations

## Willamette – Coast Fork Willamette Spring Chinook Salmon Population and Related Hatchery Programs

January 31, 2009



# 1 Coast Fork Willamette River Spring Chinook Salmon

Historically, there were seven demographically independent populations of spring Chinook salmon in the Upper Willamette River Spring Chinook Salmon ESU: Clackamas, Molalla/Pudding, Calapooia, North Santiam, South Santiam, McKenzie, and Middle Fork Willamette—all eastside tributaries (Meyers et al. 2003). The Coast Fork was not recognized as an independent population and a viable self-sustaining run does not currently occur in the Coast Fork River subbasin. No Coast Fork Willamette Chinook have been known to exist since before the 20th century (HGMP 2004).

Dorena and Cottage Grove dams block upstream access to spawning areas. Also, it is likely that low flows and warm-water discharge from the dams limit downstream Chinook salmon production (ODFW 1990; Subbasin Plan). Spawning and rearing habitat is very limited below these projects. Although some such habitat is currently available above the reservoirs for a limited number of spring Chinook, it is not accessible to returning adults (HGMP 2004). After rotenone treatments in the early 1970s, juvenile Chinook were released into the Cottage Grove Reservoir, resulting in an estimated 112,000 to 345,000 Chinook smolts migrating out of Cottage Grove Reservoir. Survival through the reservoirs may be limited by the presence of bass and other non-native fish species. Survival through the dams is unknown (HGMP 2004). In recent years, a few adult spring Chinook have been outplanted into Mosby Creek, resulting in limited production (personal communication, Kelly Reis, ODFW, January 2008).

## 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:** Coast Fork spring Chinook are part of the Upper Willamette River Chinook Salmon ESU, which was listed as threatened under the ESA in March 24, 1999 (64 CFR 14308).
- **Population Description:** The Coast Fork spring Chinook population is not recognized as a demographically independent population. It was given a Stabilizing designation for the HSRG review.
- **Recovery Goal for Abundance:** Unknown.
- **Productivity Improvement Expectation:** Unknown.
- **Habitat Productivity and Capacity (e.g., from EDT):** Productivity 1.5; Capacity 100 (assigned for this review).

### 2.2 Current Hatchery Programs Affecting this Population

No spring Chinook hatchery program currently operates in the Coast Fork of the Willamette River; however, about 30 adult spring Chinook from other programs are estimated to stray into this system annually. Under the current scenario, pHOS is estimated at 58%, even though no hatchery coho are released in the basin. Annually, approximately 17 natural-origin adults are estimated to return to the Coast Fork of the Willamette.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 30 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 0.5 to 1.1. Average abundance of natural-origin spawners (NOS) would decrease from approximately nine fish to approximately five fish. Harvest contribution of the natural and hatchery populations would go from approximately three fish to approximately two 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**

There are no hatchery programs for fall Chinook that operate in this basin. Out-of-basin strays are estimated to make up 58% 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 Coast Fork Willamette Spring 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%	49%	0.00	9	0.5	3	0
No Hatchery	None None	-	0%	0%	0%	1.00	5	1.1	2	-
HSRG Solution	None None	-	0%	0%	45%	0.00	10	0.6	3	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	41%	0.00	12	0.7	3	0