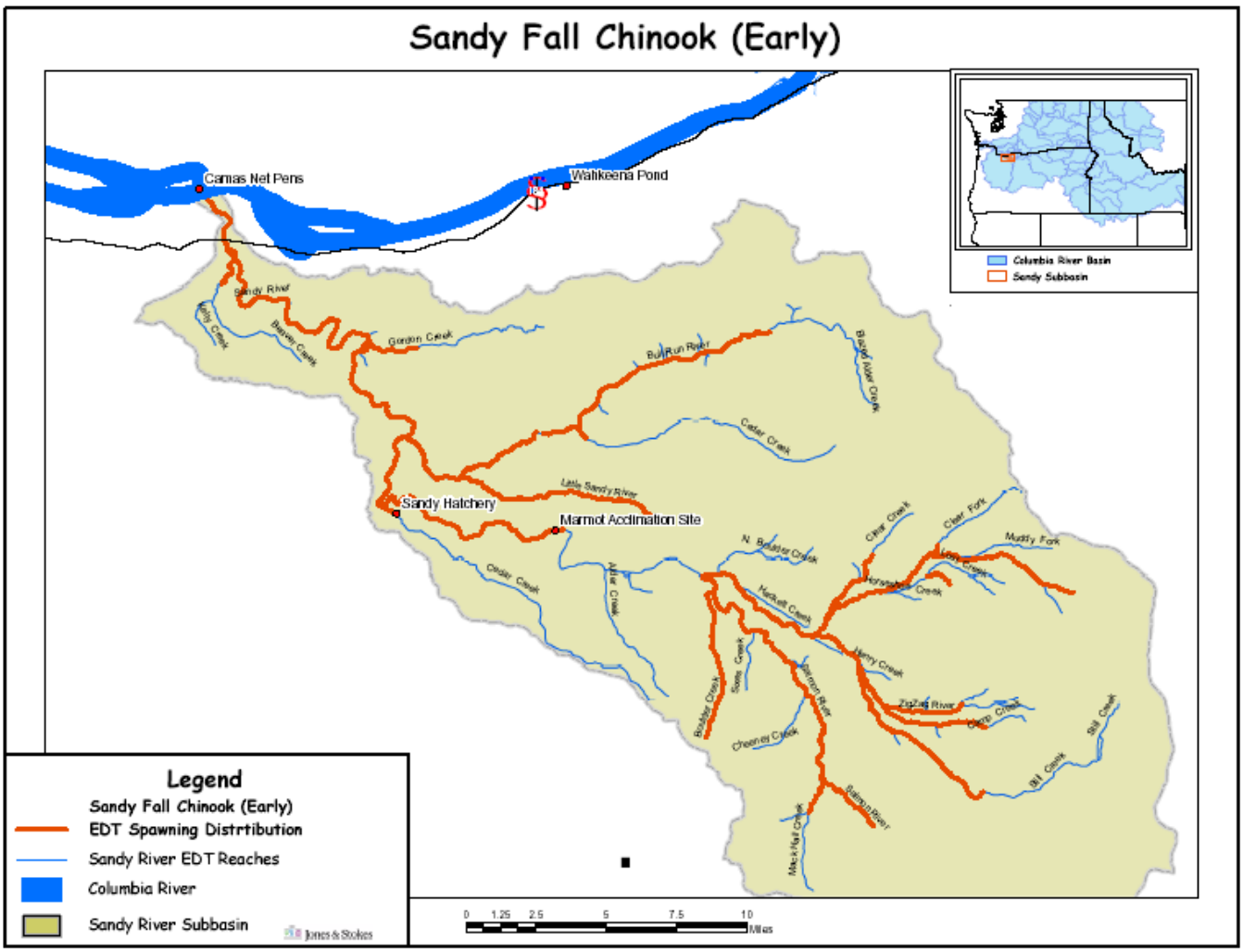
Hatchery Scientific Review Group
Review and Recommendations

Sandy Fall Chinook (Early)
Population and Related Hatchery Programs

January 31, 2009



1 Sandy Fall Chinook (Early)

The fall Chinook in the Sandy River are part of the Lower Columbia River Chinook Evolutionarily Significant Unit (ESU), which is listed as threatened under the Endangered Species Act (ESA). It is designated as a Stabilizing population.

Fall Chinook (tule) in the Sandy return in late August and generally spawn by October. Most of the spawning habitat is found in the mainstem Sandy, Bull Run, and Little Sandy Rivers. Little abundance data is available on the Sandy River tule fall Chinook population. There is no abundance or productivity evidence supporting the existence of a viable natural-origin population in the Sandy River, and comparisons with populations in similar habitats suggest the population is at significant risk. Historical fall Chinook production areas were limited to the lower mainstem and portions of the mainstem tributaries. Most of the core production area remains accessible. Portions of the historical distribution in the Bull Run River are blocked by a dam. Habitat quality remains adequate to support spawning throughout a significant portion of the accessible range. Habitat changes in the Columbia mainstem and estuary would likely have a significant effect on fall Chinook salmon and contribute to changes in the spatial structure os the population. This population is believed to be significantly affected by hatchery-origin fish from lower Gorge production facilities (Draft Oregon Lower Columbia Recovery Plan 2007).

2 Current Conditions

2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the Sandy fall Chinook (early) population.

- ESA Status: The wild population of fall Chinook in the Sandy River is listed as threatened and is part of the Lower Columbia River Chinook ESU.
- Population Description: The Sandy River fall Chinook (early) is a Stabilizing population.
- Recovery Goal for Abundance: Unknown.
- Productivity Improvement Expectation: Unknown
- Habitat Productivity and Capacity (from EDT): Productivity: 5.26; Capacity: 7,647.

2.2 Current Hatchery Programs Affecting this Population

No fall Chinook hatchery program currently operates in the Sandy River; however, fall Chinook salmon from other programs stray into the basin. About 90 adult fall Chinook are estimated to stray into this system annually. Under the current scenario, pHOS is estimated at approximately 4%, even though no hatchery fall Chinook are released in the Sandy River. Annually, approximately 1,600 natural-origin adults are estimated to return to the Sandy River.

Estimated number of hatchery strays affecting this population:

Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 90 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 1.8 to 2.6. Average abundance of natural-origin spawners (NOS) would increase from approximately 1,607 fish to approximately 2,569 fish. Harvest contribution of the natural and hatchery populations would also go from approximately 1,578 fish to approximately 2,524 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

No hatchery program for fall Chinook is operated in the basin. This population is designated a Stabilizing population, but might warrant an upgrade to Contributing status.

Recommendations

TheHSRG recommends that managers monitor the contribution of hatchery strays to spawning escapement.

Table 1. Results of HSRG analysis of current conditions and HSRG solution forSandy Fall Chinook (Early). 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%	4%	0.00	1,607	1.8	1,578	0
No Hatchery	None None	-	0%	0%	0%	1.00	2,569	2.6	2,524	-
HSRG Solution	None None	-	0%	0%	1%	0.00	3,866	3.3	1,784	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	1%	0.00	4,469	3.7	2,062	0