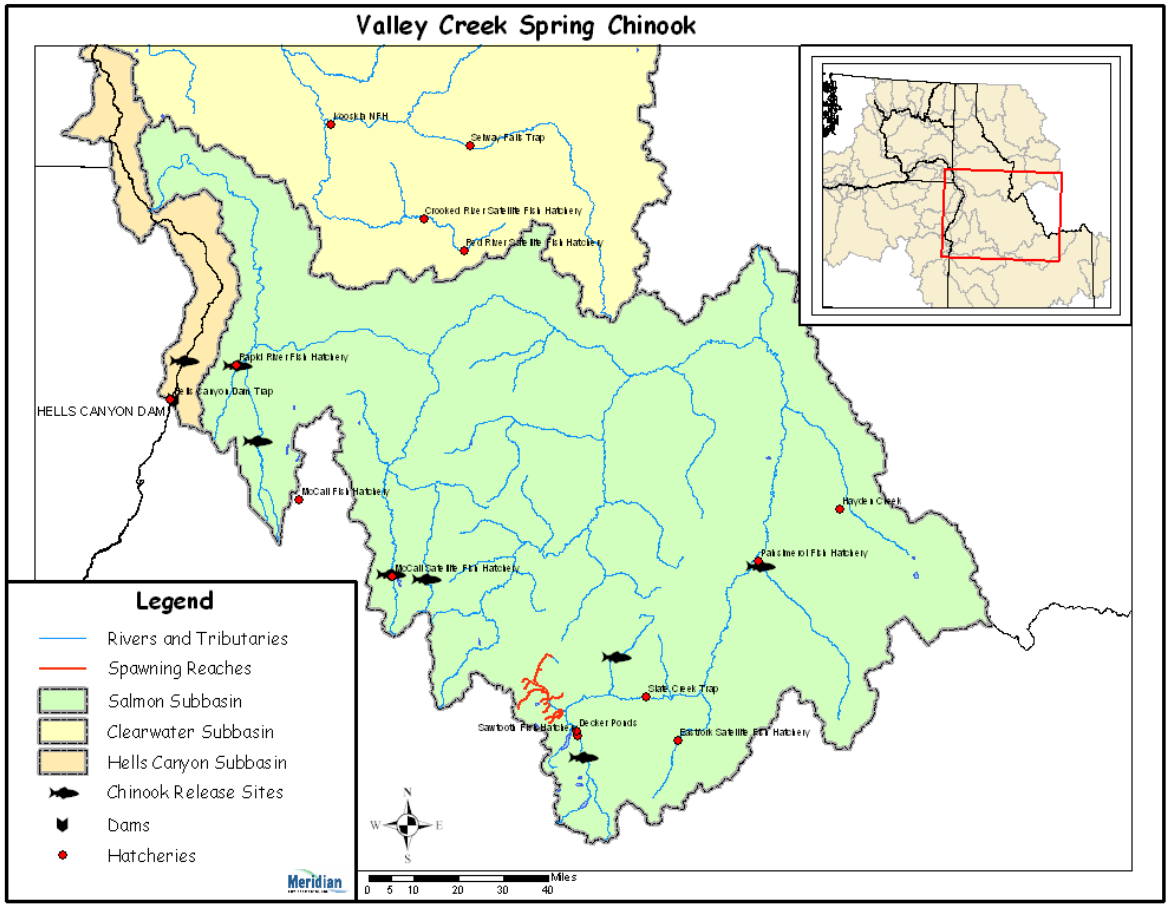
Hatchery Scientific Review Group
Review and Recommendations

Salmon - Valley Creek Spring Chinook
Population and Related Hatchery Programs

January 31, 2009



1 Salmon -Valley Creek Spring Chinook

The Valley Creek Chinook population is part of the Snake River Spring/Summer Chinook ESU. This population is characterized as a spring run adult life history type, although IDFG classifies it as containing both spring and summer runs. This population is listed as threatened under the Endangered Species Act. The Interior Columbia Technical Recovery Team (ICTRT) has classified this population as a "Basic" based on its historic habitat potential. A "Basic" population is one that requires a minimum abundance of 500 wild spawners and an intrinsic productivity greater than 2.21 recruits per spawner (R/S) to be viable.

Historically, it is estimated that anywhere from 2-3 million spring/summer Chinook returned to the entire Snake River each year (NPPC 2004). The portion returning to Valley Creek is unknown but was probably in the low thousands.

2 Current Conditions

Adult spring Chinook returns to the subbasin consist of both natural- and hatchery-origin fish. With the exception of Rapid River stock, natural- and hatchery-origin Chinook in the Salmon River drainage are listed as Threatened. Valley Creek and its tributaries support both spring and summer-run fish. Genetic samples from Valley Creek cluster closely with those from the upper Salmon River above Redfish Lake Creek. This is likely due to the influence of extensive outplanting from the Sawtooth Hatchery. The bulk of spawning in this population occurs upstream in Valley Creek, sufficiently separated from upper Salmon River spawning areas.

Current (1957 to 2003) natural population abundance (number of adults spawning in natural production areas) has ranged from 0 in 1995 to 1,496 fish in 1957. Abundance in recent years has been variable. The most recent 10-year geomean number of natural spawners was 35 fish (NOAA Draft Recovery Plan). Redd counts for Valley Creek from 1992 to 2003 generally have been less than 50 (StreamNet). AHA modeling data submitted by IDFG estimates current adult escapement and adjusted productivity for the natural-origin population at 55 and 0.71, respectively. The model also estimates that four hatchery-origin Chinook salmon stray into this population each year.

2.1 Current Population Status and Goals

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

- ESA Status: Snake River Spring/Summer Chinook are listed as threatened under ESA.
- Population Description: For the purpose of this review, the HSRF assigned this population as Contributing. The population currently meets the broodstock criteria for this population designation.
- Recovery Goal for Abundance: The ICTRT defined the Valley Creek Chinook population as "Basic" and identified a minimum abundance threshold of 500 natural-origin adult.
- Productivity Improvement Expectation: The ICTRT productivity standard associated with a population defined as "Basic" is 2.21.
- Habitat Productivity and Capacity: Productivity: 1.55; Capacity: 800

2.2 Current Hatchery Programs Affecting this Population

The IDFG, the Nez Perce Tribe, the Shoshone-Bannock Tribes, and the USFWS initiated a large-scale Chinook salmon supplementation study designed to continue through 2012. The study incorporates treatment and control streams in the Clearwater and Salmon subbasins. Valley Creek is a Control stream for this program. "Treatments" include the development and release of "supplementation" smolts (hatchery x natural parents) and the release of "supplementation" adults to treatment spawning streams (50:50 hatchery and natural-origin release design). In 2004, juvenile treatments ended in all but three ISS study streams. In 2007, adult treatments ended. The study will conclude in 2014 following a five-year period of "no treatment."

Estimated number of hatchery strays affecting this population:

- Hatchery strays from integrated in-basin programs: 0 fish.
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: four fish.

There is no Chinook salmon hatchery program operating in Valley Creek. However, AHA modeling indicates that some hatchery strays from the following programs may spawn in the Valley Creek:

- Salmon/ Little Salmon Spring Chinook (Rapid River Hatchery)
- Salmon/ East Fork/South Fork Johnson Creek Summer Chinook
- Salmon/ SF Salmon Summer Chinook (McCall Hatchery)
- Salmon/ Pahsimeroi Summer Chinook (Pahsimeroi Hatchery)
- Salmon Above Redfish Spring Chinook(Sawtooth Hatchery)

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 that Adjusted Productivity (with harvest and fitness factor effects from AHA) would increase from 1.1 to 1.5. Average abundance of natural-origin spawners (NOS) would increase from approximately 105 fish to approximately 268 fish. The harvest contribution of the natural and hatchery populations would go from approximately 11 fish to 29 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

Managers have identified a strategy for Valley Creek Chinook salmon that emphasizes maintaining existing natural spawning populations. Currently this population is consistent with the HSRG-defined standards of a Contributing population in terms of hatchery influence (pHOS less than 0.1), although abundance levels are low.

The ongoing Idaho Supplementation Study is ending in 2012. Adult returns from this program ended in 2007. The current phase of the study monitors production and productivity in the absence of adult supplementation. Following 2012, managers will have greater flexibility to pursue other management options.

Recommendations

The HSRG recommends that managers continue to monitor status and trend information for natural populations as well as the proportion of hatchery fish in natural production areas.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Valley Creek 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%	3%	0.00	105	1.1	11	0
No Hatchery	None None	-	0%	0%	0%	1.00	268	1.5	29	-
HSRG Solution	None None	-	0%	0%	5%	0.00	95	1.0	10	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	2%	0.00	272	1.4	30	0