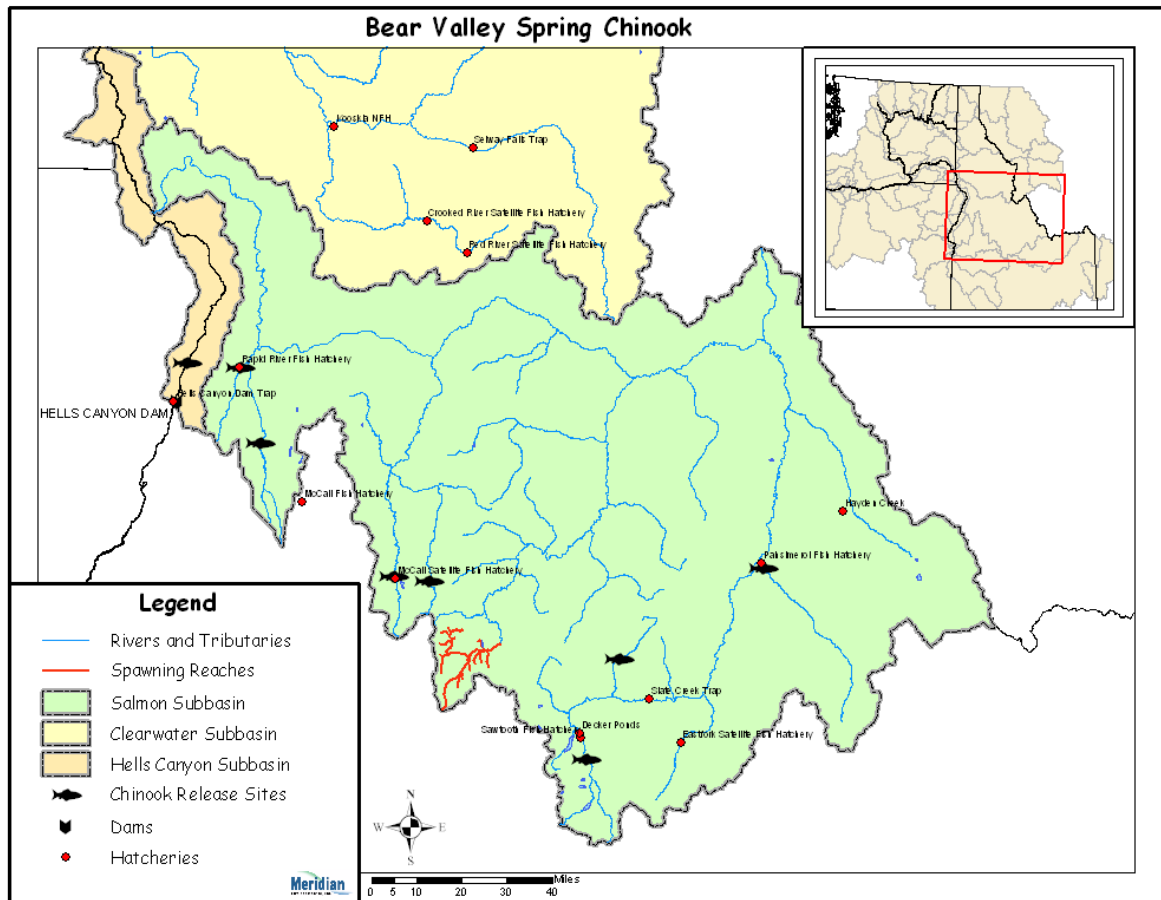


Hatchery Scientific Review Group Review and Recommendations

Salmon - Bear Valley Creek Spring Chinook Population and Related Hatchery Programs

January 31, 2009



1 Salmon Bear Valley Creek Spring/Summer Chinook

This population is considered part of the Snake River Spring/Summer Chinook ESU that is classified as threatened under the Endangered Species Act. The Interior Columbia Technical Recovery Team (ICTRT) listed this population as “Intermediate” based on its historic habitat potential. An “Intermediate” population is one that requires a minimum abundance of 750 natural spawners and an intrinsic productivity greater than 1.76 recruits per spawner (R/S) to be viable.

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

2 Current Conditions

Adult spring/summer Chinook returns to the subbasin consist of natural-origin fish only. No hatchery strays have been found during spawning surveys for this population. The natural-origin population is listed as Threatened. Spawning occurs from mid-July through late October in Bear Valley Creek, Elk Creek, Cache Creek and some smaller tributaries of these systems. Stream habitat quality is high as evidenced by the fact that this area supports some of the strongest bull trout populations in the Northwest (NPCC 2004). However, past mining activities have increased fine sediment levels in the stream.

Current (1960 to 2003) natural population abundance (number of adults spawning in natural production areas) has ranged from fewer than 16 fish in 1995 to 1,853 fish in 1962. Abundance in recent years has been highly variable. The most recent 10-year geomean number of natural spawners was 188 fish (NOAA Draft Recovery Plan). Redd count data for Bear Valley Creek from 1995-2002 ranged from 50-600 (StreamNet).

AHA modeling data submitted by IDFG estimates current adult escapement and adjusted productivity for the natural-origin population at 793 and 2.29, respectively.

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 HSRG assigned this population as Primary. The population currently meets the broodstock criteria for this population designation.
- **Recovery Goal for Abundance:** The ICTRT defined the Bear Valley Creek Chinook population as “Intermediate” and identified a minimum abundance threshold of 750 natural-origin adults.
- **Productivity Improvement Expectation:** The ICTRT productivity standard associated with a population defined as “Intermediate” is 1.76.
- **Habitat Productivity and Capacity:** Productivity: 2.5; Capacity: 1,400

2.2 Current Hatchery Programs Affecting this Population

There is no Chinook salmon hatchery program operating in the Middle Fork Salmon River drainage.

The IDFG, the Nez Perce Tribe, the Shoshone-Bannock Tribes, and the USFWS initiated a large-scale Chinook salmon supplementation study that will continue through 2012. The study incorporates treatment and control streams in the Clearwater and Salmon subbasins. Bear 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: natural-origin release design). In 2004, juvenile treatments ended in all but three study streams. In 2007, adult treatments ended. The study will conclude in 2014 following a five-year period of “no treatment” evaluation.

Estimated number of hatchery strays affecting this population:

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

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 go from 2.3 to 2.4. Average abundance of natural-origin spawners (NOS) would go from 793 fish to 869 fish. The harvest contribution of the natural population would go from approximately 87 fish to 95 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 Bear Valley Creek Chinook salmon that emphasizes maintaining existing natural spawning populations. Currently this population is consistent with the HSRG-defined standards of a Primary population (pHOS less than 0.05).

There are no releases of hatchery-origin Chinook salmon within the Middle Fork Salmon River Major Population Group.

Recommendations

The HSRG recommends that managers continue to monitor status and trend information for natural populations of Chinook salmon in Bear Valley Creek as well as monitor presence/absence and the proportion of hatchery fish in natural production areas.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Bear 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% | 0% | 1.00 | 793 | 2.3 | 87 | 0 |
| | | | | | | | | | | |
| No Hatchery | None None | - | 0% | 0% | 0% | 1.00 | 869 | 2.4 | 95 | - |
| HSRG Solution | None None | - | 0% | 0% | 0% | 1.00 | 868 | 2.4 | 95 | 0 |
| | | | | | | | | | | |
| HSRG Solution w/ Improved Habitat | None None | - | 0% | 0% | 0% | 1.00 | 1,020 | 2.6 | 111 | 0 |
| | | | | | | | | | | |