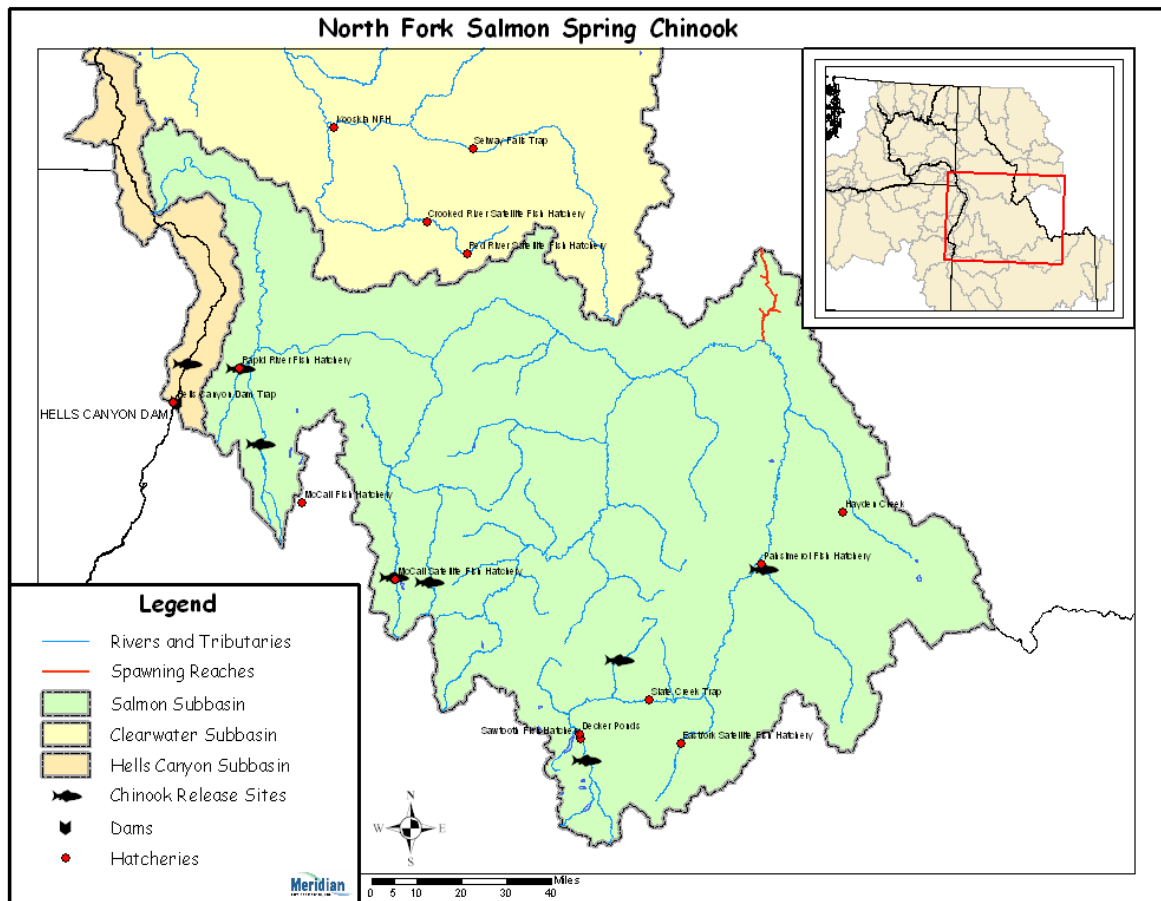


Hatchery Scientific Review Group Review and Recommendations

North Fork Salmon River Spring Chinook Population and Related Hatchery Programs

January 31, 2009



1 North Fork Salmon River Spring Chinook

The North Fork Salmon Chinook population is part of the Snake River Spring/Summer Chinook ESU. This population is characterized as a spring run adult life history type and is classified as threatened under the Endangered Species Act. The Interior Columbia Technical Recovery Team (ICTRT) listed this population as “Basic” based on its historic habitat potential. A “Basic” population is one that requires a minimum abundance of 500 natural 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 (NPCC 2004). The portion returning to the North Fork Salmon River is unknown but was probably in the low thousands.

2 Current Conditions

Adult spring Chinook returns to the basin consist of both natural-origin and a few hatchery strays from outside the population. With the exception of Rapid River stock, natural- and hatchery-origin Chinook in the Salmon River drainage are listed as Threatened. The population includes the North Fork Salmon River and all tributaries downstream to the mouth of Panther Creek. Spawning takes place from mid-July through late September in the North Fork Salmon and major tributaries. Juveniles emigrate from the system as yearlings in the spring of the year.

Current natural population abundance (number of adults spawning in natural production areas) is unknown for this population. Between 1990 and 2006, redd counts in the North Fork Salmon River have averaged approximately 20 fish (StreamNet).

AHA modeling data submitted by IDFG estimate current adult escapement and adjusted productivity for the natural-origin population at 35 and 0.73, 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 Contributing. The population currently meets the broodstock criteria for this population designation.
- **Recovery Goal for Abundance:** The ICTRT defined the North Fork Salmon River population as “Basic” and identified a minimum abundance threshold of 500 natural-origin adults.
- **Productivity Improvement Expectation:** The ICTRT productivity standard associated with a population defined as “Basic” is 2.21.
- **Habitat Productivity and Capacity:** Productivity: 1.6; Capacity: 550

2.2 Current Hatchery Programs Affecting this Population

There is no hatchery stock associated with this Chinook population. AHA modeling indicates however that some hatchery strays from the following programs may spawn in the North Fork Salmon River:

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

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. The North Fork Salmon River 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.”

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.

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 1.0 to 1.5. Average abundance of natural-origin spawners (NOS) would increase from approximately 59 fish to approximately 197 fish. The harvest contribution of the natural and hatchery populations would go from approximately six fish to 22 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 North Fork Salmon River Chinook salmon that emphasizes maintaining existing natural spawning populations. Currently this population is consistent with the HSRG-defined standards of a Contributing population (pHOS less than 0.10) 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 this natural population 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 North Fork Salmon 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%	5%	0.00	59	1.0	6	0
No Hatchery	None None	-	0%	0%	0%	1.00	197	1.5	22	-
HSRG Solution	None None	-	0%	0%	8%	0.00	53	0.9	6	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	3%	0.00	164	1.4	18	0