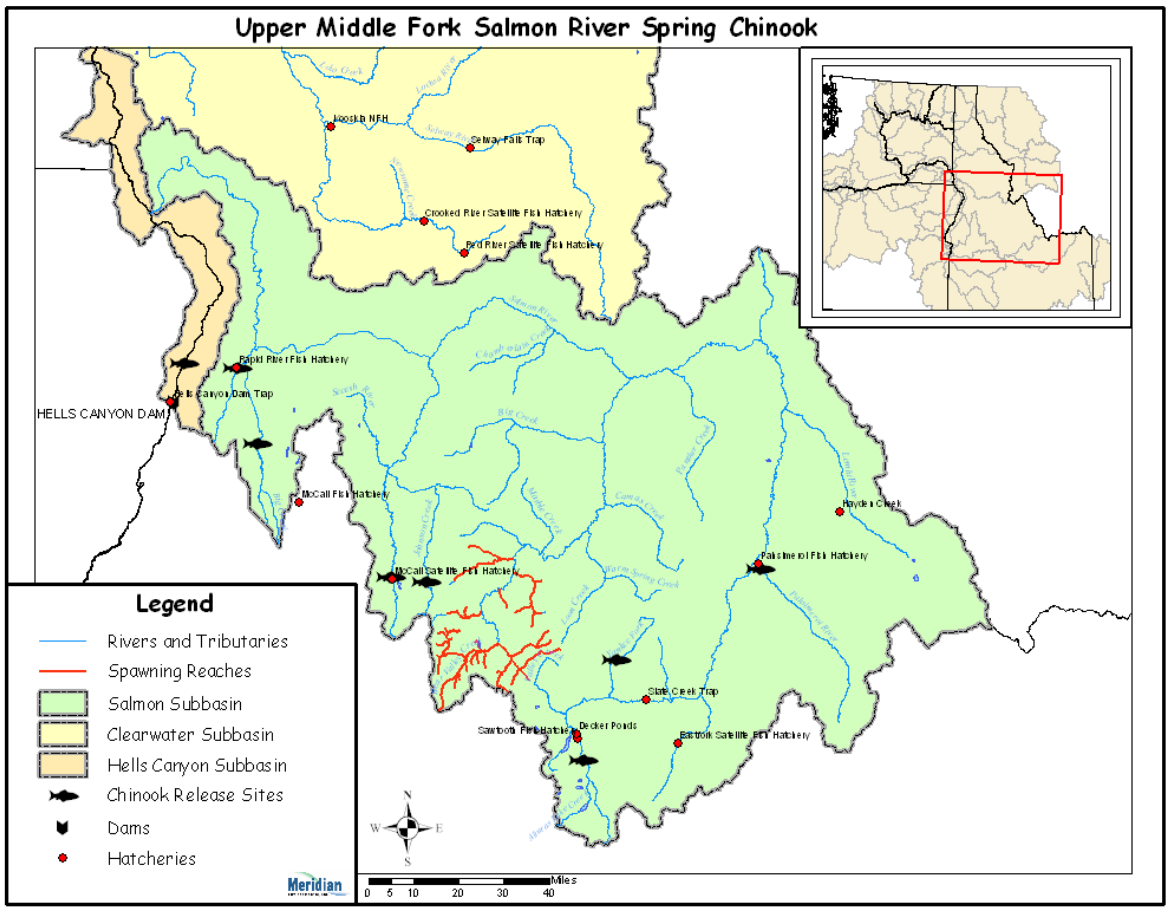
Hatchery Scientific Review Group
Review and Recommendations

Middle Fork Salmon
Upper Mainstem Spring Chinook
Population and Related Hatchery Programs

January 31, 2009



1 Middle Fork Salmon Upper Mainstem Spring 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 2-3 million spring/summer Chinook returned to the entire Snake River each year (NPPC 2004). The portion returning to the Upper Mainstem of the Middle Fork Salmon is unknown but was likely in the low thousands.

2 Current Conditions

Adult spring/summer Chinook returns to the subbasin consist of natural-origin fish only. This natural-origin population is listed as Threatened. The population includes all Chinook spawning in the mainstem Middle Fork above Indian Creek. Spawning occurs from mid-July through late September. Juveniles leave the system as yearlings starting in early March with migration continuing into spring.

Current population abundance (number of adults spawning in natural production areas) is unknown. Fewer than 50 redds were counted in the Middle Fork Mainstem Salmon River from 1995-2002 (the data were not broken out for upper and lower mainstem areas) (NPPC 2004). From 1961 through 1977, an average of 16 redds were counted in for the mainstem area between the mouth of Sulphur Creek and the confluence of Marsh and Bear Valley Creeks (StreamNet).

AHA modeling data submitted by IDFG estimate current adult escapement and adjusted productivity for the natural-origin population at 255 and 1.37, 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 Upper Mainstem Middle Fork Salmon River 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: 1.50; Capacity: 1,000

2.2 Current Hatchery Programs Affecting this Population

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

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: 0 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 be unchanged at 1.4. Average abundance of natural-origin spawners (NOS) would increase from approximately 254 fish to approximately 311 fish. The harvest contribution of the natural population would go from approximately 28 fish to 34 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 Upper Mainstem Middle Fork Salmon River 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 the Upper Mainstem Middle Fork Salmon River 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 Upper Mainstem of the Middle Fork Salmon Spring/Summer 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	254	1.4	28	0
No Hatchery	None None	-	0%	0%	0%	1.00	311	1.4	34	-
HSRG Solution	None None	-	0%	0%	0%	1.00	307	1.4	33	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	0%	1.00	416	1.6	45	0