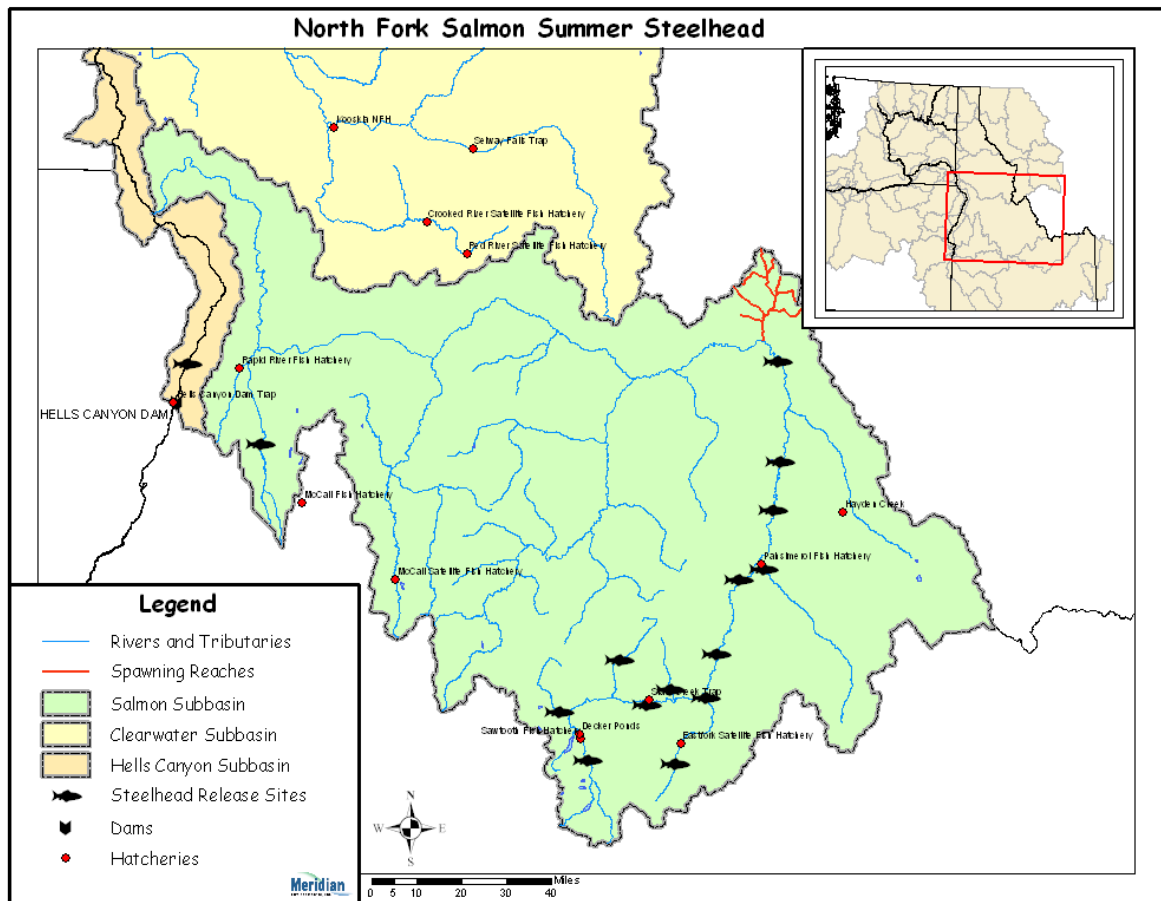


Hatchery Scientific Review Group Review and Recommendations

Salmon River North Fork Salmon Summer Steelhead A-Run Population and Related Hatchery Programs

January 31, 2009



1 Salmon North Fork Salmon Summer Steelhead (A-Run)

The North Fork Salmon River steelhead population is part of the Snake River Steelhead Distinct Population Segment (DPS). The DPS contains both A and B-run steelhead. This population is an “A” run and is classified as threatened under the Endangered Species Act and as “Basic” by the ICTRT. A “Basic” population is one that requires a minimum abundance of 500 natural-origin spawners and an intrinsic productivity greater than 1.30 recruits per spawner (R/S) to meet the 5% extinction risk criteria established by the ICTRT.

Historically, it was estimated that over two million steelhead returned to the Columbia River Basin, with about 25% of these originating from the Snake River. Ice Harbor Dam counts indicate that over a 100,000 steelhead returned to the Snake River in the early 1960s. There are no reliable estimates of the percentage of fish that have returned historically to the North Fork Salmon.

2 Current Conditions

This population includes all steelhead spawning in the North Fork and Indian Creek as well as the mainstem Salmon River and tributaries downstream to the mouth of Panther Creek. Spawning occurs from mid-March through mid-June. Juveniles emigrate from the system in the spring at ages 1-4, with most emigrating at ages 2 and 3.

Current population abundance (number of adults spawning in natural production areas) is unknown. There are no weirs where steelhead escapement can be monitored and steelhead redds are not counted. For Snake River steelhead “A” run populations lacking in direct abundance and productivity data, the ICTRT developed preliminary estimates representing an average population of this run type using Lower Granite Dam natural-origin fish counts. Abundance for the average “A” run steelhead in recent years has been moderately variable. The most recent 10-year geometric mean number of natural spawners was 456 fish. The most recent 13-year SAR adjusted and delimited geometric mean of returns per spawner was 1.69.

For AHA modeling, IDFG estimated natural-origin fish escapement and adjusted productivity for this population was 133 and 2.46, respectively. Although little data is available, the number of hatchery adults spawning naturally in the subbasin is assumed low.

Habitat quality in the North Fork Salmon appears to be high, with some impacts to channel structure evident that reduces the amount of pool habitat present (NPCC 2004).

2.1 Current Population Status and Goals

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

- **ESA Status:** Snake River steelhead 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 North Fork Salmon River A-run steelhead 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 1.30.
- Habitat Productivity and Capacity: Productivity: 3.0; Capacity: 226

2.2 Current Hatchery Programs Affecting this Population

There are no steelhead hatchery programs here and hatchery steelhead are not released directly into the population, although many adult hatchery steelhead that originated from upstream releases migrate upstream past the mouth of the North Fork Salmon River.

The Shoshone Bannock Tribes operate a streamside incubator program that plants approximately 1.0 million eyed-eggs in nearby watersheds. Supplementation from this program does not directly occur in the North Fork of the Salmon River.

AHA modeling indicates that some hatchery strays from the Salmon/Little Salmon Summer Steelhead (A- and B-Run) programs may spawn in the North Fork Salmon River.

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: six 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 2.5 to 2.7. Average abundance of natural-origin spawners (NOS) would increase from approximately 133 fish to approximately 140 fish. The harvest contribution of the natural and hatchery populations would go from approximately 19 fish to approximately 20 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 A-run steelhead that emphasizes maintaining existing natural spawning populations. Currently this population is operating consistent with the HSRG-defined standards for a Primary population (pHOS less than 0.05).

There are no releases of hatchery-origin steelhead within the North Fork Salmon River, Panther Creek, Chamberlain Creek, the Middle Fork Salmon River, or South Fork Salmon River drainages of the Salmon River Major Population Group.

Recommendations

The HSRG notes that there is a general lack of information related to steelhead abundance, productivity, spatial structure and diversity as well as straying of hatchery fish into natural production areas. An effort should be made to improve this information base.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Salmon-North Fork Salmon Summer Steelhead (A-Run). 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%	1%	0.00	133	2.5	19	0
No Hatchery	None None	-	0%	0%	0%	1.00	140	2.7	20	-
HSRG Solution	None None	-	0%	0%	1%	0.00	133	2.5	19	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	1%	0.00	157	2.8	23	0