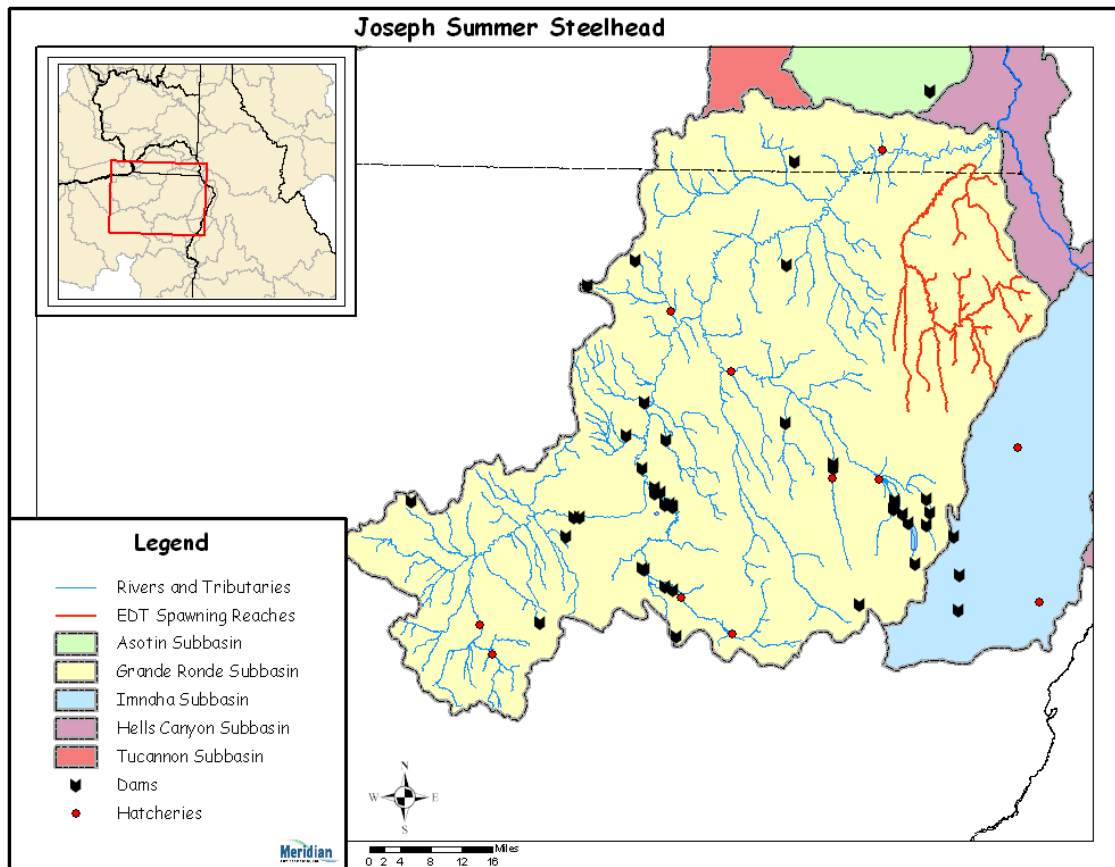


Hatchery Scientific Review Group Review and Recommendations

Grande Ronde-Joseph Creek Summer Steelhead Population and Related Hatchery Programs

January 31, 2009



1 Grande Ronde- Joseph Creek Summer Steelhead

The Joseph Creek steelhead population is part of the Snake River Basin Steelhead Distinct Population Segment (DPS) that includes all naturally spawned populations of steelhead in streams in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho (62 FR 43937; August 18, 1997). Several artificial propagation programs are considered part of the DPS: the Tucannon River natural stock, the North Fork Clearwater River stock reared at Dworshak National Fish Hatchery (NFH) and Clearwater Fish Hatchery and released in the Clearwater and Salmon Rivers¹, East Fork Salmon River local stock, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs.

The DPS has six major population groupings (MPGs): Lower Snake River, Clearwater River, Grande Ronde River, Salmon River, Hells Canyon, and the Imnaha River (ICTRT 2006), and contains both A and B-run steelhead (based on migration timing, ocean-age and adult size).

The Interior Columbia Technical Recovery Team (ICTRT) classified the Joseph Creek population as a “Basic” population based on historical habitat potential. A steelhead population classified as Basic has a mean minimum abundance threshold of 500 naturally produced spawners with sufficient intrinsic productivity to achieve a 5% or less risk of extinction over a 100-year timeframe.

According to the Draft Snake River Steelhead Recovery Plan, Snake River steelhead enter fresh water from June to October and spawn the following spring from March to June. Emergence occurs by early June in low elevation streams and as late as mid July at higher elevations. Snake River steelhead usually smolt at age 2 or age 3 years and reside in marine waters for 1 to 3 years prior to returning to their natal stream to spawn at 4 or 5 years of age.

EDT modeling of historic steelhead production indicates that the stream may have produced over 2,750 adults.

2 Current Conditions

Summer steelhead spawn in Joseph Creek and its major tributaries (e.g. Chesnimnus and Elk creeks). Recent estimates have put steelhead escapement at a little over 1,500 fish (Draft Snake River Recovery Plan). The watershed is reserved for wild fish production only; therefore, no hatchery fish are released to the stream.

2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the Joseph Creek steelhead population.

- **ESA Status:** The Snake River Basin steelhead DPS was listed as threatened on August 18, 1997; the threatened status was reaffirmed on January 5, 2006.
- **Population Description:** The ICTRT classified the Joseph Creek population as a “Basic” population based on historical habitat potential (ICTRT 2005). For the HSRG review, the population has been classified as Primary.

¹ Artificial propagation programs for steelhead in the Clearwater River subbasin are based on the North Fork Clearwater stock which was trapped at the foot of Dworshak Dam when it blocked access to the North Fork in 1969.

- Recovery Goal for Abundance: 500 fish
- Productivity Improvement Expectation: The 100-year geometric mean for abundance and productivity (i.e. growth rate) of A-run steelhead in Joseph Creek will be improved to exceed the 5% extinction-risk (viability) curves developed by the ICTRT (e.g., ~ 500 spawners at a productivity of 1.3).
- Habitat Productivity and Capacity: Productivity: 3; Capacity: 3,500

2.2 Current Hatchery Programs Affecting this Population

Currently, there are no steelhead hatchery programs in Joseph Creek. The stream is reserved by WDFW for natural steelhead production only.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin integrated programs: NA
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 3 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).

Because there is currently no hatchery influence on this population (pHOS = 0) our analysis estimated that Adjusted Productivity (with harvest and fitness factor effects from AHA) would stay at 2.7, average abundance of natural-origin spawners (NOS) would

remain at approximately 2,240 fish, and the harvest contribution of the natural population would remain at 250 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 Joseph Creek steelhead that emphasizes maintaining existing natural spawning populations. Currently this population is managed for natural production consistent with the HSRG-defined standards of a Primary population (pHOS less than 0.05).

Recommendations

The HSRG has no specific recommendations for this population.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Joseph Creek Summer Steelhead. 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	2,237	2.7	254	0
No Hatchery	None None	-	0%	0%	0%	1.00	2,239	2.7	254	-
HSRG Solution	None None	-	0%	0%	0%	1.00	2,238	2.7	254	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	0%	1.00	2,596	3.0	295	0