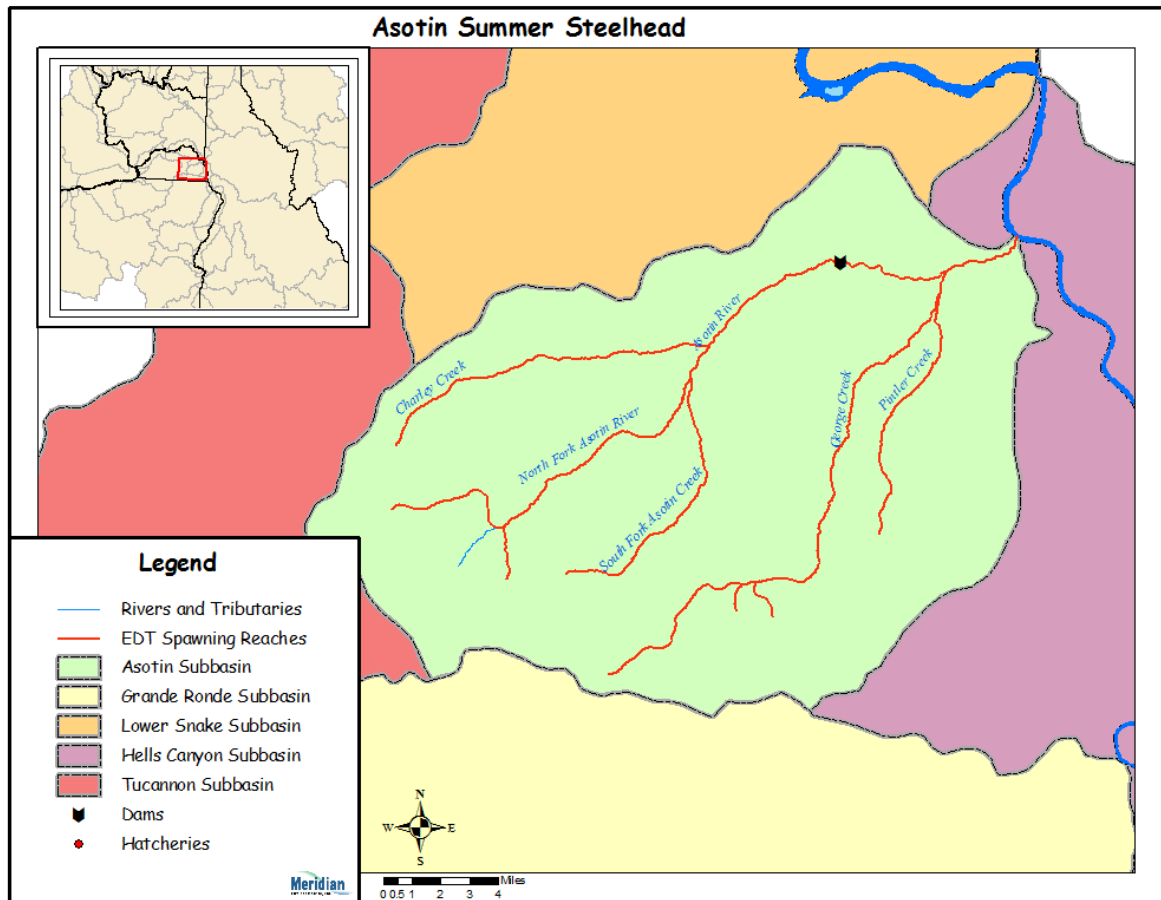


# Hatchery Scientific Review Group Review and Recommendations

## Asotin Creek Summer Steelhead (A-Run) Population and Related Hatchery Programs

January 31, 2009



## 1 Asotin Creek Summer Steelhead (A-run)

The Asotin 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). 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 Asotin Creek population is an A-run, and is included in the Lower Snake River MPG.

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 Rivers<sup>1</sup>, East Fork Salmon River local stock, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs. The DPS was listed as a threatened under the ESA on August 18, 1997; this status was reaffirmed on January 5, 2006.

The Interior Columbia Technical Recovery Team (ICTRT) classified the Asotin Creek population as “Basic” 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 2 years prior to returning to their natal stream to spawn at 3 to 5 years of age.

EDT modeling of historic steelhead production indicates that the stream may have produced over 2,500 adults.

## 2 Current Conditions

Steelhead spawning has been observed in the upper mainstem Asotin Creek and in several tributaries (George Creek, Pintler Creek, Charlie Creek, and the North and South Forks). This population also includes steelhead in Alpowa, Almota, Steptoe, Tenmile and Couse creeks. Juvenile steelhead rearing has been documented in most of the Asotin Creek drainage that is accessible to adult migration, as well as in the accessible portions of those other drainages listed above.

In 2006, 477 adult steelhead were recorded at the adult trap on Asotin Creek. Of the fish captured, 34 were of hatchery origin. Based on trap efficiency values, WDFW estimated that 555 adults spawned in the stream above the trap site that year. This excludes three miles of mainstem Asotin Creek, all of the George Creek drainage, and Almota, Alpowa, etc. Large numbers of kelts were also collected at the trap post-spawning.

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<sup>1</sup> 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 access to the North Fork was blocked in 1969.

Approximately, 2% of the female adult steelhead were repeat spawners. There were no male repeat spawners (WDFW 2007).

## 2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the Asotin 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 Asotin Creek population as “Basic” based on historical habitat potential (ICTRT 2005). For the HSRG review, the population has been classified as Primary.
- **Recovery Goal for Abundance:** 500
- **Productivity Improvement Expectation:** The 100-year geometric mean for abundance and productivity (i.e. growth rate) of A-run steelhead in Asotin 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: 2.5 ; Capacity: 1,400

## 2.2 Current Hatchery Programs Affecting this Population

Currently, there are no hatchery programs for steelhead in the Asotin 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: 0
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 75
- Above the Asotin trap, there were 34-53 strays in 2008. Nearly 50% of the 2008 Alpowa population were hatchery strays.

## 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 1.3 to 2.3. Average abundance of natural-origin spawners (NOS) would increase from approximately 354 fish to approximately 817 fish. The harvest contribution of the natural and hatchery populations would go from approximately 38 fish to approximately 87 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 not assigned a population designation for the Asotin Creek summer steelhead. Currently this population is managed for natural production but is consistent with the standards of a Contributing population (pHOS is less than 0.10). This is a small population that includes Asotin Creek and several other small tributaries to the Snake River. There is no hatchery program associated with this population; however, a high proportion of hatchery strays have been observed in the tributaries.

#### **Recommendations**

If managed as a Primary or Contributing population, methods will be required to control hatchery strays. The managers need to improve the information base about this population.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Asotin Creek Summer Steelhead. The yellow row indicates the natural population and light green 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%	0%	9%	0.00	354	1.3	38	0
No Hatchery	None None	0.0	0%	0%	0%	1.00	817	2.3	87	-
HSRG Solution	None None	0.0	0%	0%	1%	0.00	750	2.1	80	0
HSRG Solution w/ Improved Habitat	None None	0.0	0%	0%	1%	0.00	1683	2.4	179	0