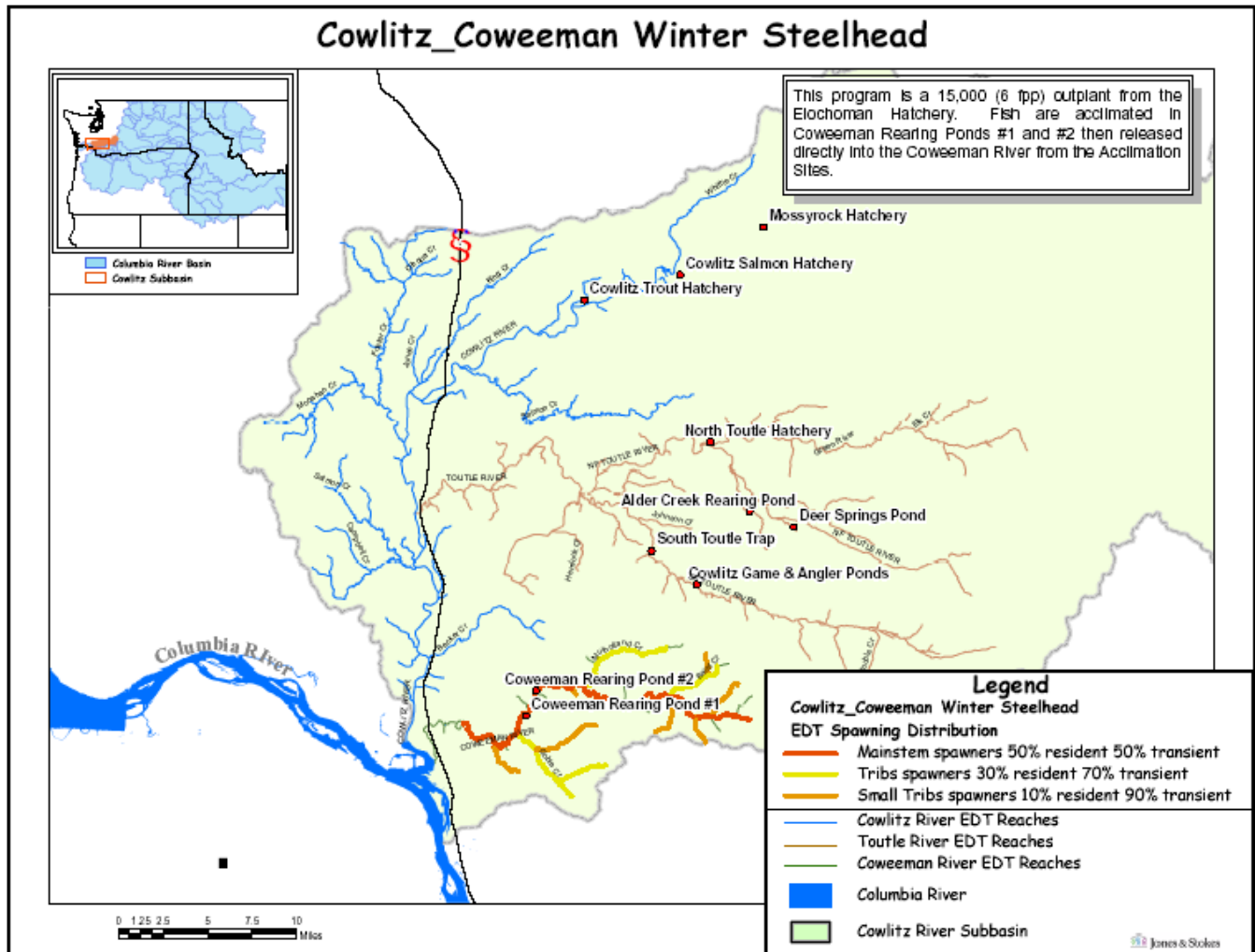


Hatchery Scientific Review Group Review and Recommendations

Coweeman River Winter Steelhead Population and Related Hatchery Programs

January 31, 2009



1 Coweeman River Winter Steelhead

Stock status was rated Depressed in 2002 because of chronically low escapements. An escapement goal of 1,064 fish has been established for this stock. This stock has had consistently low escapement estimates since 1989, with an all-time low escapement of 44 fish in 1996.

Coweeman winter steelhead were identified as a stock based on their distinct spawning distribution. Most spawning takes place from March through early June in the mainstem Coweeman River and in tributaries such as Mulholland and Gobble creeks. No genetic analysis has been done on Coweeman winter steelhead.

This is a native stock with wild production. The Coweeman River has been planted with hatchery winter steelhead since 1957. Most of the releases were Chambers Creek Hatchery winter steelhead stock, whose spawning peak occurs almost three months prior to the spawning peak of the native stock. It is not believed that significant hybridization has occurred between the Chambers Creek stock and the native stock (SaSSI, 2002).

2 Current Conditions

2.1 Current Population Status and Goals

This program conflicts with conservation of the native steelhead which are ESA-listed as a threatened species.

- ESA Status: Coweeman winter steelhead are listed as threatened and the population is part of the Lower Columbia River Steelhead DPS.
- Population Description: Primary
- Current Viability Rating: Low
- Recovery Goal for Abundance: 500
- Productivity Improvement Expectation: 25%

Habitat Productivity and Capacity (from EDT): Productivity: 3.34; Capacity: 609

2.2 Current Hatchery Programs Affecting this Population

This program currently releases 15,000-20,000 marked steelhead smolts. Broodstock are obtained from Elochoman Hatchery and are early stock steelhead (originally Chambers Creek stock). There is no means to collect returning hatchery-origin adults that are not harvested.

PNI and pHOS Estimates (include straying from all hatchery programs): None; this is a segregated program.

- Estimated Productivity (with harvest and fitness factor effects from AHA): 2.7
- Projected Average Natural Origin Escapement: 468
- Average Harvest Contribution: 159 adults
- Hatchery strays from in-basin integrated hatchery program – from AHA summary: N/A

Hatchery strays from in-basin segregated and out-of-basin hatchery programs – from AHA summary: 81

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 Adjusted Productivity (with harvest and fitness factor effects from AHA) would increase from 2.7 to 3.1. Average abundance of natural-origin spawners (NOS) would increase from 467 to 541. Harvest contribution of the natural and hatchery populations would go from 159 to 31.

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

Coweeman winter steelhead are listed as a Primary population for recovery and are affected directly by fish from one segregated hatchery steelhead program. Annually, 15,000- 20,000 “early run” steelhead smolts are outplanted from the Elochoman Hatchery into the Coweeman River after receiving brief acclimation within the watershed. This population meets Primary standards and HSRG recommendations for pHOS; however, the HSRG noted the ecological effect of these fish on an ESA-listed species. While these outplants do not appear to be having a genetic effect, considering Kostow’s data for summer steelhead, the HSRG urges caution (Kostow 2003, 2004, 2006).

Recommendations

Consideration should be given to either eliminating the current segregated program and designating this stream a “Wild Steelhead Management Zone”, or developing an integrated program. A larger integrated program could be implemented and still meet HSRG standards for a Primary population. This would require facilities to capture natural brood.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Coweeman Winter 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%	2%	0.00	467	2.7	27	0
	Seg Harv	20.2	0%						132	0
No Hatchery	None None	-	0%	0%	0%	1.00	541	3.1	31	-
HSRG Solution	None None	-	0%	0%	1%	0.00	511	2.8	30	0
	Seg Harv	22.1	0%						72	1
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	1%	0.00	602	3.2	35	0
	Seg Harv	22.1	0%						72	1

Note: Segregated hatchery fish are early-timed Elochoman Winter Steelhead released into the Coweeman.