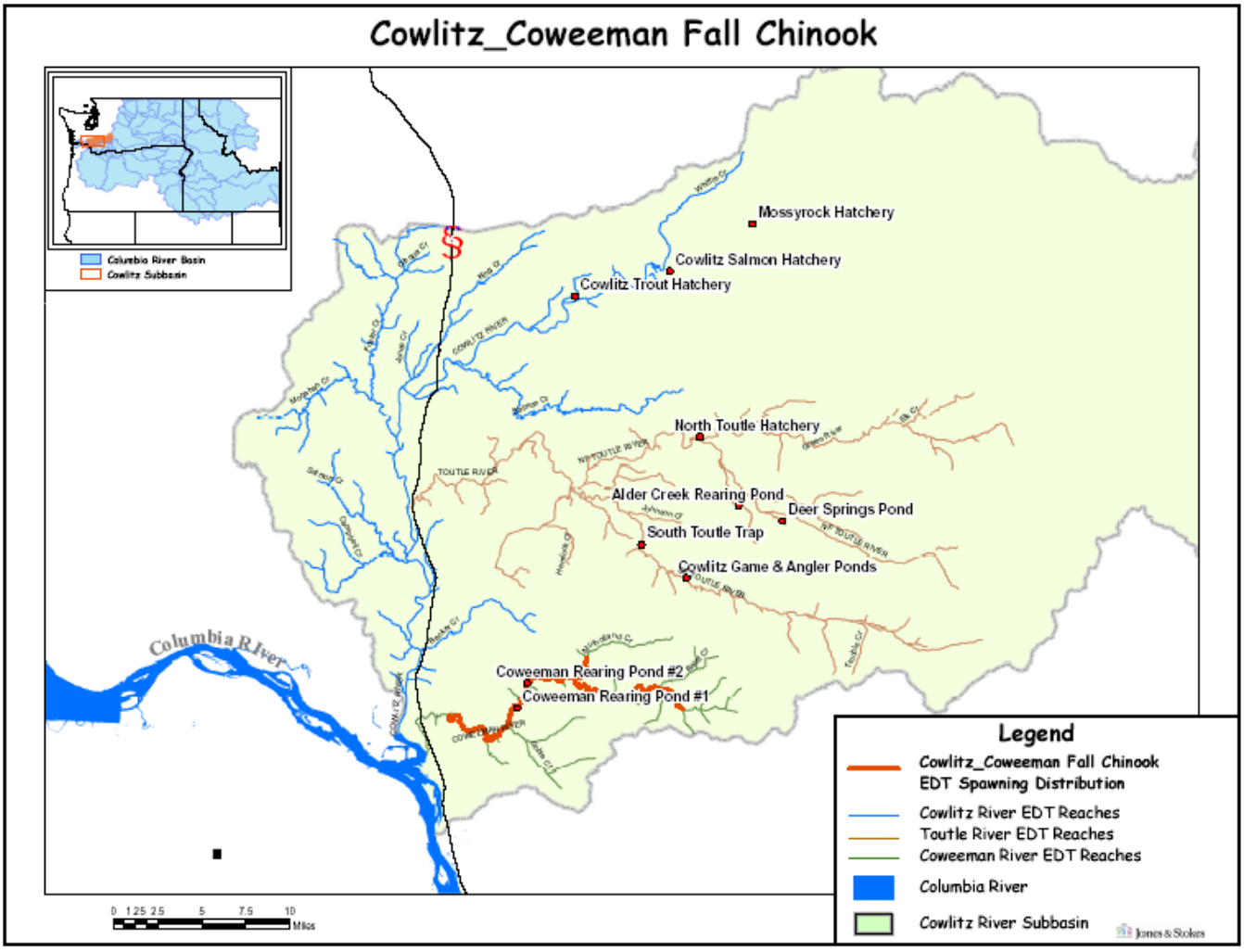
Hatchery Scientific Review Group
Review and Recommendations

Cowlitz - Coweeman Fall Chinook Population
Population and Related Hatchery Programs

January 31, 2009



1 Cowlitz Fall Chinook (Coweeman)

Stock status was rated Depressed in 2002, because of chronically low escapements and a short-term severe decline in 1998, 1999 and 2000. Most tule fall Chinook stocks, such as Coweeman fall Chinook, experienced poor survival in the 1990s. The escapement goal for the Coweeman is 1,000 adults. Generally, this goal has not been met. Recently, six miles of index areas have been added to the database. Therefore, new data are not comparable to older data. The Coweeman was identified as Depressed as a result of the low escapement in recent years. Most spawning occurs from the Jeep Club bridge upstream to Mulholland Creek. Spawning occurs from late September to mid-November.

Allozyme analysis of Coweeman fall Chinook spawners sampled in 1996 and 1997 showed that they are significantly different from all other Columbia Basin Chinook stocks examined, including lower Columbia River hatchery fall Chinook such as Cowlitz (Myers et al. 2002).

This is a native stock with wild production. In the 1992 SaSSI, Coweeman fall Chinook were characterized as being of mixed native and non-native-origin with composite production based on a history of releases of Spring Creek, Washougal and Toutle hatchery Chinook between 1951 and 1979 (SaSSI 2002).

2 Current Conditions

2.1 Current Population Status and Goals

- ESA Status: This population is listed as threatened and is part of the Lower Columbia Chinook ESU.
- Population Description: The Coweeman population is one of twenty fall Chinook (tule) populations in the ESU, and is designated as a Primary population (LCSR&SP 2004). It is one of two tule populations without a history of significant hatchery influence and is considered a genetic legacy population.
- Current Viability Rating: Medium, but the goal is to achieve a rating of High+.
- Recovery Goal for Abundance: 3,600 naturally spawning fish.
- Productivity Improvement Expectation: The recovery plan (LCSR&SP 2004) provides an expectation of an approximately 70% improvement in productivity and capacity for this stock.
- Habitat Productivity and Capacity (from EDT): Productivity 4.33; Capacity 2,376.

2.2 Current Hatchery Programs Affecting this Population

This population is one of only two tule populations without a history of significant hatchery influence and is considered a genetic legacy population.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin integrated hatchery program: NA
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 21 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 Recommendations 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 1.7 to 2.1. Average abundance of natural-origin spawners (NOS) would increase from 488 to 696. Harvest contribution of the natural and hatchery populations would go from 489 to 698.

3.2 HSRG Observations/Recommendations

In the Observations and Recommendations 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 incorporate all factors affecting productivity (i.e., habitat quality, hatchery fitness effects, and harvest rates).

Observations

This has been designated as a Primary population. Habitat productivity and abundance must be improved to achieve conservation goals. There is apparently a low proportion of hatchery strays in the natural spawning escapement.

Recommendations

This population should continue to be managed for natural production. Monitoring should occur to assure that the influence of other hatchery populations is consistent with its primary population designation.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Cowlitz-Coweeman Fall 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.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%	3%	0.00	488	1.7	489	0
No Hatchery	None None	-	0%	0%	0%	1.00	696	2.1	698	-
HSRG Solution	None None	-	0%	0%	1%	0.00	1,123	2.8	535	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	1%	0.00	1,311	3.1	624	0