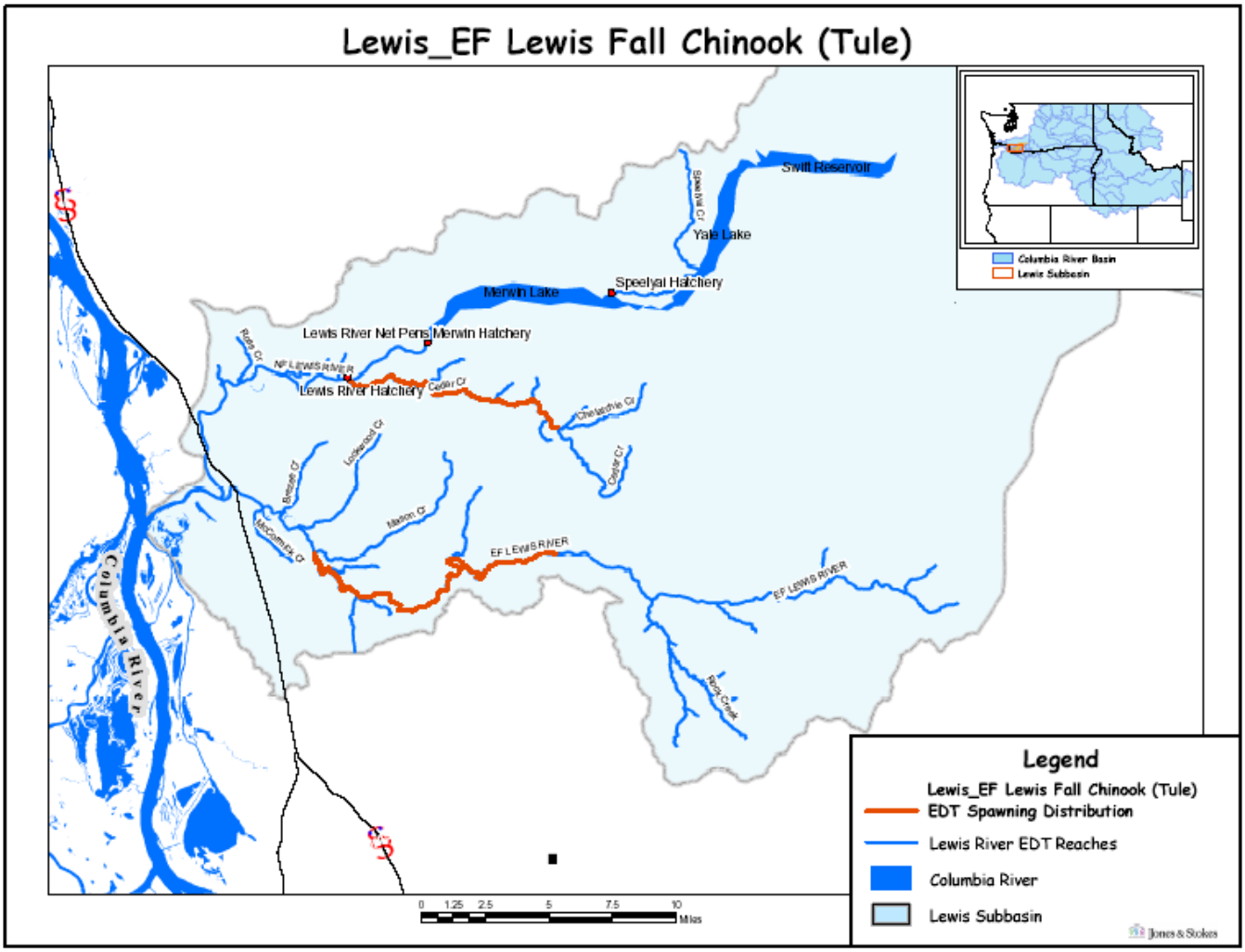
Hatchery Scientific Review Group
Review and Recommendations

East Fork Lewis Fall Chinook (Tule)
Population and Related Hatchery Programs

January 31, 2009



1 East Fork Lewis Fall Chinook (Tule)

East Fork Lewis fall Chinook were identified as a stock based on their distinct spawning distribution and spawning timing. The stock has a tule fall Chinook component and a bright fall Chinook component. Most spawning takes place in the 4-mile stretch from Daybreak Park upstream to Lewisville.

Two distinct spawning peaks are evident. Early fish spawn mainly in October, like tule fall Chinook, while late fish generally spawn from November through January, like bright fall Chinook.

Allozyme analysis has shown that East Fork Lewis fall Chinook are genetically distinct from most Lower Columbia Chinook stocks examined, but are most similar to Lewis fall Chinook. This is a native stock with wild production. Hatchery fish have never been released into the East Fork Lewis River (SaSSI 2002).

2 Current Conditions

2.1 Current Population Status and Goals

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

- ESA Status: Threatened
- Population Description: This has been designated a Primary population.
- Recovery Goal for Abundance: 7,300 fish
- Productivity Improvement Expectation: The recovery plan (LCSR&SP 2004) provides an expectation of an approximately 90% improvement in productivity and capacity for this stock.
- Habitat Productivity and Capacity (e.g., from EDT): Productivity: 2.84; Capacity: 4,690
- Populations Affected by this Hatchery Population Include: None identified

2.2 Current Hatchery Programs Affecting this Population

- No hatcheries are present in this watershed.
- Modeling indicates hatchery strays from the Kalama, Washougal and Cowlitz programs could be affecting this natural 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: 145 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 0.6 to 1.2. Average abundance of natural-origin spawners (NOS) would increase from 160 to 294. Harvest contribution of the natural and hatchery populations would go from 223 to 409.

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 population is designated a Primary population that is not meeting standards for this designation because of strays from out-of-basin hatchery programs. The analysis assumed a 75% removal of hatchery-origin adults from the natural spawning escapement.

Recommendations

The HSRG recommends that managers monitor the contribution of hatchery strays to spawning escapement.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for East Fork Lewis River Fall Chinook (Tule). 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%	42%	0.00	160	0.6	223	0
No Hatchery	None None	-	0%	0%	0%	1.00	294	1.2	409	-
HSRG Solution	None None	-	0%	75%	1%	0.00	1,526	1.8	727	0
HSRG Solution w/ Improved Habitat	None None	-	0%	75%	1%	0.00	1,915	2.0	912	0