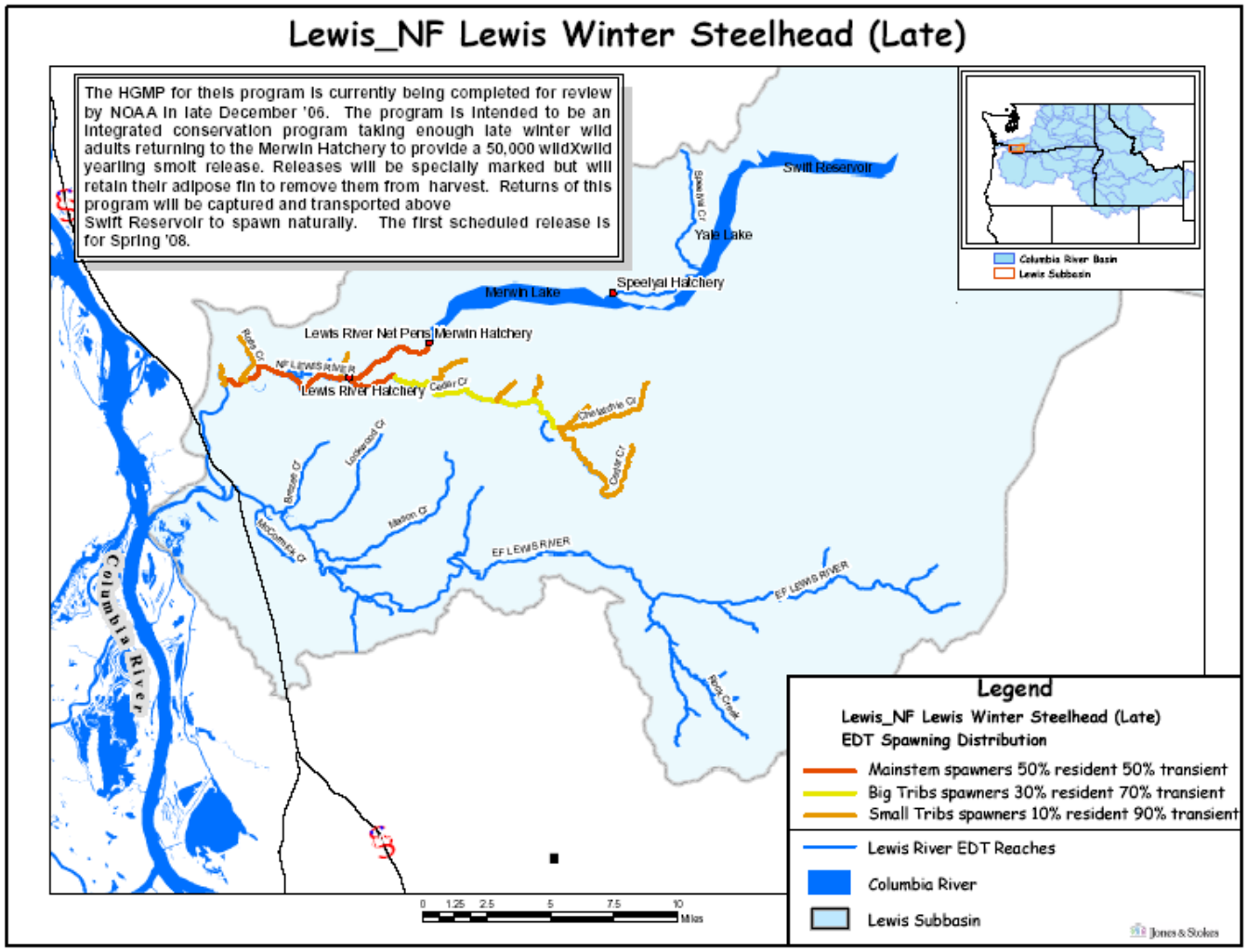
Hatchery Scientific Review Group
Review and Recommendations

North Fork Lewis River Winter Steelhead
Population and Related Hatchery Programs

January 31, 2009



1 North Fork Lewis River Winter Steelhead

The North Fork Lewis native winter steelhead population is documented in the Lower Columbia River Salmon Recovery Plan (LCRSRP). The 2002 WDFW SaSi report also identifies a native population with wild production, although the 2002 report rated this stock status as "unknown" since there are no adequate abundance trends available. WDFW has established an escapement goal of 698 fish for this population.

North Fork Lewis River winter steelhead were identified as a stock based on their distinct spawning distribution and run timing. Most spawning takes place in the North Fork Lewis River, Cedar Creek and their tributaries. Spawning generally occurs from early March through early June (WDFW 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 DPS.
- Population Description: Contributing
- Current Viability Rating: Very Low
- Recovery Goal for Abundance: A viability goal of 600 adults was identified in the LCRSRP; an interim goal of 150 adults was also identified.
- Productivity Improvement Expectation: Unknown

  Habitat Productivity and Capacity (from EDT): Productivity: 3.49; Capacity: 405

2.2 Current Hatchery Programs Affecting this Population

The Merwin Hatchery releases 100,000 smolts from locally-returning broodstock originating from early-returning Chambers Creek steelhead (in Puget Sound) via the Elochoman Hatchery. In addition, 285,000 summer steelhead are released into the lower river each year. Estimated numbers of hatchery strays affecting this program:

- 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): 372

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 influences, 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 1.6 to 3.2. Average abundance of natural-origin spawners (NOS) would increase from 158 to 365. Harvest contribution of the natural and hatchery populations would go from 1,131 to 21.

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

This is a Contributing population that does not achieve standards for this designation. Winter steelhead are planned to be reintroduced into the upper Lewis River subbasin. There are two segregated hatchery programs that affect the lower river population, a segregated summer steelhead program releasing 285,000 smolts and a segregated winter steelhead program releasing 100,000 smolts. Hatchery fish make up more than 50% of the spawning escapement, resulting in an effective pHOS greater than 10%. In order to meet the guidelines for a winter steelhead Contributing population, both hatchery programs would need to be reduced to approximately 50,000 smolts each. Managers might consider designating this as a Stabilizing population given the small population capacity of the system and current harvest benefits of the existing programs.

Once passage has been provided above the hydroelectric projects on the North Fork, more management options will be available. If reintroduction is successful, then this population should be re-evaluated for Primary population status and the program type changed to integrated with a corresponding change (increase) in program size.

Recommendations

If designated as a Stabilizing population, the existing programs are consistent with the guidelines for this categorization.

If the program continues to be designated as a Contributing population, the program would have to be reduced as described in Observations above.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for North Fork Lewis River 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	-	75%	0%	27%	0.00	158	1.6	9	0
	Seg Harv	100.2	75%						1,122	416
No Hatchery	None None	-	0%	0%	0%	1.00	365	3.2	21	-
HSRG Solution	None None	-	75%	0%	27%	0.00	158	1.6	9	0
	Seg Harv	100.2	75%						1,122	416
HSRG Solution w/ Improved Habitat	None None	-	75%	0%	24%	0.00	186	1.8	11	0
	Seg Harv	100.2	75%						1,122	416