

1 East Fork Lewis River Coho

The historical East Fork Lewis adult population is estimated to have been between 5,000 and 40,000 coho. The majority of returns are late stock that spawn from late November to March. Some early stock coho were also historically present, with spawning occurring primarily in early to mid-November. Current returns are unknown but assumed to be low. Natural spawning occurs downstream of Lucia Falls (RM 21), particularly in Lockwood, Mason, and Rock creeks. Juveniles rear for a full year in the Lewis River subbasin before migrating as yearlings in the spring. Natural production is presumed to be generally low in most tributaries. Currently, no hatchery coho are released into the East Fork Lewis River (LCSR&SP 2004).

2 Current Conditions

2.1 Current Population Status and Goals

East Fork Lewis River coho are part of the Lower Columbia Coho ESU and are listed as threatened under the ESA.

- ESA Status: Threatened
- Population Description: The East Fork Lewis River Late-Type N coho population is one of 13 in the ESU and is designated as a Primary population (LCSR&SP 2004).
- Current Viability Rating: Low
- Recovery Goal for Abundance: 600
- Productivity Improvement Expectation: The recovery plan (LCSR&SP 2004) does not provide a productivity improvement expectation for coho, although for steelhead a value of 10% is given. Until better information becomes available, we assume a 10% improvement in habitat can be expected from implementation of the recovery plan.
- Habitat Productivity and Capacity (from EDT): Productivity 5.28; Capacity 2,956
- Populations Affected by this Hatchery Population Include: Co-occurring natural salmon and steelhead populations in the local tributary areas and the Columbia River mainstem. Of primary concern are the ESA listed salmonids.
- Hatchery Populations of the Same Species that may Affect this Natural Population: North Fork Lewis River Type N-Late coho program and North Fork Lewis River Type S –Early coho. The specific effects, if any, are unknown. Coho have been planted in the Lewis River subbasin since 1930; extensive hatchery coho releases have occurred since 1967.

2.2 Current Hatchery Programs Affecting this Population

There are no coho hatchery programs operating in the East Fork Lewis River. Modeling suggests that strays from the North Fork Lewis programs are exceeding primary population standards in the East Fork Lewis.

- Estimated Productivity (with harvest and fitness factor effects from AHA): 3.3
- Projected Average Natural Origin Escapement: 1,717 fish
- Average Harvest Contribution: 332 fish

Estimated number of hatchery strays affecting this program:

- Hatchery strays from in-basin integrated hatchery program: N/A
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 74 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 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 3.3 to 4.4. Average abundance of natural-origin spawners (NOS) would increase from 1,718 to 2,142. Harvest contribution of the natural and hatchery populations would go from 332 to 414.

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

East Fork Lewis River coho currently meets the standards for a Primary population designation. This is a natural population with no hatchery production.

Recommendations

We have no specific recommendations for this population.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for East Fork Lewis River Coho. 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	-	83%	0%	3%	0.00	1,718	3.3	332	0
	None									
No Hatchery	None	-	0%	0%	0%	1.00	2,142	4.4	414	-
HSRG Solution	None	-	90%	0%	0%	1.00	2,116	4.3	413	0
	None									
HSRG Solution w/ Improved Habitat	None	-	90%	0%	0%	1.00	2,395	4.8	468	0
	None									