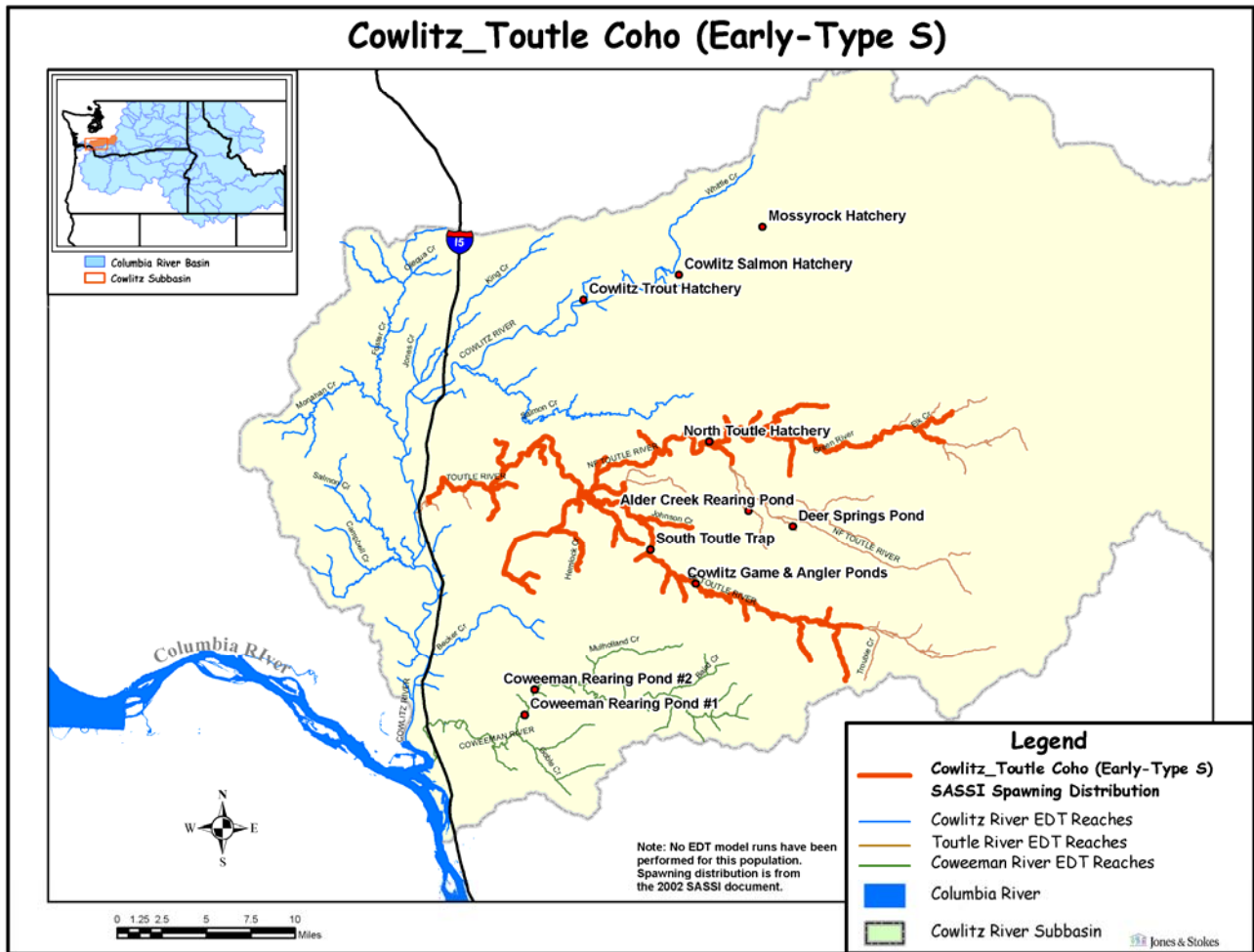


Hatchery Scientific Review Group Review and Recommendations

North Fork and South Fork Toutle Coho Population and Related Hatchery Programs

January 31, 2009



1 North Fork and South Fork Toutle Coho

Toutle coho are a highly mixed stock heavily influenced by a long history of hatchery planting typical of most Lower Columbia coho populations. Historically, large returns were experienced in both the North Fork and South Fork Toutle, with average rack returns of >13,000 fish for 1972 through 1979 (~1,600 natural, ~12,000 hatchery origin). The eruption of Mount St. Helens destroyed much of the available spawning habitat in the North Fork Toutle, drastically reducing the natural spawning potential of the population. Sections of the Green River (a right bank tributary to the North Fork Toutle) and the South Fork Toutle still contain spawning and rearing habitat that were not significantly affected by the Mount St. Helens eruption. Currently, status and abundance are unclear and numbers of the naturally spawning population are unknown.

Toutle coho were identified as a stock based on their distinct spawning distribution. The South Fork Toutle segment of this population occurs in several tributaries that remained unaffected by the eruption of Mount St. Helens. Portions of the Green River also remained unaffected by the eruption. The most disturbed sections occur in the North Fork Toutle. The 1992 SaSSIs for North Fork Toutle, Green, and South Fork Toutle portions of the population all rate the population as Depressed due to chronically low production, while the 2002 SaSSIs state that status is unknown due to a lack of production data. Natural spawning is thought to occur in most areas accessible to coho, including the mainstem Toutle, and North Fork Toutle/Green Rivers and all accessible tributaries. Peak spawning occurs in late October for early stock (Type S) and December to early January for late stock (Type N).

2 Current Conditions

2.1 Current Population Status and Goals

At the time that the Lower Columbia Salmon Recovery and Subbasin Plan was written, coho were not listed under the ESA and so were not included in the Plan's recovery goals. The 1992 SaSSI (WDFW 1992) listed the population's status as Depressed and the 2002 SaSSI (WDFW 2002) listed the status as Unknown due to a lack of abundance data.

- ESA Status: This population is listed as threatened.
- Population Description: Designated as a Primary population in the LCRSRP.
- Current Viability Rating: Low. A goal of High viability has been identified in recovery planning documents.
- Recovery Goal for Abundance: A viability goal of 600 adults each was identified in the LCRSRP for both the North Fork Toutle and South Fork Toutle with an interim goal of 600 and a potential of 32,900 for the South Fork and a potential of 1,200 for the North Fork.
- The level of current escapement is approximately 1,300 adults (300 wild, 1,000 hatchery-origin).
- Productivity Improvement Expectations: No productivity improvement expectation is provided by the LCSRSP. A 10% improvement in habitat is given for steelhead after implementation of the Recovery Plan. Until better data is given, we assume that coho would experience the same 10% increase in habitat after implementation of the Plan.

- Habitat Productivity and Capacity (from EDT): Productivity 2.17; Capacity 7,349
- Hatchery Populations of the Same Species that Affect this Natural Population: North Fork Toutle Hatchery Type S Coho

2.2 Current Hatchery Programs Affecting this Population

The only hatchery population of the same species that affects this population is North Fork Toutle Hatchery Type S coho. This program is described as integrated in its HGMP (2001); however, as of 2004, only marked, hatchery-origin fish that volitionally returned to the rack at the hatchery were included in the brood. Brood collection goals are set at 700 total brood at a 1:1 male to female ratio with a 2% jack component; however, average brood collections from 1993 through 2002 were 1,749 total brood. The HGMP states that the goal is to volitionally release 800,000 yearling fish on site from the Green River Fish Hatchery located approximately 0.81 km above the confluence of the Green and North Fork Toutle. All fish are reared and released on site.

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: 4,579 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 0.9 to 1.8. Average abundance of natural-origin spawners (NOS) would increase from 2,695 to 2,969. Harvest contribution of the natural and hatchery populations would go from 15,592 to 574.

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

The Toutle coho is designated as a Primary population for recovery. The current program is a segregated program (800,000 smolt release) which causes the natural population not to meet standards for a Primary population designation.

This is a potential source of fish to supply net pen programs in the lower Columbia River.

There is an adult fish collection facility at the Sediment Retention Dam on the North Fork Toutle River that can remove additional hatchery fish from the spawning escapement and can be a source for collecting natural-origin adults for an integrated hatchery program.

Recommendations

Manage as an integrated harvest program (560,000 release on-station) consistent with the Primary population designation. Use the adult fish collection facility at the Sediment Retention Dam to manage the spawning composition and collect natural-origin fish for the integrated program.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for North and South Fork Toutle 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.

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%	58%	0.00	2,695	0.9	521	0
	Seg Harv	801.3	75%						15,071	13,532
No Hatchery	None None	-	0%	0%	0%	1.00	2,969	1.8	574	-
HSRG Solution	Int Harv	560.3	95%	20%	14%	0.75	2,266	1.6	13,532	10,042
	Seg Harv	-	0%						-	-
HSRG Solution w/ Improved Habitat	Int Harv	560.3	95%	20%	10%	0.80	3,091	1.8	13,693	10,042
	Seg Harv	-	0%						-	-