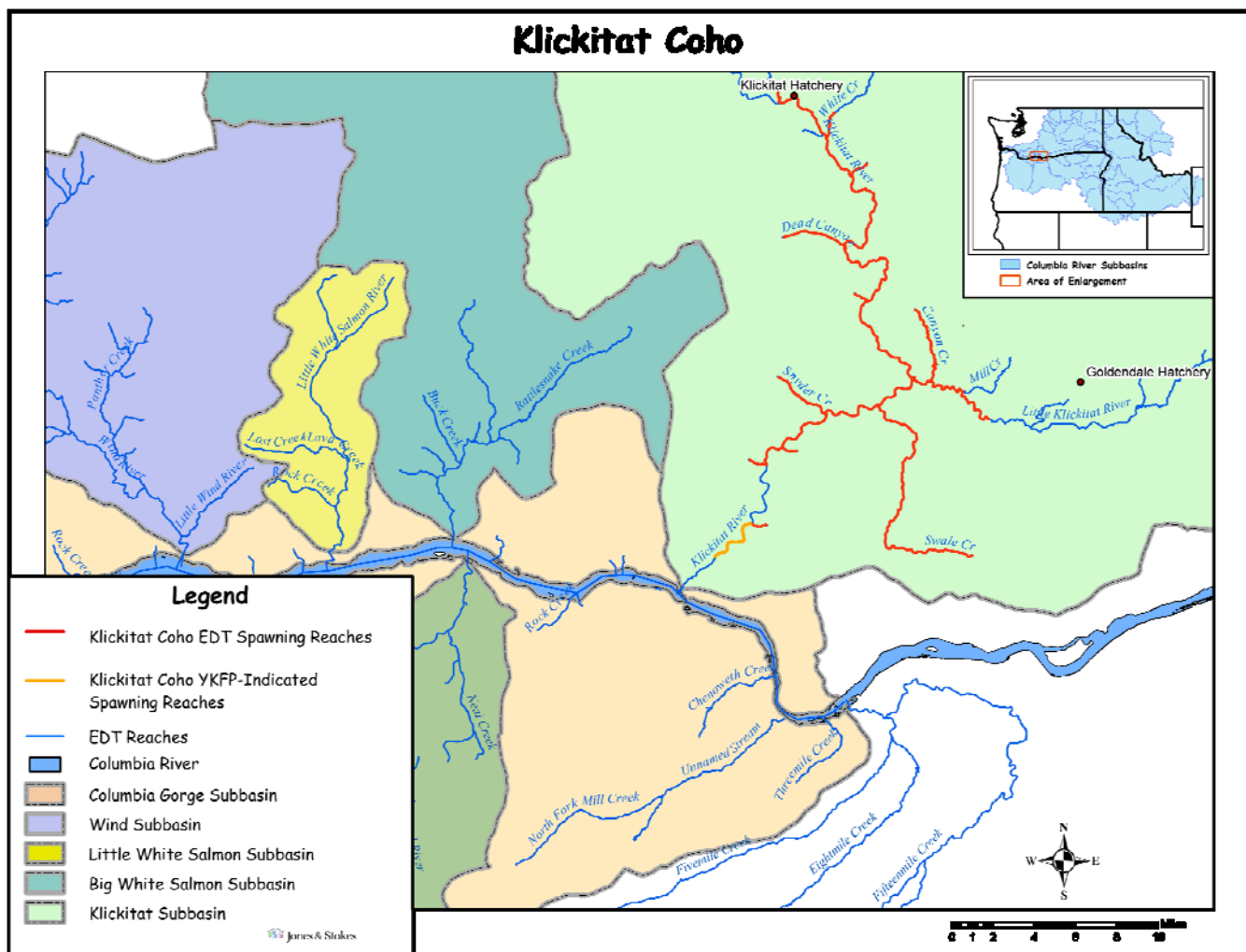


Hatchery Scientific Review Group Review and Recommendations

Klickitat River Coho Population and Related Hatchery Programs

January 31, 2009



1 Klickitat Coho

Coho are not a native species in the Klickitat subbasin. Lyle Falls was a barrier to coho adults. The naturally spawning population of coho is believed to have originated from the hatchery programs that have operated in the subbasin since the construction of the Klickitat Hatchery in 1950. Coho hatchery releases have resulted in a small population of naturally spawning fish. Spawning occurs between RM 5.2 and RM 42.0 on the mainstem. Tributary spawning occurs in Summit, White, and Swale creeks and in the lower Little Klickitat. Peak spawning occurs in October. Spawner surveys are not prolific but surveys from 1997-1999 indicated a naturally spawning population of ~500 adults.

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: Naturally spawning coho in the Klickitat system are not included as part of any ESU and so are not listed under the ESA.
- Population Designation: This population has no designation.
- Current Viability Rating: Unknown
- Recovery Goal for Abundance: Unknown
- Productivity Improvement Expectation: Unknown
- Habitat Productivity and Capacity (from EDT): Productivity: 2.4, Capacity: 1,172

2.2 Current Hatchery Programs Affecting this Population

Two segregated harvest programs currently produce coho for release into the Klickitat subbasin.

Type N Lewis stock collected at the Washougal Hatchery are spawned, hatched, and reared at the Washougal Hatchery until they reach a size of 20 fpp. Up to 2,500,000 yearlings, at an average size of 19.6 fpp (1992-2003 average) are trucked in early April from the Washougal Hatchery for release at RM 12 and 29 in the Klickitat River.

Type N Lewis Stock is also collected from the Lewis River at the Lewis River Hatchery where they are spawned and incubated until eyed. Coho are stripped of gametes, eggs and milt are transferred to the Washougal Hatchery where they are fertilized and incubated until eyed. As of 2006, PacifiCorp will no longer take eggs to eye stage for the Klickitat at Lewis River. Up to 1,500,000 eyed eggs are transferred for rearing and release at the Klickitat Hatchery. Releases from 1996 to 2003 averaged 1,205,000 yearlings (ranging from 998,900 to 1,469,000) at an average size of 16.5 fpp (ranging from 13.4 to 19.1 fpp).

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: 1,306 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 0.2 to 0.3. Average abundance of natural-origin spawners (NOS) would decrease from 76 to 1. Harvest contribution of the natural and hatchery populations would go from 15,727 to 2.

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

Coho are not native to the Klickitat upstream of Lyle Falls and there are no natural production objectives. The purpose of the Klickitat coho programs is to produce fish for harvest. The

current goal is to maintain recent harvest levels across all fisheries. Broodstock for these programs are from out-of-basin hatchery programs. The infrastructure does not exist to collect broodstock returning to the basin or acclimate the entire release.

The current program has potential ecological effects because it uses coho that are non- native, the size of program, and direct stream release and location. Direct stream releases from the Washougal program are resulting in high stray rates, poor survival and low contribution to fisheries. There may be opportunities to reduce ecological risks, reduce straying, and improve the contribution to fisheries.

Recommendations

The HSRG recommends moving towards collecting broodstock from returns to the Klickitat subbasin and developing infrastructure in the lower river to acclimate all coho prior to release. Together these measures should improve survival, reduce ecological effects, and improve the contribution to fisheries. Managers may be able to reduce the size of the programs and still achieve harvest objectives, if survival increases as expected.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Klickitat 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%	93%	0.00	76	0.2	480	0
	Washougal Hatchery Seg Harv	2,462	0%						5,916	1
	Lewis Hatchery Seg Harv	1,239	0%						9,403	0
No Hatchery	None None	-	0%	0%	0%	1.00	1	0.3	2	-
HSRG Solution	None None	-	0%	0%	84%	0.00	19	0.2	123	0
	Washougal Hatchery Seg Harv	-	0%						-	-
	Klickitat Hatchery Seg Harv	1,052	90%						16,601	419
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	82%	0.00	22	0.2	137	0
	Washougal Hatchery Seg Harv	-	0%						-	-
	Klickitat Hatchery Seg Harv	1,052	90%						16,601	419