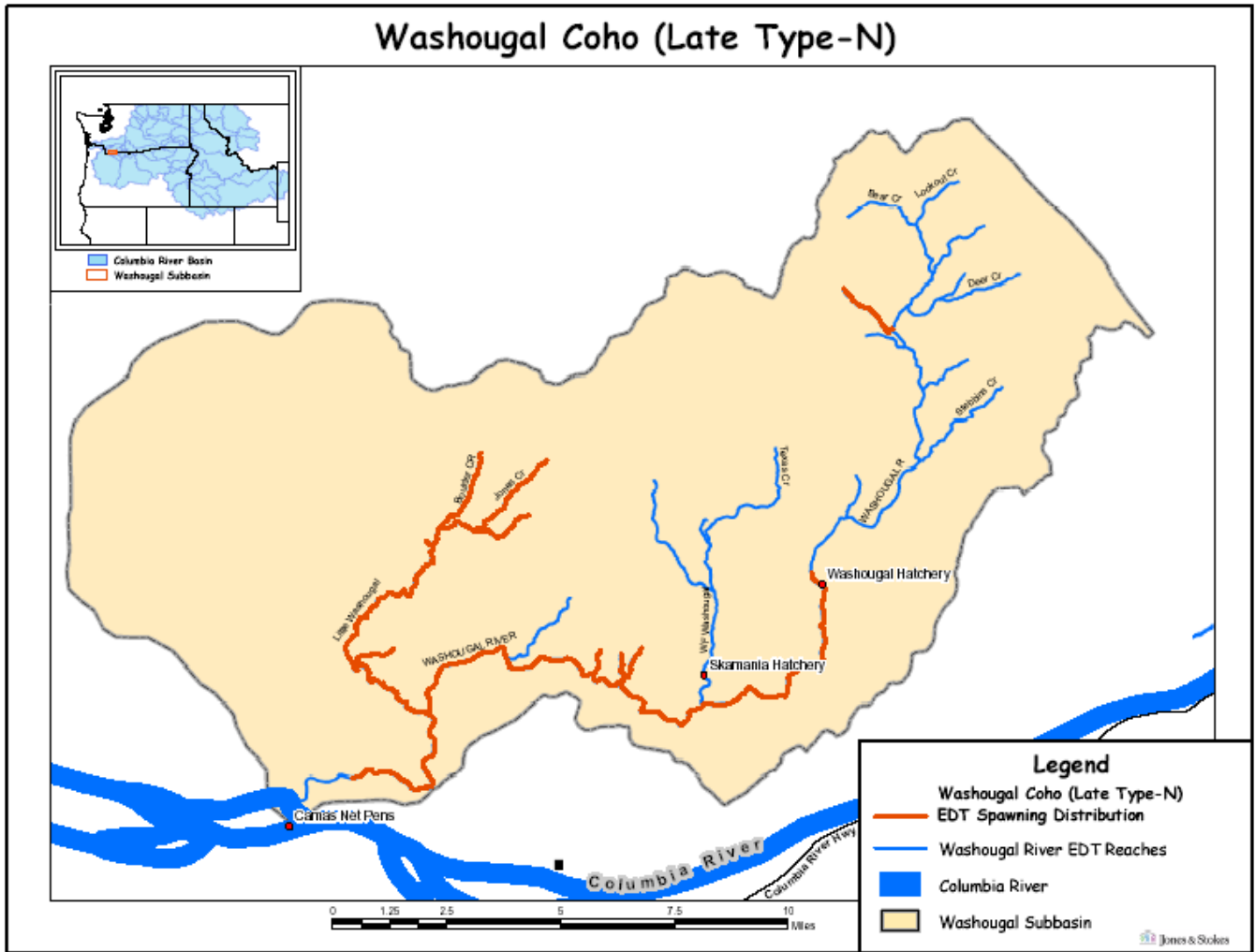


Hatchery Scientific Review Group Review and Recommendations

Washougal River Coho Population and Related Hatchery Programs

January 31, 2009



1 Washougal River Coho

The majority of the historical Washougal coho population returns as late stock (Type N) and spawns from late November to March. Peak spawning for late stock occurs in December and January. Some early stock (Type S) coho were also historically present, spawning primarily in early to mid-November. Peak spawning for the early stock occurs in mid-October to November, although current returns of early coho are unknown but are assumed to be very low. A number of hatchery-produced fish spawn naturally. The mainstem Washougal is not a primary coho spawning area but has some production potential downstream of Salmon Falls.

Washougal River coho were identified as a stock based on their distinct spawning distribution. Most spawning takes place in the lower mainstem and in the Little Washougal, a right bank tributary approximately 6 miles upstream of the Washougal's confluence with the Columbia. Typically, coho begin entering the Washougal River in early September and continue entering the subbasin through February. Spawning occurs from mid-October through February. Natural spawning can occur in most areas of the basin upstream to Dougan Falls, but the principal spawning area is the Little Washougal River. The mainstem Washougal is not considered primary spawning habitat.

2 Current Conditions

2.1 Current Population Status and Goals

When 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. A Washougal coho population is documented by the LCSRSP. The WDFW SaSSI 2002 also identifies a Washougal coho population, but neither document distinguishes the population as either Type S or Type N. Hatchery production in the early 1970s focused on Type S stock but in the late 1970s, shifted to Type N to increase benefits to Washington fishermen. The 1992 SaSSI rated this population as depressed, while the 2002 SaSSI rated its status as unknown due to a lack of abundance data for recent years.

- ESA Status: This population is listed as threatened.
- Population Description: Designated as a Contributing population in the LCSRSP.
- Current Viability Rating: Low. A goal of Medium viability has been identified in recovery planning documents.
- Recovery Goal for Abundance: A viability goal of 300 adults was identified in the LCSRSP; an interim goal of 600 adults was also identified with a potential of 4,200 adults.
- Productivity Improvement Expectation: No productivity improvement expectation is provided by the LCSRSP. A 10% improvement in habitat is assumed for steelhead after implementation of the Recovery Plan. It is assumed that coho would experience the same 10% increase in habitat after implementation of the Recovery Plan.
- Habitat Productivity and Capacity (from EDT): Productivity 2.39; Capacity 1,584
- Hatchery Populations that Affect this Natural Population: Washougal Coho (Late Type N)

2.2 Current Hatchery Programs Affecting this Population

The only hatchery coho population operating in the Washougal watershed is at the WDFW Washougal hatchery. The Washougal Coho (Late Type N) HGMP describes this program as an integrated program, but since mass marking began in 1998, only marked, hatchery-origin fish are collected for brood. Prior to mass marking, the program was integrated with the natural population; however, without distinguishing marks, to what extent is unclear. The HGMP explains that a higher rate of integration with the natural population was scheduled to begin in 2004. From 1987 to present (with the exception of 1993 when Lewis Type N stock was used due to a shortfall), only Washougal Type N stock volunteering at the hatchery has been used for brood. The program goal is to collect 1,020 broodstock with a 1:1 male to female ratio and a 2% jack component to meet the rear and release goal of 500,000 smolts. Up to 2,300 broodstock may be collected. From 1990 through 2001, an average of 1,832 adults was collected, resulting in an average release of 373,332 smolts. Approximately 124 of the brood collected at the Washougal Hatchery are spawned to meet a goal of 165,000 eyed eggs for remote site incubators in Salmon Creek. Additionally, 12,000 fry are distributed to approximately 48 Salmon in the Classroom programs (250 fry each), of which half are planted in Salmon Creek with the other half are planted at various locations throughout Clark County. If escapement allows, some of the brood has been used for transfers to the Klickitat River. The program currently transfers eyed eggs from the Washougal Hatchery to the Klickitat Hatchery for rearing and a release of 1,000,000 smolts. The Washougal Hatchery also rears and outplants 2,500,000 smolts to the Klickitat River.

Estimated number of hatchery strays affecting this program:

- Hatchery strays from in-basin integrated hatchery program: 858 fish
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 591 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 1.0 to 2.0. Average abundance of natural-origin spawners (NOS) would increase from 668 to 734. Harvest contribution of the natural and hatchery populations would go from 6,945 to 142.

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

Washougal coho are designated a Contributing population for recovery. Although the intent is to manage this program as integrated, the pNOB is currently 0%. In addition, a haul-and-plant of 2.5 million unmarked coho now goes to the Klickitat River, resulting in large numbers of unmarked fish returning to the Washougal River.

Recommendations

It is recommended that the use of Washougal broodstock for the Klickitat River be eliminated. Operating an integrated hatchery program of 230,000 smolts for harvest and conservation along with an associated segregated harvest program (stepping stone of approximately 280,000 fish) would be consistent with the designation of Washougal coho as a Contributing population.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Washougal 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	Int Harv	497.9	90%	0%	63%	0.05	668	1.0	6,945	7,312
	Stepping Stone Hatchery Seg Harv	-	0%						-	-
No Hatchery	None None	-	0%	0%	0%	0.00	734	2.0	142	-
HSRG Solution	Int Both	231.6	95%	0%	40%	0.56	537	1.4	4,049	2,728
	Stepping Stone Hatchery Seg Harv	280.2	90%						6,593	1,868
HSRG Solution w/ Improved Habitat	Int Both	231.6	95%	0%	35%	0.59	675	1.7	4,076	2,728
	Stepping Stone Hatchery Seg Harv	280.2	90%						6,593	1,868