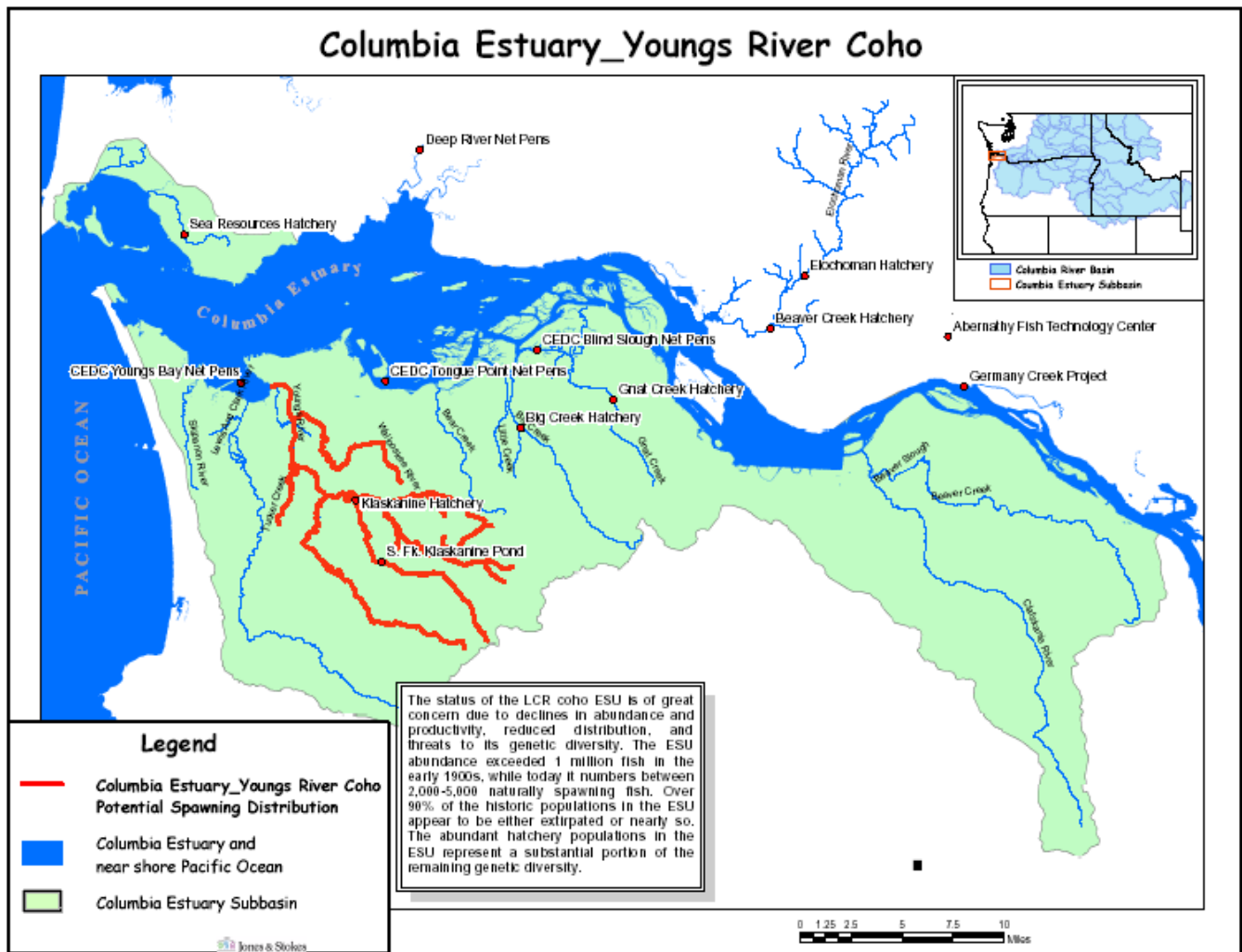


Hatchery Scientific Review Group Review and Recommendations

Columbia Estuary - Youngs Bay Tributaries Coho Population and Related Hatchery Programs

January 31, 2009



1 Columbia Estuary - Youngs Bay Tributaries Coho

The Columbia Estuary Youngs Bay Tributaries Coho population is a natural component of the Lower Columbia River Coho ESU. No major hatchery programs operate in the tributaries (small releases of coho for education purposes occur); however, Select Area Net Pen projects operate in the Youngs Bay area. Little information is available to describe population status and trend for Youngs or Klaskanine river coho salmon.

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 River Coho ESU.
- Population Description: Youngs Bay Tributary coho are a Stabilizing population.
- Current Viability Rating: Very Low
- Recovery Goal for Abundance: Not defined
- Productivity Improvement Expectation: Not defined
- Habitat Productivity and Capacity: Productivity: 4.0; Capacity: 400
- Populations Affected by this Hatchery Population: No hatchery program is associated with this natural population.
- Hatchery Populations of the Same Species That Affect this Population: Hatchery populations in the Lower Columbia River Coho ESU that could adversely affect this population (primarily through straying) include the Columbia Estuary Select Area Fishery Enhancement (SAFE) Program, the Bonneville Hatchery program, and releases from Grays River and Elochoman River programs.

2.2 Current Hatchery Programs Affecting this Population

No coho hatchery program currently operates in the Youngs Bay Tributaries; however, coho salmon from other programs stray into the Youngs Bay tributaries. About 51 adult coho are estimated to stray into this system annually. Under the current scenario, pHOS is estimated at 22% even though no hatchery coho are released in Youngs Bay tributaries. Annually, approximately 150 natural-origin adults are estimated to return to the basin.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 51 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 1.7 to 3.4. Average abundance of natural-origin spawners (NOS) would increase from 147 to 264 fish. Harvest contribution of the natural population would go from 27 to 48 fish.

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 population is designated stabilizing and has no hatchery program. The largest tributary in Youngs Bay, Klaskanine River, is flow-limited in the summer; therefore, it offers limited potential for year-round rearing. There may be potential however to use this site for over-winter rearing and release of additional coho production for harvest.

Recommendations

The HSRG recommends that this population continue to be managed for natural production as a stabilizing population. Focus actions on habitat protection and improvement that will increase productivity and capacity of the system.

Consider over-winter rearing and releasing of up to an additional one million coho smolts for harvest from the Youngs Bay Net Pens.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Youngs Bay Tributary 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	-	0%	0%	22%	0.00	147	1.7	27	0
	None									
No Hatchery	None	-	0%	0%	0%	1.00	264	3.4	48	-
	None									
HSRG Solution	None	-	0%	0%	26%	0.00	152	1.7	28	0
	None									
HSRG Solution w/ Improved Habitat	None	-	0%	0%	23%	0.00	175	1.9	32	0
	None									