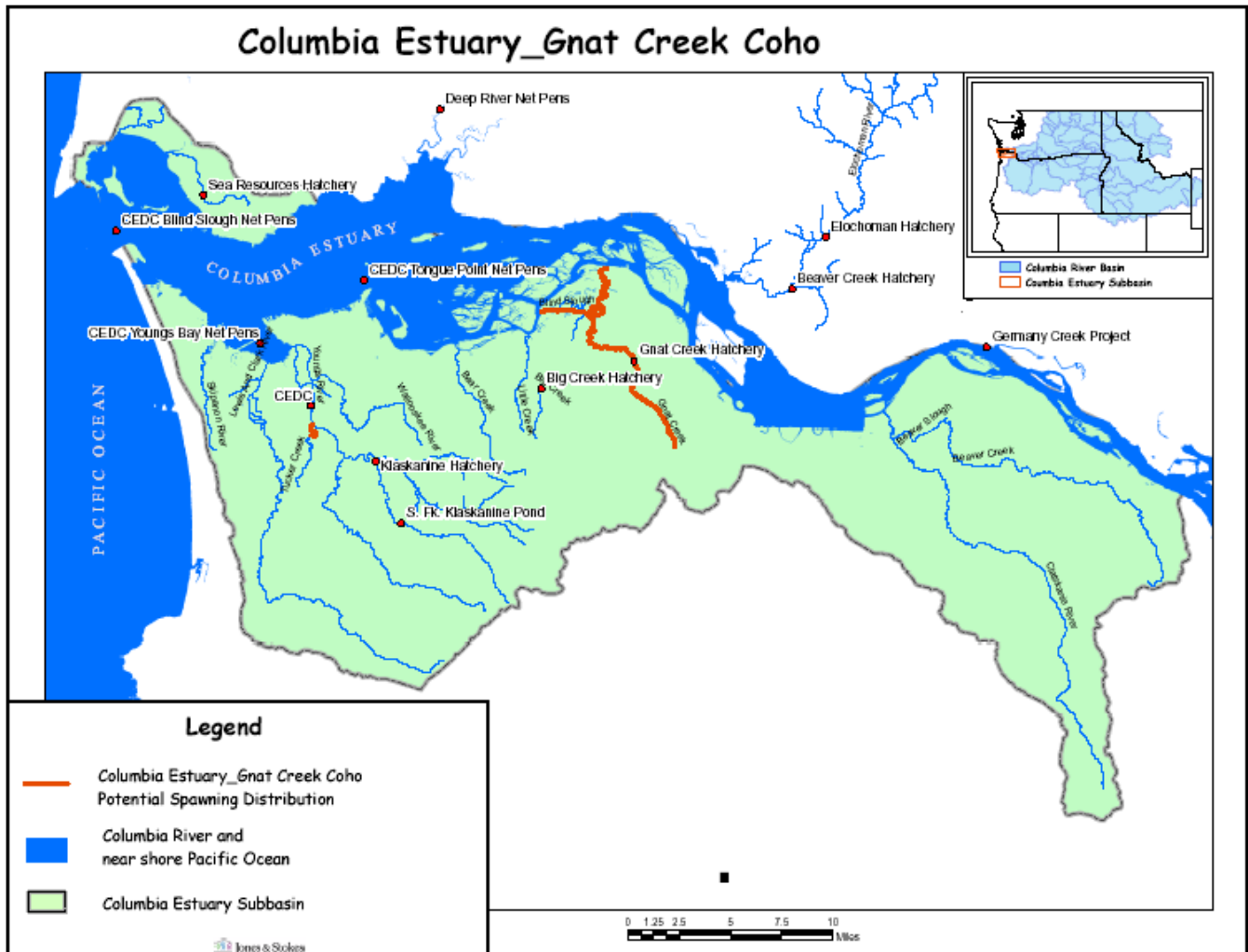


Hatchery Scientific Review Group Review and Recommendations

Columbia Estuary - Gnat Creek Coho Population and Related Hatchery Programs

January 31, 2009



1 Columbia Estuary - Gnat Creek Coho

This population is listed as threatened and is part of the Lower Columbia River Coho ESU. Gnat Creek is part of the Astoria population group and is monitored as part of that composite. Spawning survey data indicate that most coho observed in the subbasin are Type S hatchery stocks and few wild fish are present. Survey data indicates a bi-modal spawn timing with naturally-produced fish spawning in mid- to late November and another component spawning in December. There is little information specific to Gnat Creek to describe population status and trends.

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:** Gnat Creek coho are a stabilizing population.
- **Current Viability Rating:** Very Low. The population is persisting at a “minimum abundance” threshold.
- **Recovery Goal for Abundance:** Not established.
- **Productivity Improvement Expectation:** Unknown
- **Habitat Productivity and Capacity:** Productivity: 1.5; Capacity: 100
- **Populations Affected by this Hatchery Population Include:** Not applicable
- **Hatchery Populations of the Same Species that Affect this Population (primarily through straying):** Columbia Estuary Select Area Fishery Enhancement (SAFE) Program, the Bonneville Hatchery program, and releases from Grays River and Elochoman River programs in Washington.

2.2 Current Hatchery Programs Affecting this Population

No coho hatchery program currently operates in Gnat Creek; however, about 114 adult coho from other programs are estimated to stray into this system annually. Under the current scenario, pHOS is estimated at 70% even though no hatchery coho are released in Gnat Creek. Annually, approximately 40 natural-origin adults are estimated to return to Gnat Creek.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 114 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 0.6 to 1.3. Average abundance of natural-origin spawners (NOS) would decrease from approximately 38 fish to approximately 19 fish. Harvest contribution of the natural and hatchery populations would go from approximately 7 fish to approximately 3 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.

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.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Gnat Creek 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%	71%	0.00	38	0.6	7	0
	None									
No Hatchery	None	-	0%	0%	0%	1.00	19	1.3	3	-
	None									
HSRG Solution	None	-	0%	0%	68%	0.00	36	0.6	6	0
	None									
HSRG Solution w/ Improved Habitat	None	-	0%	0%	66%	0.00	40	0.7	7	0
	None									