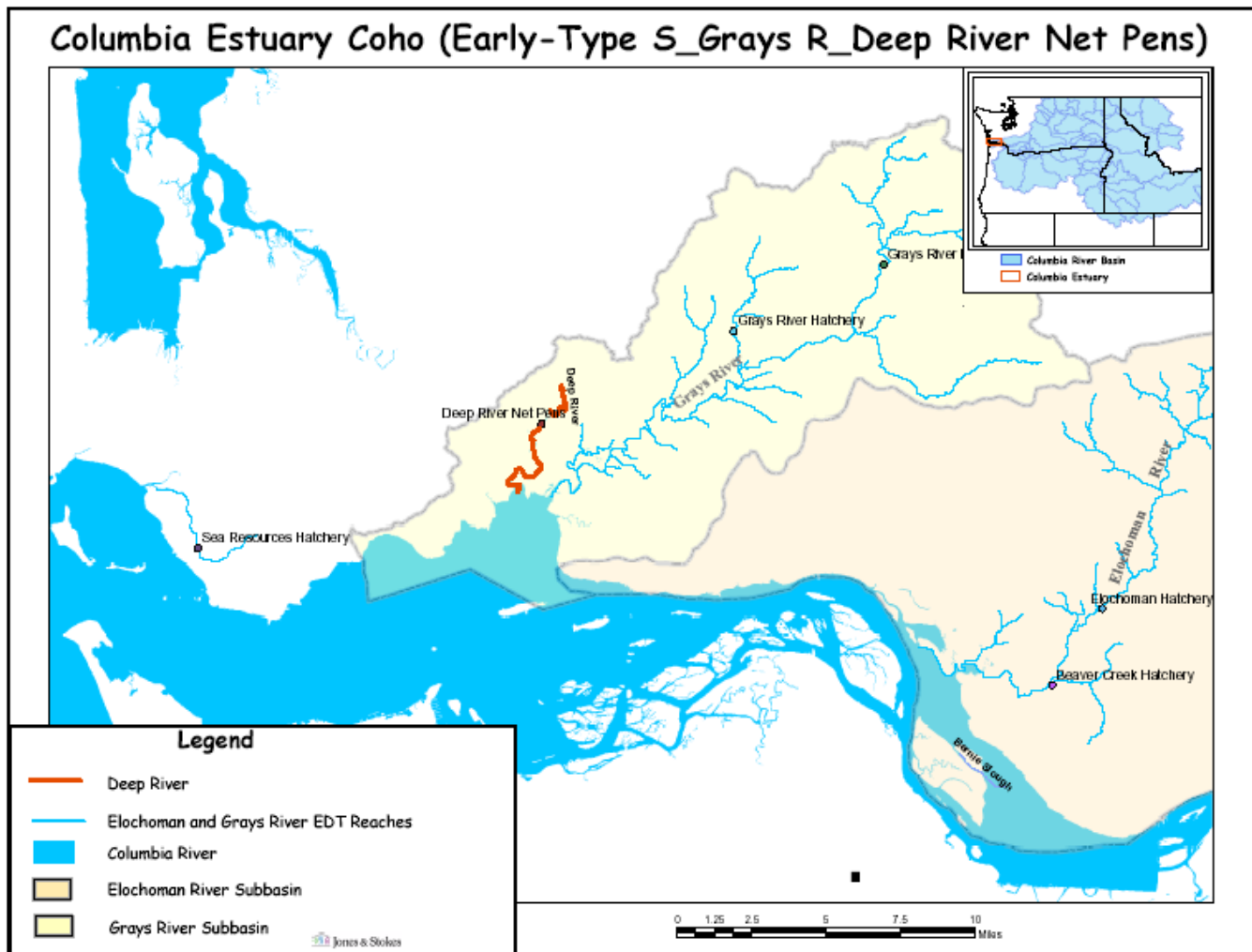


Hatchery Scientific Review Group Review and Recommendations

Columbia Estuary - Deep River Net Pen Coho Population and Related Hatchery Programs

January 31, 2009



1 Columbia Estuary - Deep River Net Pen Coho

The program releases 401,000 early, Type S coho (from the Grays River Hatchery) from net pens in the Deep River. The program is intended to provide coho back to a terminal fishery. Fingerlings are transferred to the net pens in mid-November at about 25 fish per pound (fpp). Fish are over-winter reared and released in early May at 10-14 fpp. Coho are released after natural chum fry have emerged and cleared the area. The program is operated as a segregated harvest program.

2 Current Conditions

2.1 Current Population Status and Goals

These coho are part of the Lower Columbia River Coho ESU and are listed as a threatened species. The net pen program is designed to put marked hatchery coho into the ocean, Buoy 10 and terminal fisheries where they can be harvested with minimal impact on ESA-listed natural-origin fish. These fish are not meant to contribute to any natural populations or recovery of the ESU.

- ESA Status: This population is not listed, although Lower Columbia River Coho ESU are ESA-listed as a threatened species
- Population Description: Deep River is not coho habitat and the net pen fish are not managed to contribute to any natural population.
- Current Viability Rating: NA
- Recovery Goal for Abundance: Net pen releases are not managed for contribution to recovery.
- Productivity Improvement Expectation: NA
- Habitat Productivity and Capacity (from EDT): NA
- Populations Affected by this Hatchery Population Include: Natural origin chum fry can be preyed upon by releases of net pen coho smolts. Consequently, coho releases are timed to avoid interactions with chum salmon. Adults not harvested in the terminal fishery stray to the Grays River.

2.2 Current Hatchery Programs Affecting this Population

Broodstock origin for the 401,000 smolt releases is from the Grays River Hatchery Type S program and the Toutle River Type S program. Terminal harvest is 97% on returning adults.

- PNI and pHOS Estimates (include straying from all hatchery programs): N/A
- Estimated Productivity (with harvest and fitness factor effects from AHA): N/A
- Projected Average Natural Origin Escapement: N/A
- Average Harvest Contribution: 7,963

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: N/A

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).

The terminal fisheries program cannot function without a companion hatchery program. Current harvest is 7,963 fish from this program. Harvest contribution of the natural and hatchery populations would go from 7,963 to 0.

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 program is supplied by Type S coho from the Grays River program (400,000 smolt release).

Recommendations

A segregated program for a selective terminal fishery could be sustained at the Deep River net pens releasing 440,000 Type S coho. The switch to an integrated Type N program at Grays River requires developing a new broodstock source for this program. The Type S coho production for the net pens could be supplied from Elochoman or other WDFW facilities that rear Type S coho (Lewis or Toutle).

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Deep River Net Pen 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										
	Seg Harv	401.3	10%						7,963	16
No Hatchery										
HSRG Solution										
	Seg Harv	441.0	0%						8,784	0
HSRG Solution w/ Improved Habitat										
	Seg Harv	441.0	0%						8,784	0