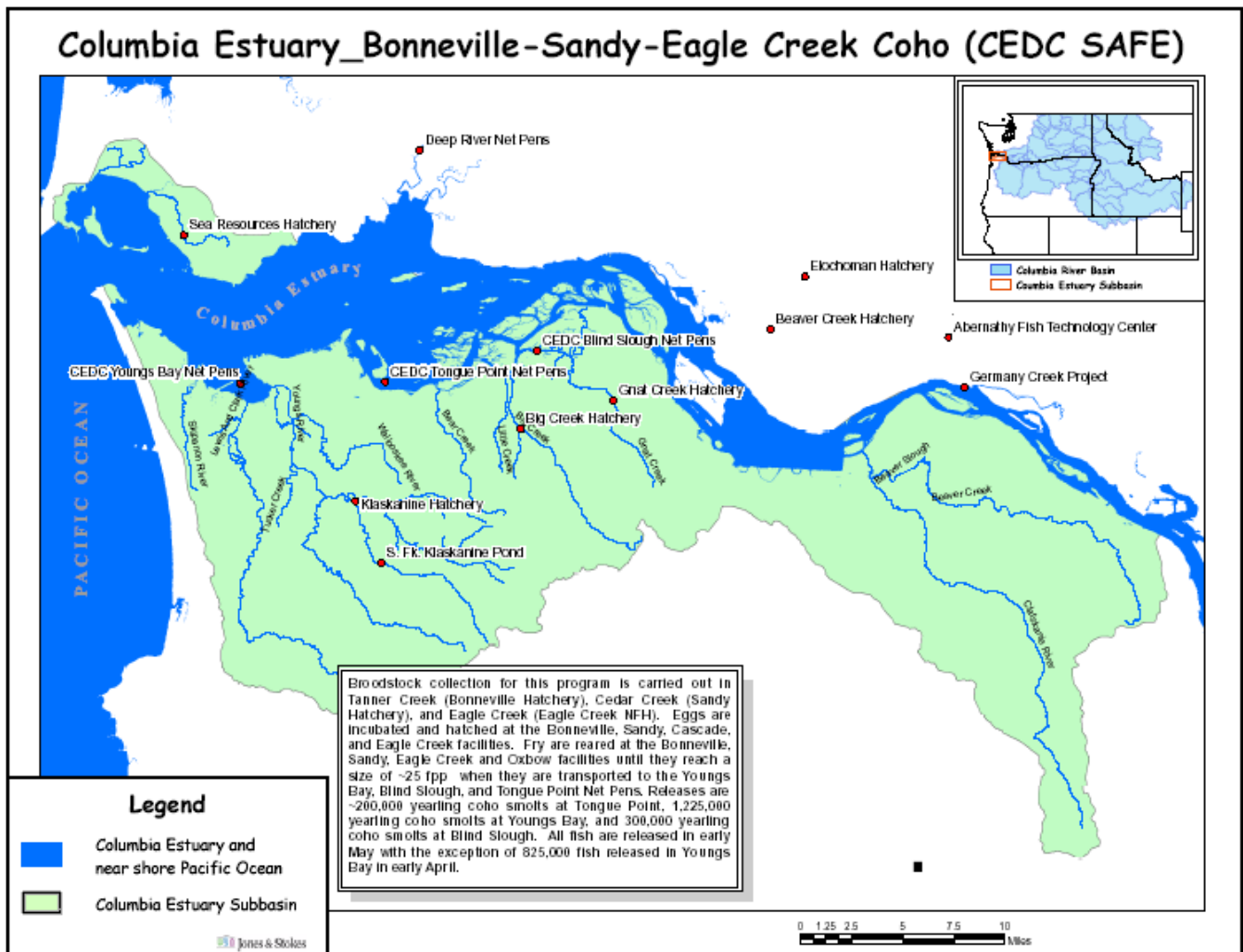


# Hatchery Scientific Review Group Review and Recommendations

## Columbia Estuary – Young Bay Net Pens Bonneville-Sandy-Eagle Creek Coho (CEDC SAFE) Population and Related Hatchery Programs

January 31, 2009



# 1 Columbia Estuary – Youngs Bay Net Pens Bonneville-Sandy-Eagle Creek Coho (CEDC SAFE)

The Select Area Fisheries Enhancement (SAFE) Project uses lower Columbia River coho salmon *Oncorhynchus kisutch*. Stock 14 (Bonneville/Cascade/Oxbow) and stock 11 (Sandy) are used in this program. USFWS Eagle Creek Hatchery stock was used in this program from 1992 through 2004 (final releases of brood year 2002 smolts occurred in 2004). Funding comes from the Mitchell Act and Clatsop Economic Development Council (CEDC) for rearing and acclimation of coho. Approximately 60%, 30%, and 10% of CEDC's funding comes from the BPA Fish and Wildlife Program, ODFW, and commercial fishing interests, respectively.

## 2 Current Conditions

### 2.1 Current Population Status and Goals

The program goal is to mitigate for the loss of coho salmon catch in Oregon commercial troll, Oregon ocean recreational, and Columbia River mainstem commercial and recreational fisheries due to loss of habitat and passage loss and/or degradation in the Columbia River Basin.

- ESA Status: This is a segregated hatchery population.
- Population Description: This is a segregated hatchery population.
- Current Viability Rating: Not applicable
- Recovery Goal for Abundance: Not applicable
- Productivity Improvement Expectation: Not applicable
- Habitat Productivity and Capacity: Not applicable
- Populations Affected by this Hatchery Population Include: Winter steelhead (Scappoose/Clatskanie), winter steelhead (Youngs Bay), fall Chinook (Sea Resources), and early coho (Sea Resources). Additionally, coho releases from this program could potentially impact other populations within the Lower Columbia River steelhead DPS, Lower Columbia River Chinook ESU, and the Columbia River chum ESU. Straying of SAFE net pen coho has not been quantified in detail. It is generally accepted that some level of risk to other populations does exist as a result of net pen fish straying to lower Columbia River tributary systems.
- Hatchery Populations of the Same Species that Affect this Population: Big Creek coho program and potentially releases from Grays River, Sea Resources early coho program in the Chinook River, and the Elochoman River program.

### 2.2 Current Hatchery Programs Affecting this Population

Coho broodstock for the SAFE program are collected at the Bonneville and Sandy fish hatcheries. Through brood year 2002, broodstock was also collected at the Eagle Creek National Fish Hatchery. Eggs are incubated and hatched at Bonneville, Sandy and Cascade facilities. Fry are reared at Bonneville, Sandy, and Oxbow facilities until a size of approximately 25 fpp. They are then transported to the Youngs Bay, Blind Slough, and Tongue Point net pens. Releases are roughly 200,000 yearlings to Tongue Point, 1,225,000 to Youngs Bay and 300,000 to Blind Slough. The current hatchery program is a segregated-harvest program. No natural-origin river population is directly associated with this program.

Up to 80,000 coho were harvested annually between 1996 and 2002 (combined Youngs Bay, Tongue Point, and Blind Slough locations). Since 2005, harvest has been lower due to the loss of smolt production from the Eagle Creek National Fish Hatchery (smolt production for the SAFE program was cut by approximately one million smolts annually).

### 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).

Since this is a segregated hatchery population, the No Hatchery scenario would have no impact on the adjusted productivity or natural-origin spawners. Harvest contribution of the hatchery population would go from approximately 24,153 fish to zero under the No Hatchery scenario.

#### 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 is a candidate location to increase releases of coho for harvest. For this program to be successful, a high harvest rate is critical to control straying into natural populations. For this reason, contribution to natural populations should be monitored. If the assumed 97% harvest rate is not achievable or maintained, strays may put the neighboring natural populations at increased risk.

**Recommendations**

The HSRG recommends maintaining or expanding coho production to pre-2004 levels (2.7 million smolts) using 500,000 coho from Bonneville and another 500,000 from a suitable donor stock. Increase production beyond 2.7 million only after confirming that risks to natural populations have been addressed.

Refine straying estimates for this program and work to balance risks associated with straying as management decisions are developed. Monitor impact of fisheries associated with this program on important natural populations as well as harvest rates on the target hatchery population.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Youngs Bay Net Pens; Bonneville, Sandy and Eagle 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										
	Seg Harv	1,726.2	0%						24,153	0
No Hatchery										
HSRG Solution										
	Seg Harv	2,701.9	0%						37,948	0
HSRG Solution w/ Improved Habitat										
	Seg Harv	2,701.9	0%						37,948	0