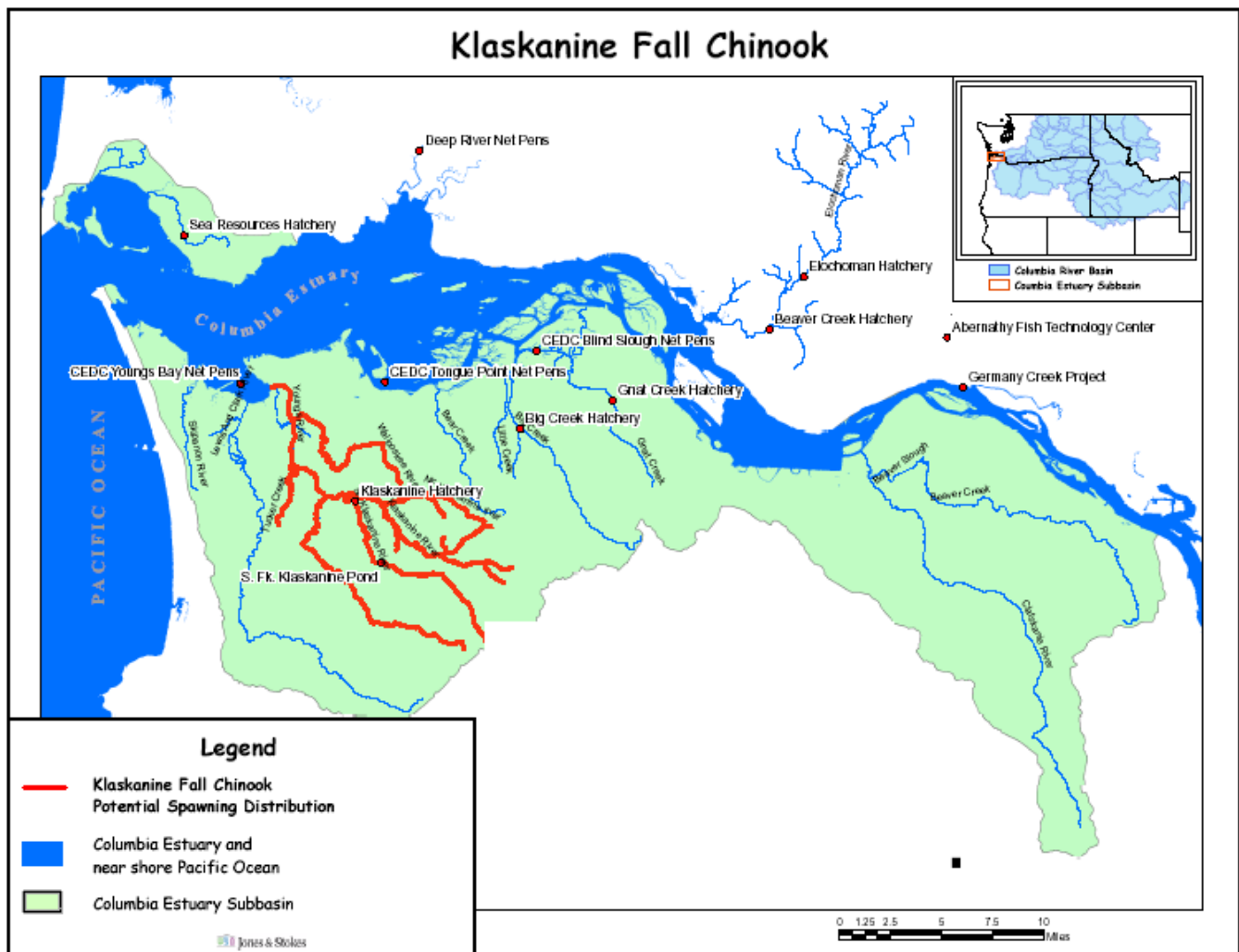


# Hatchery Scientific Review Group Review and Recommendations

## Youngs Bay Tributaries Fall Chinook Population and Related Hatchery Programs

January 31, 2009



# 1 Youngs Bay Tributaries Fall Chinook

The Youngs Bay watershed is located near the mouth of the Columbia River in the northwest corner of Clatsop County. The Lewis and Clark River, Youngs River, and the Walluski River are the dominant stream systems in the basin. The Youngs River is approximately 17 miles long. The Lewis and Clark River is approximately 21 miles long. Populations of fall Chinook in the lower Columbia River are part of the Lower Columbia River Chinook Evolutionarily Significant Unit (ESU). This ESU contains both fall and spring Chinook, and was listed as threatened under the Federal Endangered Species Act (ESA) in 1999 (Federal Register Notice 1999). This hatchery population is included as part of the Lower Columbia River Chinook ESU (Federal Register Notice 2005). Population abundances are generally low and hatchery fish make up a substantial portion of the escapement. Habitat condition is relatively poor and there is potential for further human population growth and habitat degradation.

## 2 Current Conditions

### 2.1 Current Population Status and Goals

This section describes the current population, status, and goals for the natural population.

- **ESA Status:** This population is listed as threatened and is part of the Lower Columbia Chinook ESU.
- **Population Description:** The Youngs Bay fall Chinook population is designated as a Stabilizing population (LCSR&SP 2004).
- **Current Viability Rating:** Unknown, Viability Goal is Low.
- **Recovery Goal for Abundance:** Unknown.
- **Productivity Improvement Expectation:** Unknown.
- **Habitat Productivity and Capacity (from EDT):** Productivity 3.0; Capacity 300.

### 2.2 Current Hatchery Programs Affecting this Population

No Chinook hatchery program currently operates in Youngs Bay tributaries, but large net pen programs are operated. About 119 adult Chinook from other programs are estimated to stray into this system annually making up approximately 95% of the natural spawning population.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 119 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 Recommendations 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 0.1 to 0.3. Average abundance of natural-origin spawners (NOS) would decrease from approximately 5 fish to 1 fish. Harvest contribution of the natural and hatchery populations would go from 43 fish to 2 fish.

### 3.2 HSRG Observations/Recommendations

In the Observations and Recommendations 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**

The population has been designated a Stabilizing population. It is unlikely to meet Contributing population standards because fall Chinook habitat is limited.

#### **Recommendations**

The HSRG recommends that this population continue to be managed for natural production as a Stabilizing population.

Table 1. Results of HSRG analysis of current conditions and HSRG solution for Youngs Bay Tributaries Fall Chinook. 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 None	-	0%	0%	95%	0.00	5	0.1	43	0
No Hatchery	None None	-	0%	0%	0%	1.00	1	0.3	2	-
HSRG Solution	None None	-	0%	0%	93%	0.00	5	0.2	31	0
HSRG Solution w/ Improved Habitat	None None	-	0%	0%	92%	0.00	6	0.2	35	0