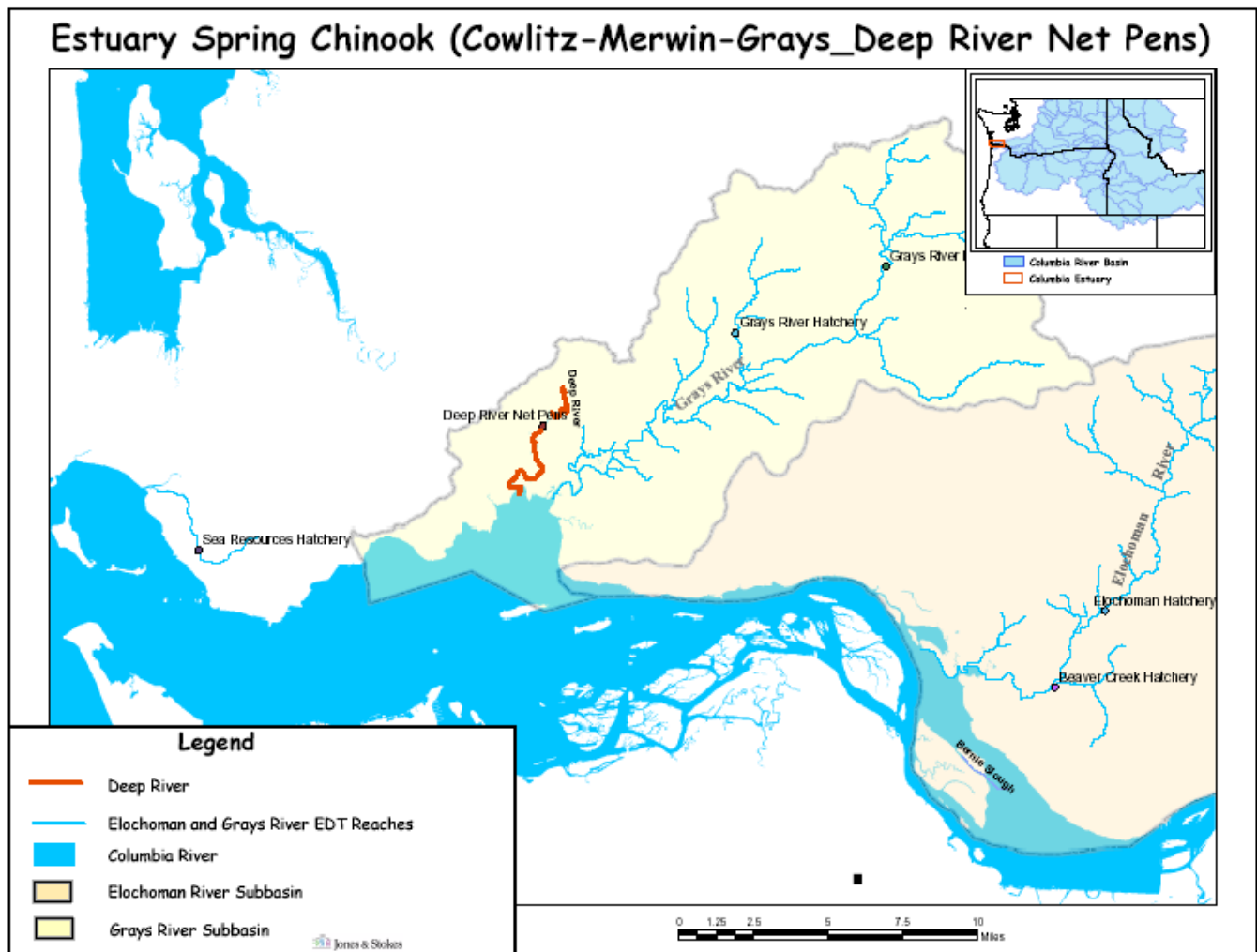


Hatchery Scientific Review Group Review and Recommendations

Columbia Estuary Spring Chinook (Deep River Net Pens) Population and Related Hatchery Programs

January 31, 2009



1 Columbia Estuary Spring Chinook (Deep River Net Pens)

There is no natural population corresponding to the Deep River Net Pens Spring Chinook hatchery population because it was derived from out-of-basin (Lewis/Cowlitz River) stock. Native fall Chinook in Washington tributaries of the lower Columbia River are almost all tule fall Chinook, with the exception of bright stock fall Chinook produced in the Lewis River. Small, scattered, naturally spawning fall Chinook populations are observed in Washington tributaries including Grays and Elochoman Rivers, and Skamokawa Creek (HGMP 2004).

2 Current Conditions

2.1 Current Population Status and Goals

The Columbia Estuary Spring Chinook is a hatchery population that is not included as part of the Lower Columbia River Chinook ESU. This population has no viability or recovery goals.

- ESA Status: This population is not listed.
- Population Description: This program is part of the Select Area Fisheries Evaluation Project begun in 1993 to mitigate lost fishery contribution by creating programs to support the harvest of locally produced stocks in off-channel areas of the Columbia River. Fish originate from Cowlitz and Lewis rivers and are listed as threatened under the ESA. There are no local (Columbia estuary) spring Chinook populations affected by this program, and therefore no recovery goal for estuary spring Chinook.
- Current Viability Rating: NA
- Recovery Goal for Abundance: NA
- Productivity Improvement Expectation: NA
- Habitat Productivity and Capacity (from EDT): NA
- Populations Affected by this Hatchery Population: These fish are likely to contribute to spawning aggregations in the lower Columbia River Gorge, particularly in the vicinity of the hatchery. No information was provided to indicate the scale of this straying.
- Hatchery Populations of the Same Species that Affect this Population (e.g., through straying): No straying information from other hatchery programs was provided during this review.

2.2 Current Hatchery Programs Affecting this Population

Broodstock is collected and spawned, and eggs are eyed at Cowlitz and Lewis river facilities. Each population contributes half the eggs for the program. Egg hatching and rearing until net-pen transfer occurs at the Grays River Hatchery. The broodstock contributing to this program (from the Cowlitz and Lewis rivers) is listed as threatened under the ESA, and both contributing populations are subject, or soon to be subject, to reintroduction efforts in their respective watersheds.

The program is described as a segregated harvest program and releases 360,000 yearlings. Since there are no spring Chinook in the Columbia River estuary and this is described as a segregated program, there is no estimate of habitat productivity and capacity for this population. Fish not harvested from this program are likely to stray and spawn in Lower Columbia tributaries in the vicinity of the net pens. Considering the harvest rates indicated by the managers, it is estimated

that approximately 300 spring Chinook from this program escape fisheries to spawn naturally. Approximately 19% of recoveries from this program were at WDFW and ODFW hatcheries, but the contribution to natural spawning appears to be unknown. The projected average harvest contribution from the current program is 2,300 fish annually.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin integrated hatchery program: NA
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: NA

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).

Harvest contribution of the natural and hatchery populations would go from 2,374 to 0.

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 incorporate all factors affecting productivity (i.e., habitat quality, hatchery fitness effects, and harvest rates).

Observations

Broodstock used for this program are from programs used for reintroduction in the Cowlitz and Lewis rivers.

Recommendations

The HSRG recommends that the current program be continued. This program could be increased with minimal biological risks, and the infrastructure is in place. Use of this broodstock should not be at the expense of Cowlitz and Lewis river spring Chinook reintroduction needs.

Table 1. Results of HSRG analysis of current conditions and HSRG solution for Columbia Estuary Deep River Net Pen Spring 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										
	Seg Harv	362.3	0%						2,374	1
No Hatchery										
HSRG Solution										
	Seg Harv	362.3	0%						2,374	1
HSRG Solution w/ Improved Habitat										
	Seg Harv	362.3	0%						2,374	1