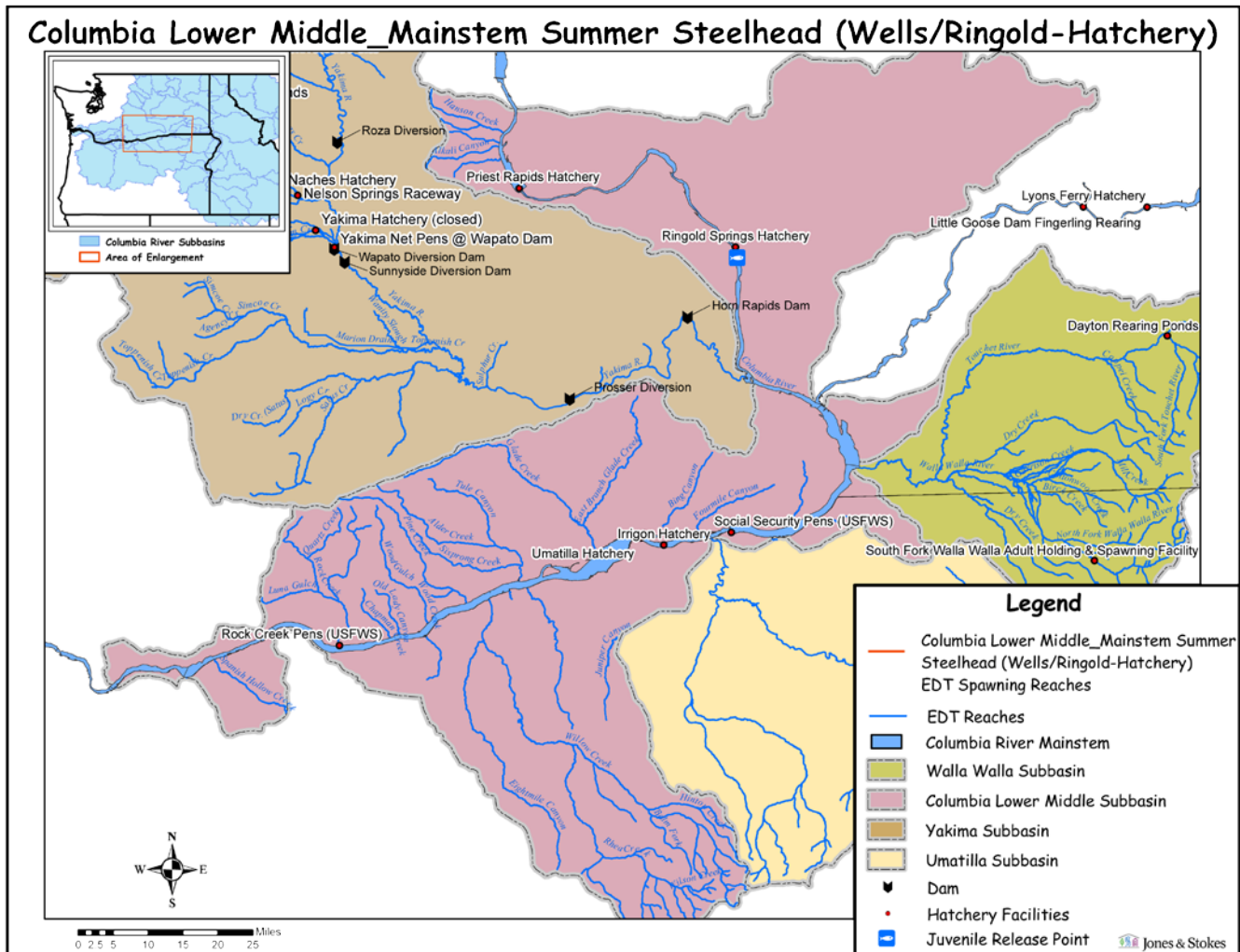


# Hatchery Scientific Review Group Review and Recommendations

## Columbia Ringold Hatchery Summer Steelhead Population and Related Hatchery Programs

January 31, 2009



# 1 Ringold Hatchery Summer Steelhead

This is a segregated hatchery program and does not have an associated natural population.

## 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: Not listed
- Population Designation: NA
- Current Viability Rating: NA
- Recovery Goal for Abundance: NA
- Productivity Improvement Expectation: NA
- Habitat Productivity and Capacity (from EDT): NA

### 2.2 Current Hatchery Programs Affecting this Population

The Ringold Springs steelhead program began in 1963 using primarily Skamania brood stock. In 1998, one year after Upper Columbia steelhead were listed, the broodstock source changed to Wells stock. Ringold Hatchery steelhead are managed as a segregated harvest program, and have provided an average of ~250 fish to the fishery between the Highway 395 bridge (Tri-Cities WA) and Priest Rapids Dam since 1981. The Ringold stock is classed by NOAA as an “ESU Reserve” stock for the Upper Columbia River (UCR) steelhead ESU, meaning that it might be used to bolster production in the aftermath of a catastrophic losses within the ESU proper.

Currently, a maximum of 180,000 (average 171,000) 4-5 fpp yearling smolts are released annually after ~6 months of acclimation in a 5-acre pond fed with water from Ringold Spring. Fish are released into Spring Creek, which also carries Ringold Spring water and enters the Columbia at Rkm 567 (some miles downstream of the Hanford Reach). Release is volitional and occurs between mid April and early May. All fish are ad-clipped and right ventral clipped to allow identification of Ringold fish at Wells so that they can be excluded from brood stock collected for UCR steelhead programs. Only marked hatchery fish are selected for the Ringold program. In addition, early maturing fish are selected for the Ringold broodstock to lessen chances of introgression with UCR steelhead. The hatchery includes a volunteer trap, and any wild UCR steelhead entering the trap are transported ~4 miles upstream and released.

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).

Our analysis estimated Adjusted Productivity (with harvest and fitness factor effects from AHA) would be unchanged. Average abundance of natural origin spawners (NOS) also would be unchanged. Harvest contribution of the natural and hatchery populations would go from 251 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**

The purpose of the current segregated summer steelhead program (180,000 smolts) is to provide harvest and act as a genetic reserve for upper Columbia River steelhead. The program is maintained from out-of-basin broodstock imported from Wells Hatchery. Fish currently are recycled to increase harvest opportunities. There appears to be little opportunity for genetic interaction between this segregated harvest program and natural spawning stocks.

Broodstock collection potential appears to be adequate for the needs for this program and better than for fall Chinook.

## Recommendations

The HSRG recommends that managers transition to the use of local broodstock derived from returns to the Ringold facility. This would require facility upgrades to allow for adult collection, handling, holding, incubation and rearing. The HSRG recognizes that changes in the broodstock protocol will diminish the value of this population as a genetic reserve for upper Columbia River steelhead.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Columbia Ringold Hatchery Summer Steelhead. 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	171.1	0%						251	1
No Hatchery										
HSRG Solution										
	Seg Harv	171.1	80%						251	615
HSRG Solution w/ Improved Habitat										
	Seg Harv	171.1	80%						251	615