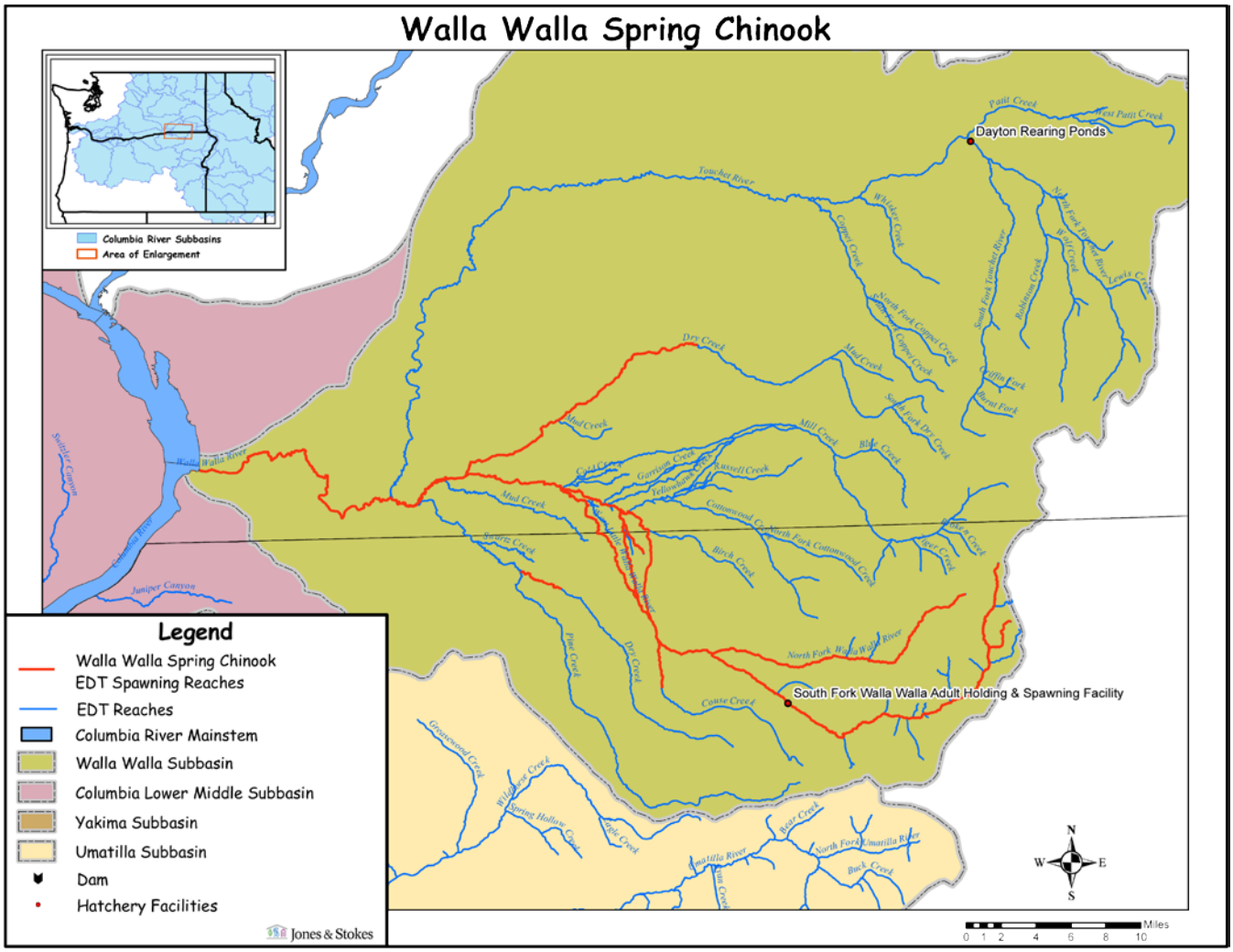
Hatchery Scientific Review Group
Review and Recommendations

Walla Walla River Spring Chinook
Population and Related Hatchery Programs

January 31, 2009



Note: Spawning reaches likely vary from those depicted.

1 Walla Walla River Spring Chinook

Walla Walla spring Chinook were extirpated early in the 20th century. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) has developed a reintroduction plan for spring Chinook. This plan includes the release of hatchery adults from nearby hatchery programs and recently the release of Carson or Walla Walla stock hatchery smolts into the South Fork Walla Walla. The purpose of the Walla Walla program is to help mitigate for fish losses in the Columbia River Basin associated with development of the federal Columbia River hydropower system and other basin development.

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: Population extirpated, part of the Middle Columbia River Spring-run Chinook ESU.
- Population Designation: Using a rating system similar to that used by the recovery planners for the Lower Columbia and Willamette results in a designation of Primary.
- Current Viability Rating: Extirpated.
- Recovery Goal for Abundance: Unknown.
- Productivity Improvement Expectation: 1.2 to 1.4 (CTUIR pers. communication).
- Habitat Productivity and Capacity (from EDT): Productivity: 4.0; Capacity: 443.

2.2 Current Hatchery Programs Affecting this Population

The current reintroduction program is based on Carson stock collected from either the Little White Salmon or Carson National Fish Hatchery. In recent years, sufficient fish have been available from the Umatilla spring Chinook program to release into the Walla Walla. The proposed annual release level is 250,000 smolts to be released in the South Fork Walla Walla River (RM 7) (2005 HGMP). Program releases first occurred in 2005 from brood year 2003 fish. Before 2003, spring chinook adults collected from Ringold Hatchery were released into the Walla Walla.

The CTUIR has proposed to develop an integrated recovery program using broodstock collected from the Walla Walla River.

Estimated number of hatchery strays affecting this population:

- Hatchery strays from in-basin integrated hatchery program: 719 fish.
- Hatchery strays from in-basin segregated and out-of-basin hatchery programs: 39 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 1.8 to 3.5. Average abundance of natural-origin spawners (NOS) would increase from 261 to 316. Harvest contribution of the natural and hatchery populations would go from 190 to 42.

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

Native spring Chinook were extirpated. This is a reintroduction program. Initially, the benchmarks for PNI and pHOS are not attainable. Under current habitat conditions, the size of an integrated hatchery program is limited to about 100,000 smolts if standards for a Primary population are to be met, and 200,000 smolts if standards for a Contributing population are to be met. As this population has no genetic legacy, managers may want to consider this a Contributing or even Stabilizing population. Habitat improvements will be required to achieve a naturally sustainable population. Information provided to us indicates that some natural production occurs. Fish are externally marked to evaluate strays.

Recommendations

Transition to local broodstock as soon as required facilities are operational. Until habitat can support an integrated population, maintain the current program until natural production appears evident. This segregated program using local broodstock would serve as a transitional phase in the reintroduction program. Returns in excess of broodstock needs should be allowed to spawn naturally.

Expansion of this program should be contingent on the development of a local broodstock.

The HSRG recommends that managers implement a BKD control strategy for their spring and summer/fall Chinook hatchery programs where BKD has proved a recurring problem. Ideally, the strategy should include culling (destroying) eggs/progeny from hatchery- and natural-origin brood that are found to be infected with the BKD agent. However, because brood fish with high levels of the BKD agent are more likely to transmit the agent to their progeny than brood with lesser levels of the agent, the culling of eggs/progeny from infected brood fish, should, at the very least, be applied to those with high levels of the BKD agent (e.g., ELISA OD value of 0.4 and above when broodstock are not in short supply and ELISA OD value of 0.6 and above when broodstock are in short supply). In addition, in programs using ESA-listed natural-origin brood fish, the culling of their eggs/progeny may, at the managers' discretion, be dispensed with. However, the ESA-listed broodstock should be injected, pre-spawning, with an appropriate antibiotic (preferably, azithromycin at 40 mg/kg fish), and the resulting eggs should be surface-disinfected with an iodophor. All pre-spawning brood injections may be limited to females, ESA-listed or otherwise.

Finally, eggs and hatchlings derived from broodstock found to be heavily infected with the BKD agent should be incubated/reared in isolation from those obtained from broodstock with no or lesser levels of the BKD agent. In addition, the hatchlings should be reared at the lowest possible densities (below current standards), and, at the first signs of infection with the BKD agent, they should be treated with orally administered erythromycin (100 mg/kg fish) for 28 days. The treatment should be repeated if there is evidence that the BKD agent has persisted in the hatchlings.

Table 1. Results of HSRG analysis of current condition and HSRG Solution for Walla Walla 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	Int Cons	249.5	0%	0%	70%	0.00	261	1.8	190	0
No Hatchery	None None	-	0%	0%	0%	1.00	316	3.5	42	-
HSRG Solution	Int Cons	198.5	90%	0%	40%	0.50	131	2.3	247	816
HSRG Solution w/ Improved Habitat	Int Cons	198.5	90%	0%	31%	0.56	194	2.8	255	816