July 19, 2013

Washington Department of Fisheries and Wildlife
Hatcheries Division
600 Capital Way N.
Olympia WA 98501

Subject: HSRG Review of Wallace River Coho HGMP

A subcommittee of the Hatchery Scientific Review Group (HSRG) has reviewed the Wallace River Coho Hatchery and Genetic Management Plan (HGMP), dated May 31, 2013. The principles and recommendations developed by the HSRG during their review of the Columbia River Basin hatcheries (HSRG 2009) were used as a template to organize information from review of this HGMP. The HSRG reviewers were asked to compare the consistency of the Wallace River Coho HGMP with the principles and recommendations developed by the HSRG for hatchery operations for the Columbia River Basin. We hope you find this review helpful.

Sincerely,

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Co-Chairs, HSRG

Principles and System-Wide Recommendations

The HSRG's three principles for hatchery management are presented below, with each of 17 system-wide recommendations (applicable to programs across the Columbia River Basin hatchery system) listed under the principle from which it is derived. These principles and system-wide recommendations represent the key findings of the HSRG in its review of Columbia River Basin hatcheries and we believe are applicable to all hatchery programs. The more closely hatchery programs adhere to these principles and recommendations, the greater the likelihood of their contribution to the managers' harvest and conservation goals.

Principle: Develop Clear, Specific, Quantifiable Harvest and Conservation Goals for Natural and Hatchery Populations within an "All H" Context.

"During its reviews, the HSRG observed that goals for fish populations were not always explicitly communicated and/or fully understood by the managers and operators of hatchery programs. These goals should be quantified, where possible, and expressed in terms of values to the community (harvest, conservation, education, research, etc.). At times, goals have been expressed in terms of the numbers of smolts to be released without specifying whether or how this hatchery production contributes to harvest and/or conservation. Hatchery production numbers may be the means of contributing to harvest and/or conservation values, but they are not endpoints. When population goals are clearly defined in terms of conservation and harvest, hatcheries can be managed as tools to help meet those goals."

"To be successful, hatcheries should be used as part of a comprehensive strategy where habitat, hatchery management and harvest are coordinated to best meet resource management goals that are defined for each population in the watershed. Hatcheries are by their very nature a compromise—a balancing of benefits and risks to the target population, other populations, and the natural and human environment affected by the hatchery program. Use of a hatchery program is appropriate when the benefits significantly outweigh the risks and when the benefit/risk mix from the program is more favorable than the benefits/risks associated with non-hatchery strategies for meeting the same goals."

Recommendation 1: *Express conservation goals in terms of a population's biological significance (Primary, Contributing, Stabilizing) and viability (natural-origin spawning abundance and productivity).*

Comment: The biological significance of the Snohomish basin Coho (natural population associated with the Wallace River hatchery Coho program) was not provided. General information on abundance was provided (~130,000), but no information on productivity was presented.

This is surprising in that a great deal of work has been devoted to developing biological significance categories for all populations of salmonids in Puget Sound. The work of the Hatchery advisory work group should have been presented, even as a "draft". In addition, the Comprehensive Coho Management Plan (CCMP), cited in the HGMP, does provide classifications for Coho populations' throughout Puget Sound (Snohomish is classified as a "Key Wild"). This classification could certainly be used to assign significance to this population.

Recommendation 2: *Express harvest goals in terms of a population's contribution to specific fisheries.*

Comment: The HGMP lacks specific quantifiable goals for contribution to specific fisheries. Section 1.7 identifies Goal of program as "Harvest Augmentation" and Section 1.10 "Performance Indicators", table 1.10.1 further identifies "co-manager harvest" and "Program contributes to fulfilling tribal trust responsibility mandate". Managers have identified an estimated number of adults produced (8,955) (Section 1.12) but without a goal to compare it to it is not possible to evaluate the success of the facility.

Recommendation 3: *Ensure goals for individual populations are coordinated and compatible with those for other populations in the Region.*

Comment: The HGMP cites *U.S v Washington* and the *Puget Sound Salmon Management Plan* (PSSMP 1985), Non-Chinook Resource Management Plan (RMP) and a list of MOU agreements as providing the legal framework for coordinating hatchery programs in the Region (Section 3.1, 3.2). However, these plans are aimed at coordinating harvest and harvest opportunity and do not reflect the conservation issues that may arise from large scale hatchery programs in most of the watersheds within Puget Sound. Another plan, The Comprehensive Coho Management Plan (CCMP), is described as "support the maintenance and restoration of wild stocks in a manner that reflects the regions fisheries objectives (resource protection, allocation, and harvest stabilization), production constraints, and production opportunities (PSTT and WDFW 1998)." However, no indication is provided as to how that plan would affect the Wallace River Hatchery Coho production.

Several salmon recovery planning processes are listed (Section 3.4,) but these plans are directed at ESA listed populations within the watershed (Coho are not one of these).

Missing is any reference to the WDFW Hatchery and Fishery Reform Policy.

Principle: Design and Operate Hatchery Programs in a Scientifically Defensible Manner.
"Once a set of well-defined population goals has been identified, the scientific rationale for a hatchery program (in terms of benefits and risks) must be formulated, explaining how the program expects to achieve its goals. The purpose, operation and management of each hatchery program must be scientifically defensible. The strategy chosen must be consistent with current scientific knowledge. Where there is uncertainty, hypotheses and assumptions should be articulated."

"Scientific defensibility should be a central consideration throughout all phases of a hatchery program—when determining whether a hatchery should be built or a program initiated; during the hatchery or program planning and design phase; and during the operations phase. This

ensures a scientific foundation for hatchery programs, a means for addressing uncertainty, and a method for demonstrating accountability. Documentation for each program should include a description of analytical methods and should be accompanied with citations from the scientific literature."

Recommendation 4: *Identify the purpose of the hatchery program (i.e., conservation, harvest or both).*

Comment: Program is identified as a Harvest program (Section 1.7). Implied, but not stated in the goal is the support of several other net pen facilities by supplying eggs/fish. This should be stated directly.

Recommendation 5: *Explicitly state the scientific assumptions under which a program contributes to meeting the stated goals.*

Comment: The Wallace River Hatchery Coho program does appear to have a conservation goal (other than perhaps "do no harm"), however, the concern for harm seems to be only to ESA listed fish (Section 1.8).

The rationale to support the harvest goal is provided in several places (Section 1.8, 1.12, 3.3). However, the goals provided are only general in nature (support or contribute to fisheries). Because of this, it is not possible to evaluate the hatchery program in any detail, or discuss the key assumption supporting the program (how many smolts to release).

Recommendation 6: *Select an integrated or segregated broodstock management strategy based on population goals and hatchery program purpose.*

Comment: Program is identified as an integrated program (Section 1.6). It also includes a "stepping stone" program that provides eggs to the Bernie Kai-Kai tribal facility (also located in the Snohomish basin) However, eggs are also taken to support net pen programs in South Puget Sound, which could lead to large straying of these fish into other Coho populations. No mention of the impacts of this activity is provided.

Recommendation 7: *Size hatchery programs based on population goals and as part of an "all H" strategy.*

Comment: The current production goal of 150,000 on-station smolt release and up to 3.5 million egg/fingerling transfers requires 3,462 spawners. It appears (though not stated) that the main use of Wallace Hatchery Coho production is to supply other programs with fish. This should be stated in the goals section (1.7) and the justification section (1.8).

Recommendation 8: *Manage harvest, hatchery broodstock and natural spawning escapement to meet HSRG standards appropriate to the affected natural population's designation.*

Comment: Item 3.4.1 of Table 1.10.2.1 states, in part: "While there are no pNOB or PNI goals for this program…." This seems odd in light of the existing WDFW policy on Hatchery and Fishery Reform. Some explanation of this is needed in the document.

The document does provide estimates of PNI for this program (0.9-0.99), however, item 3.5.1 (in Table 1.10.2.1) states: "Due to the high numbers of fish (average escapements have averaged 130,000 for the past 12 years) and extensive survey stream area (approximately 1,300 anadromous fish- bearing miles) it is not currently feasible to monitor abundance or specific patterns of genetic variation within and among natural populations. For this same reason, it is not possible to monitor abundance by origin or gene flow, PNI, pNI (sic), pHOS or pHOS (sic) for Coho in the natural Snohomish escapement." Item 3.5.3 states (same Table): "While precise pHOS estimates for Snohomish Coho are not yet available, it is believed that Coho released from the Tulalip and Wallace River Hatcheries have not contributed substantially to natural spawning aggregations in the Snohomish basin. Hatchery contributions are thought to be low", based on data collected at Sunset falls fish trap.

Based on this, it is unclear how much confidence in the estimates of PNI can be assumed.

Recommendation 9: *Manage the harvest to achieve full use of hatchery-origin fish.*

Comment: Table 3.3.1.1 provides recent average harvest in Eastern Pacific fisheries and a total exploitation rate of approximately 31%. It appears from the data in Section 10.3 that there has been a significant reduction in number of smolts released for this program, and a commensurate reduction in hatchery returns. These changes should be discussed (were they the results of adaptive management or low survival?). An exploitation rate of 31% on hatchery Coho is considered low, but understandable if the HGMP described the need to secure eggs for other programs (which should have been stated in the goals section).

Recommendation 10: *Ensure all hatchery programs have self-sustaining broodstocks.*

Comment: Program has achieved broodstock goals for at least the last 12 years (table 1.12.1; 7.4.2.1).

Recommendation 11: *Coordinate hatchery programs within the Regions ecosystem to account for the effects of all hatchery programs on each natural population and each hatchery program on all natural populations.*

Comment: Section 3 of the HGMP describes the coordination of hatchery production in the Region to achieve adherence to *U.S. v Washington,* which provides the legal framework for coordinating these programs. Other objectives are described in the Puget Sound Management Plan (PSSMP), the Co-managers' Non-Chinook Resource Management Plan (RMP) for Puget Sound region non-Chinook salmon hatchery programs and the Comprehensive Coho Management Plan (CCMP). However, these documents are concerned with the equitable sharing of harvest, stabilizing hatchery production or the health of and impacts on ESA listed populations, and not other non-listed populations of salmonids co-occurring in the basin.

Recommendation 12: *Assure that facilities are constructed and operated in compliance with environmental laws and regulations.*

Comment: NPDES guidelines with regard to effluents are generally being adhered to. Water intake screens are in compliance with the federal and state criteria established in 1995 and 1996 but the screens at Wallace River Creek Hatchery are currently not in compliance with more recently mandated standards for juvenile fish passage (NMFS 2012). Funding to correct this problem is scheduled to be received in 2015-2017.

Recommendation 13: *Maximize survival of hatchery fish consistent with conservation goals.*

Comment: Fish appear to be released at a time and size aimed at maximizing survival for Coho reared at Puget Sound hatcheries.

Principle: Monitor, Evaluate and Adaptively Manage Hatchery Programs.
"In addition to establishing resource goals and a defensible scientific rationale for a hatchery program, the HSRG recommends that the managers' decisions be informed and modified by continuous evaluation of existing programs, changing circumstances and new scientific information. Decisions about hatcheries must also be made in a broader, integrated context and hatchery solutions must meet the test of being better, in a benefit/risk sense, than alternative available means to meet similar goals. Systems affected by hatchery programs are dynamic and complex; therefore, uncertainty is unavoidable. The only thing certain is that the unexpected will occur."

Recommendation 14: *Regularly review goals and performance of hatchery programs in a transparent, regional, "all-H" context.*

Comment: The HGMP describes a process for updating information on survival, contribution to fisheries and contribution to natural spawning areas for this program (Tables 1.10.1.1 and 1.10.1.2). In addition, Section 11 (Monitoring and Evaluation of Performance indicators), describes several monitoring studies taking place or planned in the near future. However, due to lack of clear conservation and harvest goals, it is unknown how these data will be used to modify the program.

Recommendation 15: *Place a priority on research that develops solutions to potential problems and quantifies factors affecting relative reproductive success and long-term fitness of populations influenced by hatcheries.*

Comment: No on-going research was identified.

Recommendation 16: *Design and operate hatcheries and hatchery programs with the flexibility to respond to changing conditions.*

Comment: In the absence of clear conservation or harvest goals, it is difficult to see how (or why) hatchery operations would change due to changing conditions (social or environmental). A section on adaptive management could be included in the document (perhaps in Section 3, or Section 11) that describes a process for altering hatchery programs based on changes to goals, or hatchery performance. While not called for specifically in the HGMP template, this would add significantly to the accountability of hatchery operations.

Recommendation 17: *Discontinue or modify programs if risks outweigh the benefits.*

Comment: Various monitoring activities are described within the HGMP to measure risk (Table 1.10.2) to natural populations. While it is assumed that results from this monitoring could be used to alter hatchery programs, no level of impacts was identified as "unacceptable" so it is unclear why much of these data are being collected.