Hatchery Scientific Review Group
Pacific Salmon Hatchery Reform
www.hatcheryreform.us

HSRG - Washington

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January 18, 2013

Washington Department of Fish and Wildlife
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600 Capital Way N.
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Subject: HSRG Review of Soos Creek and Voights Creek Fall Chinook HGMPs

A subcommittee of the Hatchery Scientific Review Group (HSRG) has reviewed the Soos Creek Hatchery Fall Chinook Hatchery and Genetic Management Plan (HGMP), dated November 28, 2012, and the Voights Creek Hatchery Fall Chinook HGMP, dated December 19, 2012. The HSRG has declined to comment on the Hood Canal Steelhead Supplementation Project HGMP due to the specific nature of the project being classified as research.

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 these HGMPs. The HSRG reviewers were asked to compare the consistency of the Soos Creek/Voights Creek Fall Chinook HGMPs with the principles and recommendations developed by the HSRG for hatchery operations for the Columbia Basin. The results are provided as Attachments A and B.

As a general comment to the development of all future HGMPs, the HSRG suggests that HGMPs would benefit from a concise introductory narrative at the beginning of the document that describes the overarching goals and objectives of the program. While not specifically called for in the HGMP template, we believe that this addition will dramatically improve the reader's ability to fully understand what is being described.

We hope you find these comments helpful.

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Subject: HSRG Review of Soos Creek Fall Chinook HGMP

A subcommittee of the Hatchery Scientific Review Group (HSRG) has reviewed the Soos Creek Hatchery Fall Chinook Hatchery and Genetic Management Plan (HGMP), dated November 28, 2012. 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 these HGMPs. The HSRG reviewers were asked to compare the consistency of the Soos Creek Fall Chinook HGMPs with the principles and recommendations developed by the HSRG for hatchery operations for the Columbia River Basin. The results are as follows:

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 during its review of Columbia River Basin hatcheries, but are applicable to all hatchery programs. Hatchery programs that adhere to these principles and recommendations are more likely to contribute 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 Soos Creek Fall Chinook HGMP identifies the populations' biological significance as "Category 2a".

NMFS (1999) considered this stock to be in the ESU, but not essential for recovery. Stock was designated Category 2a, as the hatchery population is derived from a native, local population (SSHAG 2003). The NMFS subsequently listed hatchery production in the Green River because these hatchery stocks were not significantly divergent from naturally-spawning fish in those systems (NMFS 2005a, NMFS 2005b) (Section 2.2.2, page 12) and identifies critical and viable population thresholds to be 1,800 and 5,800 respectively (PSTRT 2003). However, the origin was not specified (Hatchery or Natural). In addition, the population was not identified as Primary, Contributing or Stabilizing.

"NMFS critical escapement threshold for natural-origin fall Chinook in the Duwamish-Green River is 835, and 5,523 for the population to be considered rebuilding (NMFS 2011)" (Same Section).

It is unclear which, if either, of these goals are the management targets.

Productivity goals were not provided, however, past and current estimates of productivity were included (Table 2.2.2.1, page 13).

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 the 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 should specify numbers of fish contributed to specific fisheries, or at a minimum the total number of fish expected to be harvested.

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) as providing the legal framework for coordinating hatchery programs in the Region (Section 3.2, page 19). 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.

Several salmon recovery planning processes are listed (Section 3.4, page 21), but no description is provided as to how they may affect hatchery production at Soos Creek Hatchery.

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: The program is identified as a Harvest program (Section 1.7, page 3). However, there appears to be intent to use this program to maintain the numbers of fish spawning naturally (Conservation) by planting hatchery adults into the watershed (Section 7.5, page 29). This attempt at recolonization should be discussed at the beginning of the HGMP under Section 1.7 "Purpose (Goal) of program."

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

Comment: The rationale to support the differential use of "highly" and "limited" integrated juveniles is not explained. The number of smolts planted at locations changes when integration levels change is not justified. No scientific rationale is provided for the definitions of "highly" or "limited" integration rates.

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

Comment: The program is identified as an integrated program (Section 1.6, page 3). However, the level of integrated target (PNI) is not provided. Broodstock is described as "highly integrated" or "limited," with no definitions/rationale provided (Section 10.7, page 37).

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

Comment: The current production goal of 4.5 million smolts appears to be based on facility capacity and not on varying natural origin abundance. While the level of NOR returns do prescribe the number of smolts released by location, they do not affect the number released (Section 6.2.3, page 27).

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

Comment: While PNI and pNOB is presented for 2008-2011 broods (table 6.2.3.1, page 28), no targets for PNI, pNOB, or pHOS were identified and no reference to the WDFW Hatchery and Fishery Reform Policy (which sets HSRG standards as targets) is made. In fact Table 1.10.2 ("Performance Indicators" addressing risk), while identifying as a Performance Standard, the proportion of hatchery origin adults on the spawning grounds (Standard 3.5.3), concludes that this standard is "Not applicable".

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

Comment: Table 3.3.1.1, page 20 provides recent average harvest in Eastern Pacific fisheries and a total exploitation rate of approximately 62% (sub-yearlings). Given that the hatchery typically exceeds its broodstock requirements by 1,500 (Hatchery Performance Summary Table, WDFW 2009) and the natural spawning escapement is approximately 40% hatchery fish (Table 2.2.2.6, page 15), it does not appear that hatchery fish are managed to achieve "full" use.

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

Comment: The program has achieved broodstock goals for at least the last 12 years (table 7.4.2.1, page).

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, and the *Comprehensive Management Plan for Puget Sound Chinook* (WDFW 2004) for defining artificial production objectives. Neither of these documents addresses genetic or ecological impacts of hatchery production on natural populations. In addition, Section 3.4 (Relationship to habitat protection and recovery strategies) incorrectly, we believe, identifies the Soos Creek Hatchery program as being included under the co-managers' **non-Chinook** Resource Management Plan (RMP) for Puget Sound region **non-Chinook** salmon hatchery programs.

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 but there have been a few instances at Soos Creek Hatchery where particulates did exceed the permitted level (see Table 4.2.1). Funding for an effluent treatment pond to correct this problem was made available in 2012. No such NPDES violations have been reported for the Icy Creek and Palmer Ponds facilities. Water intake screens are in compliance with the federal and state criteria established in 1995 and 1996 but the screens at Soos Creek Hatchery are currently not in compliance with more recently mandated standards for juvenile fish passage. Funding to correct this problem was made available in 2012.

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 fall Chinook reared at Puget Sound hatcheries. However, using the ventral clip for the 1.0 million sub-yearling releases at Palmer Ponds does not maximize survival. The marking system used by

the tribes and WDFW everywhere else in the state involves either the adipose clip where harvest is the designated purpose or CWT-only where maximizing adult returns for a conservation purpose is desired. Previous WDFW/USFWS study with sub-yearling Chinook releases for three brood years showed an average of 47% fewer adult returns of ventral fin clipped compared to adipose clipped fish.

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. However, due to lack of clear conservation and harvest goals, it is unclear 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: There is intent described in the HGMP to modify the program due to changing numbers of returning NORs, however, the scientific rationale for doing so (changes in release numbers by location) is not provided.

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

Comment: This program has been ongoing since 1901 and there is no indication that it will be discontinued, regardless of risks. Section 1.16 identifies alternatives considered for attaining program goals, but elimination of the program was not considered.