

The Washington Department of Fish and Wildlife developed the Wallace Coho Hatchery and Genetic Management Plan (HGMP), placed a draft version on our web page on July 3, 2013, announced its availability, and solicited public comment through August 4, 2013.

WDFW received comments from only one organization during the public comment period: Mr. Andy Appleby and Dr. Peter Paquet representing the Hatchery Scientific Review Group. WDFW would like to thank the HSRG for their review of the Wallace Coho HGMP. Their submitted comments are posted under separate cover, and our responses are appended below.

Response to Comments by the Hatchery Scientific Review Group – submitted to WDFW July 19, 2013.

Comment 1. 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.

WDFW Response: We agree with the HSRG comment, and additional information regarding the Snohomish population has been added to the HGMP section 1.12:

The natural coho population in the Snohomish Basin, associated with the Wallace Hatchery coho program, is biologically significant and has been assigned a key wild management unit status (one of five) in Puget Sound (CCMP 1998). WDFW rated the status of Snohomish coho as “depressed” in 1992, due to a multiple-year decline in the escapement indicator data . This trend was reversed in the mid-1990s, with escapements that were higher than those observed prior to 1992; consequently, the stock was rated as “healthy” in 2002 (SASI, 2013). The current short- and long-term population trend and growth rate estimate, as presented by Ford (2011), indicates self-replacing population (**Table 1.12.1**).

Table 1.12.1: Short and long term population trend and growth rate estimates for the Snohomish Basin coho population.

Region and Population	Years	Short-term trend (95% CI) ^a	Long-term trend (95% CI) ^b
Snohomish River	2005-2009	0.99 (0.911- 1.076)	1.007 (0.978 - 1.037)

Source: Ford 2011. These are based on analyses reported by Ford et al. (2011) that are not necessarily agreed to by WDFW and the Tulalip Tribes. See Ford (2011) for explanation of the columns.

^a Trend from 1995.

^b Trend from 1984 (Snohomish, Stillaguamish), based on data compiled from WDFW.

An average smolt-to-adult survival rate of 5.97% (fishery years 2003-2008, HGMP **Table 3.3.1.1**), was estimated based on hatchery program performance (RMIS 2013). Based on the survival rate and the program release goal (150,000 yearlings), the estimated annual hatchery program production level would be 8,955 adults (**Table 1.12.2**).

Table 1.12.2: Wallace River Hatchery and Snohomish Basin coho escapement 2000-2012.

Brood Year	Hatchery Escapement	Snohomish Basin Natural Escapement
2000	26,263	94,210
2001	31,661	261,647
2002	11,802	161,567
2003	13,262	182,714
2004	13,880	252,931
2005	13,304*	109,143
2006	6,145*	75,848
2007	7,228*	118,594
2008	3,316*	35,817
2009	8,237*	99,033
2010	4,338*	49,239
2011	7,801*	111,524
2012	10,475*	130,859
Average	12,132	129,471

Source: Equilibrium Brood Database (Tulalip and WDFW 2012), WDFW Hatcheries Headquarters Database 2012, RMIS 2012, SaSI 2013.

* Sunset Falls transfers are included in the Hatchery Escapement column.

Comment 2. *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.*

WDFW Response: Salmon hatchery programs support State sport and commercial, and Treaty commercial, ceremonial and subsistence fisheries. Unlike the State’s lowland lake trout fisheries, where such metrics make sense, the complexities of the salmon life history and salmon harvest management, overlaid with Endangered Species Act conservation restrictions, do not lend themselves to the creation of specific quantifiable goals for contribution to specific fisheries. The State sport and Treaty harvests occur throughout Puget Sound, as well as in the freshwater environments. The marine fisheries are supported by a host of hatchery programs throughout Puget Sound, whereas the freshwater fisheries are supported mostly by the local production. In order to create a fishery package for salmon harvest management, there are conservation objectives for specific stocks that must be met. Therefore, the success of the fisheries is not only dependent on the size of hatchery programs, but whether the fisheries package in place meets all the conservation objectives. For example, it may be that the harvest in a particular fishery is reduced for one year in order to limit the harvest on a population that is not meeting its conservation objective. In another year, the harvest might be higher because the limiting stocks did not curtail fisheries where a particular hatchery program’s fish are caught. That, combined with the number of different fisheries supported by each hatchery program and the number of different hatchery programs that support each fisheries make the concept impractical for salmon programs.

Comment 3. *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.*

WDFW Response: Section 4 in the *Puget Sound Salmon Management Plan (PSSMP)* explains the Equilibrium Brood Program, which describes hatchery programs and the Co-manager process of how changes may be made to those programs. Sections 9 and 10 of the *PSSMP* discuss harvest and harvest allocation. Therefore, the *PSSMP* addresses both. Coho are not listed under the Endangered Species Act, and Chinook and steelhead were not yet listed when *PSSAMP* was published, so it is true that it does not reflect current conservation issues. Nevertheless, those court decisions guide the current co-management process in both harvest and hatcheries management under the concerns regarding ESA-listed species.

Comment 4. *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.*

WDFW Response: The overview of programs benefiting from eggs collected at Wallace River hatchery is presented in HGMP section 1.3. The full list of facilities supported by Wallace River hatchery coho program to release fish for harvest or for educational purposes is presented in detail in Table 1.11.2.2., and the detail egg/fish allocation for harvest releases is presented in Figure 6.2.2.1.

Comment 5. *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).*

WDFW Response: Conservation objectives for Puget Sound coho are described in the *Comprehensive Coho Management Plan (CCMP)*.

Comment 6. 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.

WDFW Response: The risks and benefits of the eggs/fish provided from the Wallace River Hatchery program for releases from the Tulalip Tribal hatchery and Squaxin Island Tribal net pen programs are addressed the respective in Bernie Kai-Kai Gobin and South Sound Net Pen coho HGMPs.

Comment 7. 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).

WDFW Response: See response to **Comment 4**, pg 3.

Comment 8. 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.

WDFW Response: Based on the index escapement counts, the Co-managers recognize that the natural coho population in the Snohomish River Basin is healthy, and has a very high average escapement, which, combined with the very low hatchery program release size, allows it to achieve high PNI values. The healthy and abundant natural population allows for collection of natural-origin fish for incorporation into hatchery broodstock at the rate of over 92%. WDFW is successfully trapping returning hatchery adults at a high rate and continues to monitor index reaches for escapement levels of natural-origin fish. These combined factors exceed HSRG recommendations for integrated programs of highest conservation concern.

Comment 9. *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).*

WDFW Response: The egg-take goals are described in HGMP section 1.11.1, and account for on-station program releases and egg/fish transfers to other facilities. The overview of programs benefiting from eggs collected at Wallace River Hatchery is presented in HGMP section 1.3, and **Table 1.11.2.2** and **Figure 6.2.2.1** in the HGMP.

Comment 10. *: Program has achieved broodstock goals for at least the last 12 years (table 1.12.1; 7.4.2.1).*

WDFW Response: This statement is correct.

Comment 11. *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 no other non-listed populations of salmonids co-occurring in the basin.*

WDFW Response: While U.S. v Washington (1974) and the *Comprehensive Management Plan for Puget Sound Chinook* (WDFW 2004) define artificial production objectives as they relate to harvest, these documents do not address genetic or ecological impacts of the hatchery production on natural populations. Instead these issues are discussed in the HGMP. Genetic effects of the program are addressed in HGMP section 2.2.3 and ecological impacts are addressed in HGMP section 3.5. The format of the HGMP as set by NOAA Fisheries does not call for information about impacts on non-listed species.

Comment 12. *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.*

WDFW Response: The Wallace River Hatchery is currently scheduled for a facility remodel that will address any deficiencies in the intake structure. WDFW has identified the facility as a high priority in the Capital Budget request to the Legislature. It is currently ranked in the top five (5) projects, with design and permitting expected in biennium 2015 and construction in biennium 2017. This construction request will not only bring Wallace River Hatchery into compliance for both adult and juvenile passage and screening requirements, but will also address adult holding, juvenile rearing ponds and pollution abatement -- all items identified by the HSRG.

Comment 13. *Fish appear to be released at a time and size aimed at maximizing survival for Coho reared at Puget Sound hatcheries.*

WDFW Response: The statement is correct.

Comment 14. *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.*

WDFW Response: The format of the HGMP was set by NOAA Fisheries, and does not require this information.

Comment 15. *No on-going research was identified.*

WDFW Response: The format of the HGMP was set by NOAA Fisheries, and does not require this information.

Comment 16. *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.*

WDFW Response: Integrated hatchery programs play a key role in meeting conservation objectives. On one hand, hatcheries can play a key role from preserving populations on the brink of extinction to providing appropriate fish for colonization of unoccupied habitat, and on the other, hatcheries can provide harvest opportunities while ensuring local adaptation goals are met. **Table 1** shows an adaptive strategy for addressing changes to hatchery programs. However, it should be noted that program changes are subject to *U.S. v Washington* as well as to budget, facility and staffing constraints.

Table 1: Phase description for integrated hatchery programs

PHASE	HSRG DESCRIPTION	WDFW PROGRAM OBJECTIVES
Preservation	Secure the genetic identity and diversity of the native population until habitat can support survival at all life stages.	Implement genetic preservation programs to prevent extinction while habitat productivity is either too low or too dynamic for the population to be able to consistently replace itself absent fishing.
Re-colonization	Re-populate suitable habitat from pre-spawning to smolt outmigration (all life stages).	Implement programs to address demographic risks until the habitat is adequately and consistently productive to more than replace the NOS's for sufficient returns of natural origin fish.
Local Adaptation – addressing genetic risk	Meet and exceed minimum viable spawner abundance for natural origin spawners. Increase fitness, reproductive success and life history diversity through local adaptation.	Implement programs to address genetic risks until the habitat has sufficient and consistent productivity and capacity to more than replace NOSs for healthy returns of natural origin fish.

Restoration	Long-term adaptive management to maintain viable population, in terms of all VSP parameters.	Implement programs consistent with recovery parameters.
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Comment 17. *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.*

WDFW Response: For program evaluation, WDFW has adopted the “*Performance Standards and Indicators for the Use of Artificial Production for Anadromous Resident Fish Population in the Pacific Northwest*”. Collected data are used as measurement for standards and indicators.

Cited References:

Ford, M.J. (ed.). 2011. Status review update for Pacific salmon and steelhead listed under the Endangered Species Act: Pacific Northwest. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-113, 281 p.

NPPC (Northwest Power Planning Council). 2001. Performance standards and indicators for the use of artificial production for anadromous and resident fish populations in the Pacific Northwest. Portland, Oregon. 19 pp.

PSTT (Puget Sound Treaty Tribes) and WDFW (Washington Department of Fish and Wildlife). 1998. Comprehensive coho management plan; second interim report. Washington Department of Fish and Wildlife. Olympia, Washington. 92pp.

Puget Sound Salmon Management Plan. 1985. United States vs. Washington (1606 F.Supp. 1405).

RMIS (Regional Mark Information System). 2013. Retrieved February 6, 2012. Available from: <http://www.rmpc.org/>.

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