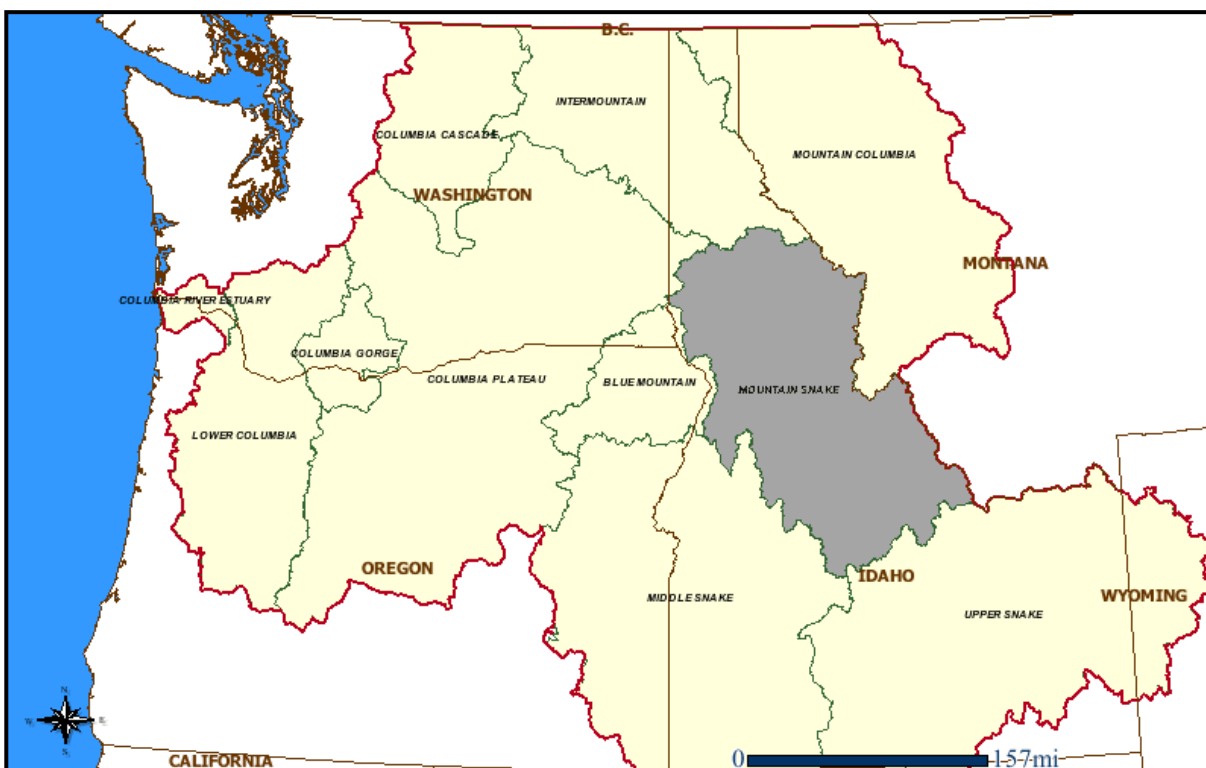




U.S. Fish and Wildlife Service Pacific Region
Columbia River Basin Hatchery Review Team

Columbia River Basin, Lower Snake Province
Clearwater and Salmon River Watersheds



**Dworshak, Kooskia and Hagerman National Fish
Hatcheries**

Assessments and Recommendations

Final Report, Appendix D:
Complete Text of Comment Letters Received from Stakeholders

June 2009

Please cite as:

U.S. Fish and Wildlife Service (USFWS). 2009. *Dworshak, Kooskia, and Hagerman National Fish Hatcheries: Assessments and Recommendations Appendix D: Complete Text of Comment Letters Received from Stakeholders. Final Report, June 2009*. Hatchery Review Team, Pacific Region. U.S. Fish and Wildlife Service, Portland, Oregon. <<http://www.fws.gov/pacific/Fisheries/Hatcheryreview/>>

Appendix D: Complete Text of Comment Letters Received from Stakeholders

Idaho Department of Fish and Game

*Nez Perce Tribe Department of Fisheries Resources
Management*

And

U.S. Fish and Wildlife Service

*Comments to the Columbia Basin Hatchery Review Team
On their Draft Assessments and Recommendations for Dworshak,
Kooskia, and Hagerman National Fish Hatcheries*

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Introduction

This document contains comments by the fisheries resource managers (Idaho Department of Fish and Game, Nez Perce Tribe, and U.S. Fish and Wildlife Service) recommendations provided by the USFWS Hatchery Review Team (HRT) for these facilities and programs. Comments from the USFWS in this document were provided by Dworshak and Kooskia Fish Hatchery staff (Larry Peltz, Adam Izbicki and Howard Burge).

This report should focus only on the programs reviewed; there are numerous references to IDFG programs such as Clearwater Hatchery. Clearwater Hatchery is not reviewed in this report and references to it are tangential and confusing to a reader unfamiliar with the basin.

We believe that the selection of a recommended alternative is premature until all the fish production facilities in the Clearwater Basin are reviewed and assessed comprehensively. Until then the review is basically incomplete and should not be recommending major program changes. Likewise for Hagerman NFH, until the other LSRCP facilities contributing to the program are reviewed, recommending a specific alternative is premature and recommending a major change in a program is presumptive.

When the HRT recommends practices that are on-going at the hatchery it should just **recommend continuing the current practice**, not write the recommendation like it's a change or something new. Then when addressing the recommendations we can just concur, when they are written as if a change or new procedure, we must provide a more thorough explanation (see comments for Recommendation HA18 below) and it appears that the HRT doesn't understand the program. It would have been good if the HRT had spent more time with the specific program further along in the review process to avoid confusion over some basic program operations. This would have saved the HRT and the program valuable time in writing and reviewing the report. I'd recommend that they do this for future reviews.

December 2008

Dworshak NFH B-run Steelhead

Program goals and objectives

Issue DW1: *Program goals for Dworshak NFH B-run steelhead, as established by the Army Corps of Engineers, are not fully expressed in terms of numeric outcomes that quantify intended benefits. This hatchery program lacks specific numeric goals for harvest, although providing fish for harvest is a primary purpose of the program. The Service's return goal to the Clearwater River for adult steelhead from Dworshak NFH is 20,000 fish, but no numeric harvest goals within the Clearwater basin, or for on-station releases from Dworshak NFH, have been identified.*

Recommendation DW1: Restate program goals to identify the number of harvestable adult B-run steelhead released directly from Dworshak NFH for harvest in the Clearwater River basin. For example, based on the Service's return goal to the Clearwater River (20,000 adults) and broodstock needs (3,000-4,000 adults), the harvest goal could be as high as 16,000 adults, assuming 100% survival from lower Granite Dam to the fishery and hatchery.

Comanagers Response to DW1: The IDFG, NPT, and USFWS agree that it would be beneficial to update or establish numerical goals for broodstock needs, harvest, and natural spawning escapement in the Clearwater River basin. These types of goals are contained in Table 3, Clearwater Subbasin Management Plan (11/2003) which provides a profile for anadromous adult returns for the Clearwater subbasin. These goals are derived from various management plans as described in Appendix A, Table 8 of this plan and do not imply consensus by all management agencies. Nevertheless, it does provide a reference and a beginning point for managers to consider establishing return goals and to discuss and set goals; i.e., *future, existing conditions, long-term return, natural spawning components, hatchery components (broodstock and rack return), and harvest components*, and/or other goals each manager may desire.

Table 3, Clearwater Subbasin Management Plan (11/2003) provides a profile as proposed by NPT for anadromous adult returns for the Clearwater subbasin. These goals are derived from various management plans as described in Appendix A, Table 8 of this plan and do not imply consensus by all management agencies. Nevertheless, it does provide a reference and a beginning point for managers to consider establishing return goals and to discuss and set goals; i.e., *future, existing conditions, long-term return, natural spawning components, hatchery components (broodstock and rack return), and harvest components*, and/or other goals each manager may desire.

Issue DW2: *Current conditions affecting the survival of salmon and steelhead in the Snake and Columbia rivers (operation of the hydropower system, habitat, harvest, and ESA listings) downstream from Dworshak NFH differ from the assumptions that were used to establish LSRCP mitigation goals. These different conditions inhibit consistent achievement of Dworshak NFH's contribution (34,000 adult steelhead) towards meeting the LSRCP mitigation goal of 55,100 adult steelhead returning*

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

annually upstream of Lower Granite Dam,, as developed initially by the Army Corps of Engineers in the mid-1970's.

Recommendation DW2: Continue to work through various regional processes such as (a) implementation of the mainstem *Federal Columbia River Power System* Biological Opinion to improve migration survival, (b) *US vs. OR* discussions to address harvest issues, (c) NOAA Fisheries to complete ESA consultations on hatchery mitigation programs, and (d) local watershed groups to continue improving habitat to, collectively, allow the Service and cooperators meet Army Corps of Engineers and LSRCP mitigation goals on a consistent basis. Reexamine current approaches for contributing 34,000 adult steelhead to the LSRCP mitigation goal of 55,100 adult steelhead (upstream of Lower Granite Dam) to determine whether the current hatchery program should be modified to account for existing conditions and facility capabilities at Dworshak NFH.

Comanagers Response to DW2: The IDFG, NPT, and USFWS agree that they will work through the various regional processes in an attempt to improve adult returns and meet LSRCP and COE mitigation goals on a consistent basis. They also agree that it would be beneficial to reexamine current production approaches to determine if the program should be modified.

Broodstock Choice and Collection

Issue DW3: *During broodstock collection, the fish ladder into the hatchery is closed periodically or “pulsed” to leave fish in the river for harvest. The extent to which pulsing the ladder increases stray rates to natural spawning areas for steelhead in the Clearwater River is unknown. In addition, leaving hatchery steelhead in the N.F. Clearwater River - in the general vicinity of the hatchery’s water supply- increases fish health risks to juvenile fish on station (see also issue DW12). Pulsing the ladder also inhibits collection of coho salmon for broodstock as part of the reintroduction program of the Nez Perce Tribe (see review section of Clearwater Coho hatchery program).*

Recommendation DW3: Evaluate the harvest benefits versus ecological and disease risks associated with pulsing the ladder for trapping adult steelhead. When evaluating benefits and risks, consider options – including the benefits and risks of those options - if the ladder were kept open continuously from October through May versus the current mode of operation. Perform a ladder operation study to assess straying and spawning behavior of Dworshak NFH hatchery fish. This could include a radio-tagging study of adult fish captured at the hatchery and then released back into the Clearwater River. Similar studies were conducted at Little White Salmon NFH¹. If straying of hatchery fish into natural spawning areas of listed steelhead exceeds the 5% guideline established by NOAA fisheries, then change the ladder operations to evaluate whether the 5% guideline can be met.

Comanagers Response to DW3: NPT doesn’t have a strong stance on this recommendation. Evaluating benefits and risks is a good thing to do. However, logistically operating the ladder continuously from October to May sounds infeasible. Leaving the steelhead in the river for harvest is important to the Tribe because currently a substantial part of our steelhead harvest occurs right near the Dworshak ladder. Currently, we work cooperatively with FWS to determine ladder opening and closing for collection of coho and that has worked quite well.

¹Engle et al. 2005 and 2006. *Assessments to Determine the Effect of Current and Alternate Ladder Operations on Brood Stock Collection and Behavior of Hatchery Fall Chinook Salmon at Little White Salmon National Fish Hatchery During 2004-05.* U.S. Fish & Wildlife Service, Columbia River Fisheries Program Office, Vancouver, WA.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Dworshak steelhead are listed and we do outplant them on purpose for natural spawning in the South Fork drainage. We are not too anxious to change an operation that is working due to an undocumented perceived risk of “straying” into natural spawning areas. The only real issue of concern for us is the fish health risk – which could be resolved with a new pipeline to Dworshak Dam.

Hatchery and Natural Spawning, Adult Returns

Issue DW4: *Approximately 1.3-1.4 million fertilized green eggs from Dworshak NFH steelhead are transferred to Clearwater FH for eventual outplanting in the Salmon River basin: Hagerman NFH and Magic Valley FH respectively receive 215,000 and 830,000 Dworshak NFH steelhead eyed eggs from Clearwater Hatchery for subsequent rearing and release as yearling smolts in the Salmon River basin. The annual transfer and releases of Dworshak NFH B-run steelhead into the Salmon River are inconsistent with the principles of local adaptation and managing hatchery stocks for maximum viability. These transfers also pose genetic and ecological risks to ESA listed natural populations in the Salmon River (e.g., natural populations in the East, South, and Middle Forks of the Salmon River). In addition, neither the Clearwater Hatchery nor Dworshak NFH have the space to rear those outplanted fish. Instead, those fish are reared at Hagerman NFH and Magic Valley State Hatchery in the Hagerman Valley, the water sources for which pose culture problems and increased disease risks to steelhead from the Clearwater River (see Hagerman NFH section of this report).*

Recommendation DW4: Discontinue steelhead egg takes at Dworshak NFH for outplanting into the Salmon River basin and develop an alternative long-term strategy for meeting the fishery management goals of those outplants. For example, if the benefits of releasing Dworshak NFH steelhead in the Salmon River are determined to outweigh the risks of those releases to natural populations, then a local Salmon River broodstock derived from Dworshak NFH steelhead should be developed at a location where non-harvested returning adults can be captured efficiently and used for broodstock. Refer to Hagerman B-run steelhead recommendation HA3 and the recommended alternative (Alternative 2) for that program for more information.

Comanagers Response to DW4:

NPT supports the recommendation to discontinue stocking of Dworshak B steelhead in the Salmon River basin and the development of a localized “B-run” stock for the Upper Salmon River Basin.

IDFG also supports developing a localized broodstock for B-run steelhead releases in the Upper Salmon River Basin. Historically anglers in the Salmon River fished for B-run fish destined for the South Fork Salmon and the Middle Fork Salmon. To mitigate for lost opportunity with respect to fishing for large 2-ocean B-run steelhead, IDFG is committed to developing a B run hatchery population that is locally adapted to upper Salmon River Basin. The Upper salmon River Basin is an area we have designated as suitable for hatchery mitigation production for harvest because there is little evidence of viable ancestral natural populations remaining there and releases of hatchery produced B-run fish in the area are spatially segregated far upstream of wild stock sanctuaries in the South Fork Salmon and Middle For Salmon River. We concur with the HRT that the existing annual releases of F1 generation smolts from Dworshak Hatchery into the Upper Salmon River is not desirable

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

biologically. While moving the B-run releases to an existing hatchery and adult capture facility (e.g. Pahsimeroi) to accommodate broodstock management is an option, we believe that installing a permanent adult weir and capture facility on the lower East Fork Salmon is a better option. The option for a weir and trapping facility on the lower east Fork Salmon River could be used to capture broodstock for a segregated locally adapted Upper salmon B-run, manage hatchery and natural spawning for the existing integrated East Fork Natural A –run, and exclude A-run fish from the segregated hatchery programs at Sawtooth and Pahsimeroi.

IDFG and NPT concur with the recommendation to build a program and infrastructure (adult capture and holding facilities) for a developing a locally adapted B-run broodstock in the South Fork Clearwater. In fact, the managers have endorsed that approach through the recently ratified U.S. vs. Oregon Management Agreement such that fish production and release plans have been structured to move in that direction.

Issue DW5: *Approximately 3,000 to 4,000 fish are trapped currently for broodstock each year; however, only 1200 females need to be trapped to meet all egg take requirements for all release programs. Excess broodstock are taken because females outnumber males by a ratio of approximately 2.3 to 1 (3 females: 1-2 males) and the hatchery spawns all adults pairwise (1 female: 1 male). Approximately 60% of the crosses are required to produce fish for on-station rearing, while 40% are required for egg transfers to Clearwater Hatchery. Egg transfers to Clearwater Hatchery eventually result in fish that are outplanted in the S.F. Clearwater River or the Salmon River. Consequently, those latter fish do not contribute to adult returns back to Dworshak NFH, and genetic concerns regarding minimum effective number of breeders do not apply.*

Recommendation DW5: Consider reducing the total number of fish retained for broodstock to achieve a spawning ratio of 2 females to 1 male for adult steelhead retained for the Clearwater Hatchery programs. Although the current spawning protocol is consistent with genetic management guidelines, strict pairwise spawning is not necessary to produce fish for harvest in outplanted areas (e.g., Salmon River). Reducing the total number of fish retained for broodstock is expected to reduce labor and provide additional fish for harvest or direct surplusing to tribes. Adult steelhead spawned for on-station releases at Dworshak NFH should continue to implement pairwise spawning of males and females to maximize the genetic effective number of breeders (N_b) contributing to future generations of steelhead at Dworshak NFH.²

Comanagers Response to DW5: IDFG and NPT see response to DW4. Through time, conversion to localized broodstock for B-run steelhead releases in the Upper Salmon River and in the South Fork Clearwater River will result in a need to collect fewer fish for broodstock at the Dworshak facility. Pairwise spawning for Salmon River production should be maintained until conversion to localized broodstock is developed in order to maximize genetic diversity within the pending localized stock.

² $N_b = 4N_mN_f / (N_m + N_f)$

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Issue DW6: Dworshak NFH collects approximately 15% of its broodstock in the fall (October-December) and the remaining broodstock (85%) in the late winter through spring (February-May). Under current spawning protocols, all fall-collected fish are spawned amongst themselves independent of late-winter and spring-collected fish. Consequently, the program may be inadvertently selecting for separate “early” and “late-returning” populations between which little or no gene flow occurs.

Recommendation DW6: Collate existing coded wire tag data and/or conduct both genetic and differential tag studies to assess the degree of interbreeding between fish collected in the fall for broodstock and fish collected the following winter and spring. Offspring of adults trapped in the fall should be given a different coded-wire tag code than offspring of adults trapped the following winter and spring. Determine the relative proportions of progeny of fall-collected adults that subsequently return and are trapped during the fall versus winter-spring. Perform the same evaluation for the progeny of adults collected during the winter and spring. Genetic analyses may provide additional insights regarding the long-term effects of current spawning protocols. The Abernathy Fish Technology Center is well equipped to perform these genetic analyses.

Comanagers Response to DW6: NPT does not oppose considering this type of evaluation, however, prior to any implementation that would affect production activities, marking, sampling, etc. we will want to thoroughly discuss and agree upon an approach for this study. In addition, it was our understanding that some evaluation of return timing and spawn timing had already been performed and there was not a correlation between the two. It would be helpful to check with the USFWS regarding their return timing and spawn timing data. It's our understanding that this has reviewed in the past and there was not a strong correlation between return timing and spawn timing .

Issue DW7: Exclusive use of hatchery-origin adults for broodstock (segregated program) poses a domestication genetic risk to the Dworshak NFH steelhead population. This population represents the ancestral genetic legacy of the North Fork Clearwater River with high biological significance.

Recommendation DW7: The Service should investigate potential opportunities within the Clearwater River basin of establishing a naturalized population of North Fork Clearwater steelhead - derived from the Dworshak NFH hatchery population – with a long-term goal of integrating natural-origin adults into the steelhead broodstock at Dworshak NFH to reduce domestication risks. Implementation of this recommendation could be coupled with Recommendation DW22 under Research, Monitoring and Evaluation.

Comanagers Response to DW7: NPT would support investigating potential opportunities to establish a naturalized population of North Fork Clearwater steelhead or of incorporating natural origin fish trapped in Clearwater River tributaries into the Dworshak broodstock. However, the USFWS and NPT question how would this differ from a locally developed stock, as recommended for the SF Clearwater and Clear Creek (DW9c and DW10c)? Furthermore, how would the HRT propose to reproduce the unique environmental conditions that developed the NF Clearwater B steelhead or fully reproduce all the selective factors necessary to reproduce or maintain the original genetic structure. We would also question the

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

use of rainbows that have been locked above Dworshak Dam for ~40 years since any sea-run characteristic may be lost. Also, thousands of domestic rainbows from numerous stocks were stocked into the reservoir for a 25 year period. The genetic integrity of the residual rainbow trout may have been compromised.

In addition, it's important to consider that if tributary specific stocks (SF CLWR, etc.) are going to be developed that actually support supplementation programs and the DNFH on-station production is solely for harvest augmentation then domestication concerns really aren't a concern. Don't lose sight of the program purpose. That being said, under current operations where on-station fish are released into SF CLWR then infusion of NOR is good.

Issue DW8: *MS-222 is currently used to anesthetize adults during spawning. This precludes the use of carcasses for nutrient enhancement of streams and other beneficial uses. For example, the U.S. Food and Drug Administration has not approved MS-222 for use on animals that could be consumed by humans or other animals within 30 days of use.*

Recommendation DW8: Develop an alternative method of anesthetizing broodstock at the time of spawning. Potential alternatives include electro-anesthesia and carbon dioxide.

Comanagers Response to DW8: It is our understanding that CO₂ is available and is used at Dworshak as an anesthesia already. NPT supports investigating alternative anesthetics, however, at the time of spawning fish are really not fit for human consumption.

Incubation and Rearing

Issue DW9: *The current number of fish reared on-station program (2.8 million green eggs and 2.1M smolts), coupled with the length of time that fry are retained in the nursery building, results in the total capacity of the nursery tanks to be exceeded relative to recommended rearing density index (D.I.) guidelines for steelhead (D.I. < 0.5). At maximum loading, the nursery tanks reach rearing densities of D.I.=0.75 which increases disease risks. Although rare, bacterial infections of *Pseudomonas* and coldwater disease do occur. Fry are retained in the nursery tanks for an extended period to increase their size which reduces their susceptibility to IHNV after ponding to the outside Burrow ponds. The ponds are supplied with river water that is exposed to adult salmon and steelhead staging near the ladder to the hatchery.*

Recommendation DW9: To achieve a rearing density no greater than 0.5 DI, increase the nursery rearing space, or (b) reduce the number of smolts produced on station. Alternatively, increasing the water supply from Dworshak Reservoir to provide sufficient water to the outdoor Burrows ponds (see Recommendation DW12) would reduce risks to IHNV substantially, thus allowing transfer of fry from the indoor nursery tanks to the outdoor ponds at a smaller size mean size when rearing densities approach D.I. = 0.5. The Service may also wish to evaluate rearing constraints and fish health concerns under current protocols; for example, the hatchery could conduct a density rearing study (refer also to Recommendation DW10 regarding steelhead outplants).

Comanagers Response to DW9: NPT strongly supports the development of a water supply line from Dworshak Reservoir. NPT would also concur with performing an evaluation of rearing constraints and fish health concerns in an effort to produce healthier fish. The FWS is

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

hesitant to reduce fish production due to impacts to *US v Oregon* and other production agreements. Increasing the nursery rearing space would be costly and is not currently one of the highest priorities for capital improvements. Dworshak production staff will investigate mechanisms to reduce stress without reducing fish production.

Release and Outmigration

Issue DW10: *Currently, 600,000 Dworshak NFH B-run steelhead smolts, reared at Dworshak NFH, are outplanted directly into the South Fork Clearwater Basin for harvest. In addition, approximately 840,000 Dworshak NFH B-run steelhead smolts, reared at Clearwater Fish Hatchery, are outplanted to several sites in the South Fork Clearwater River (≈ 800,000 smolts) and Lolo Creek (50,000 smolts). Those outplanting programs depend on adult returns to Dworshak NFH for broodstock each year, thus circumventing potential development of a localized South Fork Clearwater broodstock. In addition, the majority of those fish are released in the lower reaches of the S.F. Clearwater River to support terminal fisheries, but no facilities exist in those reaches to recapture unharvested adults. The potential natural spawning of unharvested hatchery-origin steelhead poses unknown genetic and ecological risks to natural populations.*

Recommendation DW10a: Phase out the direct outplanting of Dworshak NFH B-run steelhead into the South Fork Clearwater River and Lolo Creek.

Recommendation DW10b: (i) Increase the number of steelhead smolts released from existing smolt acclimation and adult recapture satellite facilities (i.e., Red and Crooked rivers) and at Dworshak NFH and/or (ii) develop new satellite facilities in the S.F. Clearwater River for acclimating smolts prior to release and for recapturing unharvested hatchery-origin adults. If conservation and viability of naturally-spawning populations of steelhead in the South Fork are comanager goals or priorities, then hatchery-origin steelhead (i.e., from a segregated hatchery program) should constitute no more than 5% of the total number of naturally-spawning fish, as per NOAA Fisheries and HSRG guidelines. The Team recognizes the economic costs and logistic difficulties of establishing new satellite facilities, including the monitoring needed to evaluate such programs.

Recommendation DW10c: Develop a localized broodstock of South Fork B-run steelhead derived from adult returns to the South Fork Clearwater River and associated satellite facilities described in Recommendation 10b. If B-run steelhead from Dworshak NFH continue to be outplanted in the S.F. Clearwater River, then those fish should be differentially marked from smolts representing the progeny of adults returning to and trapped in the South Fork. A local South Fork broodstock could be developed and managed as a segregated or integrated population relative to naturally spawning populations in the South Fork Clearwater River (see also recommendations of the independent Hatchery and Scientific Review Group).

Comanagers Response to DW10: IDFG and NPT concur with recommendation DW10c (see also responses to DW4 and DW5). NPT does not support DW10a.

Issue DW11: *Currently, 300,000 smolts are transferred from Dworshak NFH and directly released into Clear Creek 150 feet below the weir at Kooskia NFH. The direct outplanting of smolts into Clear Creek poses a straying risk to natural populations of steelhead in the region.*

Recommendation DW11a: All unharvested and marked, hatchery-origin steelhead returning to Clear Creek should be removed at the Kooskia NFH weir and not passed upstream.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Recommendation DW11b: Develop an acclimation pond at Kooskia NFH from which smolts can be released. Although onsite rearing of spring Chinook and steelhead is impeded by water quantity and quality from Clear Creek during the summer months, water availability may not be a problem for acclimating steelhead smolts prior to release in April.

Recommendation DW11c: Use marked steelhead adults returning to the weir at Kooskia NFH to develop a locally adapted broodstock. The resulting eyed eggs and progeny could be hatched and reared, respectively, at Dworshak NFH. If a local broodstock is established, then any Dworshak B steelhead outplanted from Dworshak NFH should be differentially marked to distinguish them from the new Kooskia NFH stock.

Comanagers Response to DW11: NPT is not aware of a documented “straying” problem from the releases of steelhead at Kooskia. The tribal fishery on the Middle Fork Clearwater and in Clear Creek is very important to the NPT. NPT supports discussing these recommendations with co-managers, but until an agreement is reached by the co-managers and the U.S. vs. Oregon Parties to change the current program we are not supportive of implementing these recommendations. The FWS echoes the concerns of the NPT.

Facilities/Operations

Issue DW12a: *Dworshak NFH uses water pumped from the N.F. Clearwater River below Dworshak Dam as its water supply for the outdoor raceways and Burrows ponds . The fish ladder into the hatchery is in the immediate vicinity of the water intake for the pumps. The concentration of steelhead and salmon adults near the water intake poses disease risks to fish reared on station. Horizontal transmission of IHN virus from adults to juvenile fish at Dworshak NFH has been documented. In addition, spring Chinook returning to Dworshak NFH exhibit a high prevalence of INHV, and juvenile steelhead on station die annually from IHN during the period that spring Chinook return to the hatchery (May-August).*

Issue DW12b: *The use of reuse water to rear steelhead to the smolt stage further increases disease risks. Reuse water is required to increase water temperatures and accelerate the growth of steelhead during the winter months so that they achieve the desired size at smoltification at one year of age.*

Issue DW12c: *Parasitic infections of Ich are a recurring problem when steelhead are on the reuse system. The standard treatment for Ich is formalin; however, formalin also kills the nitrifying bacteria that are an essential component of the biological filtration system.*

Recommendation DW12: Replace pumped water from the North Fork Clearwater River below the dam with gravity-fed water from Dworshak Reservoir. This would solve several inherent problems, including high rearing densities in the nursery building prior to transfer to the outdoor Burrows ponds (Issue DW9). It would also eliminate the need for the water reuse system and replace many large water pumps (see also Issues DW15 and DW18) with gravity-feed pipelines. In the long-run, installation of gravity-feed pipelines is expected to save tens of millions of dollars in energy and maintenance costs. If replacing the current pump system with a gravity-feed system from the reservoir is not feasible, then the river water supply should be disinfected (e.g., ozone treatment) and equipped with temperature controls. The gravity-feed option is preferred because the disinfection alternative adds mechanical complexity and considerable maintenance operation costs. In addition, continuation of the pumped water system with disinfection represents greater risk of catastrophic fish losses on station.³ In the near term, the

³ Issue/recommendation may be influenced by the results of the Freshwater Institute evaluation.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Service should restrict adult anadromous fish from the area around the intake. This latter action potentially includes not “pulsing” the ladder for steelhead.

Comanagers Response to DW12: We strongly concur and support the recommendation to develop a gravity-fed water supply pipeline from Dworshak Reservoir. The FWS and NPT as Joint-Managers of Dworshak hatchery are the lead advocates for building a gravity fed pipeline from the reservoir. Funding for this endeavor (needs to be developed in an effective period of time, during the next 2-5 years with implementation to make this planning economically effective) will not be easily obtained and may take many years. We agree with the NPT that changing ladder operations may cause more problems than it solves.

We believe this should be a high priority for the region. It is the key to improved fish production at Dworshak as it results in a cost recovery mechanism that is environmentally and biologically sound. It would also provide all managers with additional management options that are beneficial to the region.

The HRT did not provide logistical/technical recommendations on how to restrict anadromous fish from the area around the intake. We are not convinced that changing ladder operations would be helpful in achieving that goal. This could lead to additional logistical and expense issues that would not help the overall management results.

Restricting adult movement in the vicinity of the intakes will lead to confrontation with both non-Indian and Tribal fishers. It will also be expensive and difficult to maintain and to be effective, it might require blocking the North Fork to adults from just above the fish ladder to the face of the dam – several miles of fishing grounds that would affect a majority of non-Indian fishers.

Issue DW13: *Untreated water from the nursery building, Burrows ponds, and cleaning water from the Burrows ponds is discharged directly into the Clearwater River. Direct discharge of unsettled effluent poses ecological and water quality risks to aquatic species in the Clearwater River.*

Recommendation DW13: Construct a pollution abatement system or settling pond to remove dissolved solids from the hatchery effluent water prior to discharge into the Clearwater River.⁴ As required in the NPDES permit, ensure a Quality Assurance Plan and a Best Management Plan are written to address NPDES operations.

Comanagers Response to DW13: FWS and NPT are working collaboratively on finding a solution to address this issue. The COE and EPA are also actively involved in addressing this problem. A settling pond will not resolve the issue. Other mechanisms to reduce effluent problems are being addressed.

The Dworshak complex manager has obtained an evaluation document from Freshwater Institute in an attempt to provide pollution abatement. While it provides a method to resolve

⁴ Issue/recommendation may be influenced by the results of the Freshwater Institute evaluation.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

the NPDES issues, it only partially solves the problems for production at the hatchery and may make operations equally complex to produce fish that is equivalent to the operation of heaters, chillers and biofilters. The simplest and best long term solution to hatchery operations should include a pipeline and other remodeling suggestions listed in Response DW9 above. A hatchery remodel team should be convened to develop, plan and implement a remodel of Dworshak hatchery within the next 5 years or less.

Issue DW14: *The roof over the nursery building leaks, and the roof supports are deformed, thus posing a human health and safety risk. The inability to completely dry the nursery tanks between different groups of fish creates a culture environment for the continued growth of bacteria such as Pseudomonas.*

Recommendation DW14: Replace the roof immediately. The roof has been identified as a priority project. The Army Corps of Engineers did not have sufficient funds to replace the roof in 2008. This issue has been identified by the hatchery as an employee safety concern that is scheduled to be addressed in 2009.

Comanagers Response to DW14: FWS and NPT strongly agree and have pushed hard to get this implemented as soon as possible. Construction of the new roof is scheduled to begin the summer of 2009.

Issue DW15: *No offline backup pumps are available for quick exchange if one of the main pumps supplying river water to the hatchery fails. The absence of an offline back-up pump increases the risk of catastrophic fish losses.*

Recommendation DW15: Purchase one or more backup pumps to have on site for immediate replacement if an operating pump fails.

Comanagers Response to DW15: The FWS supports this recommendation however there is no money in the budget to purchase this item. The COE would need to provide funding for this recommendation. The NPT would support this item if necessary; however, other options could be considered more beneficial; e.g., providing a gravity flow pipeline to supply hatchery water. In addition, supplemental oxygen may be an alternative to allow backup while the pump is replaced. Then again, recent staff discussion reveals that ponds leak so much that it may not be possible to hold a full water level until flow is reconnected.

Issue DW16: *Lack of shade covers over the raceways and Burrows' Ponds increases crowding and the effective density of fish, particularly during the summer months, thus increasing stress and disease risks to juvenile fish.*

Recommendation DW16: Construct shade covers over the raceways and Burrows' ponds.

Comanagers Response to DW16: The FWS supports this recommendation however there is no money in the budget to purchase this item. The COE would need to provide funding for this recommendation.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Issue DW17: *The water management and reuse system at Dworshak NFH is complex, has changed over the years, and institutional knowledge of its structure and function have been lost.*

Recommendation DW17: Develop an updated engineering schematic of the water systems and an updated water reuse system *standard operating procedure* (SOP) at Dworshak NFH.⁵

Comanagers Response to DW17: The FWS concurs with this recommendation. We are investigating options to reduce or eliminate the need for the reuse systems. The NPT would prefer that short-term and inexpensive SOP be developed by staff and consultants. However, in the long-term a complete remodel of the hatchery would be of greater benefit even if it required staging over time these improvements.

Issue DW18: *The water intake screen for the hatchery does not comply with current NOAA Fisheries ESA screening criteria. The screen mesh is 3/8"; however, NOAA requires 3/32" mesh. NOAA criteria also include parameters for water approach velocity, sweeping velocity, and screen angle.*

Recommendation DW18: Replace the water intake screen for the hatchery so that it complies with NOAA Fisheries criteria.

Comanagers Response to DW18: The FWS and NPT support this recommendation however there is no money in the budget to purchase this item. The COE would need to provide funding for this recommendation. As we've captured under other issues/recommendations, this recommendation again points to the fact that a gravity flow pipeline along with all other remodel improvements is the management approach that should be taken. Many of these recommendations are really no better than a band aid on wound that should be cleaned and surgically repaired.

Issue DW19: *A Standard Operation Plan, including a preventative maintenance program and schedule, do not exist currently at Dworshak NFH. Facility maintenance has suffered and institutional knowledge has been lost when employees retire or transfer to other facilities. In addition, standard operations and maintenance have not been adequately documented. A Standard Operation Plan and Maintenance Program represent "Best Management Practices" for hatcheries.*

Recommendation DW19: Develop Standard Operation Plans and Maintenance Program for Dworshak NFH.

Comanagers Response to DW19: The FWS has initiated a formal preventative maintenance program using "Maintenance Pro" software. Standard Operational Plans for all operations will be developed as time allows.

Research, Monitoring, and Accountability

Also see the Clearwater Spring Chinook at Dworshak NFH Research, Monitoring and Accountability section.

⁵ This issue and recommendation may already be addressed in the consulting report of the Freshwater Institute.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Issue DW20: *Dworshak NFH currently does not have an adequate database for tracking maintenance issues and managing assets. The facility is owned and funded by the Army Corps of Engineers and is not included in the Service's SAMMS database which tracks maintenance, costs, and identifies Service needs. (The system documents the current condition, life cycle and replacement costs of assets to help manage property assets and identify maintenance needs).*

Recommendation DW20: To be consistent with other Service facilities, develop an adequate database (e.g., SAMMS or Army Corps of Engineers database) for tracking maintenance issues and managing assets.

Comanagers Response to DW20: See response to DW19.

Issue DW21: *The Monitoring and Evaluation (M&E) program for Dworshak NFH is not well documented.*

Recommendation DW21: Develop a clearly-defined and well-documented long-term M&E program. Such a long-term program should be established for assessing annual benefits (e.g., contributions to harvest) and short-term and long-term risks of the program (e.g., straying). Proposed or planned M&E activities should be reviewed annually prior to tagging and ponding of each broodyear.

Comanagers Response to DW21: NPT, FWS, and IDFG agree a long term M&E plan would be beneficial and will work cooperatively to develop. Annual review of M&E activities and marking plans, and results does occur under the Annual Operation Plan and bi-annual meetings.

Issue DW22: *The extent to which Dworshak NFH B-run steelhead spawn successfully in outplanted areas is largely unknown. Without understanding the productivity of hatchery-origin adults, opportunities for potentially integrating natural origin adults into the Dworshak NFH steelhead broodstock are unknown (see Recommendation DW7). Supplementation components of the program would benefit from utilizing naturally spawning returns to the supplemented reaches instead of constantly relying on outplanting from Dworshak NFH. In addition, outplanting steelhead from Dworshak NFH throughout the Clearwater Basin poses unquantified genetic risks to natural populations.*

Recommendation DW22: Increase smolt trapping and monitoring of natural reproduction to establish population estimates in outplanted streams. Collect fin tissue samples non-invasively from natural-origin smolts for genetic analysis to determine genetic similarities to Dworshak NFH B-run steelhead.

Comanagers Response to DW22: NPT, FWS, and IDFG agree additional data on natural-origin steelhead status and supplementation effectiveness is desirable and will continue to develop proposals and pursue funding support. FWS and IDFG are currently collecting some data towards this need. Genetic analysis of juvenile steelhead from Clear Creek and South Fork Clearwater tributaries relative to Dworshak NFH B-run steelhead has been conducted.

Issue DW23: *Coded-wire tagged fish may not accurately represent all progeny groups released from Dworshak NFH. Beginning with brood year 2008, a total of 180,000 juvenile steelhead - representing six tag groups of 30,000 fish each - will receive coded-wire tags (CWT) and left ventral fin clips. These tagged fish will be reared in 12 of 82 Burrows ponds. Because fish in different raceways can differ (e.g., mean age and size) and the pond environments can differ slightly (e.g., flow index and flow pattern), the practice of tagging fish in just a few raceways may not accurately represent the entire brood year of fish that will be released. In most NFH salmon and steelhead programs, fish are spawned*

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

from throughout the entire adult return to ensure that most segments of the run are represented in the resulting progeny. This procedure usually results in many different spawn “takes”. The fish are ponded by take/hatch date into a series of raceways that, when fully populated, can differ in mean age and size between raceways. Post-release monitoring of each release group using coded-wire tags requires that the tags represent the entire population.

Recommendation DW23: Consult with the Idaho Fishery Resource Office and the Columbia River Fisheries Program Office coded-wire tagging team to insure that the tagging strategy accurately represents the entire population of progeny from all spawn groups for a particular brood year. For example, all spawn groups should be proportionately represented among tag groups and raceways.

Comanagers Response to DW23: NPT supports a review of the CWT marking groups as part of a long-term M&E plan referenced in DW21. However, proportionately distributing tags across all raceways does not meet some ongoing M&E objectives/study designs and is not the only way to adequately represent entire population performance.

***Issue DW24:** The PIT tag program for steelhead (greater than 50,000/year) currently depends on funding from the Comparative Survival Study (CSS) which compares smolt-to-adult return rates (SARs) of fish transported downstream in barges versus SARs for juvenile fish negotiating the passage systems at each dam on the Columbia and Snake Rivers. Once the CSS study is complete, funding for the PIT tag program will cease. PIT tagging and monitoring are required to continue evaluating post-release migration and survival. The Service, LSRCP, and Idaho Power Company have recently initiated a PIT-tag plan to assess migration and survival, adult run reconstruction, and assist with in-season harvest management, independent of CSS funding.*

Recommendation DW24: Continue to implement and refine a PIT tag program independent of the CSS to monitor migration and survival of steelhead, and to assist with in-season harvest management of returning fish.

Comanagers Response to DW24: Starting with release year 2008 Dworshak NFH put in 20,000 PIT tags for evaluation independent of any outside study, this program is planned to continue into the future. Also in 2008, CSS PIT tagged 8,000 steelhead in addition to the 20,000 we tagged. The CSS study is also planned to continue into the future. The HRT recommendation should be to continue current PIT tag program for steelhead.

NPT supports a review of the PIT tag marking groups as part of a long-term M&E plan referenced in DW21. However, proportionately distributing tags across all raceways does not meet some ongoing M&E objectives/study designs and is not the only way to adequately represent entire population performance.

***Issue DW25:** Recovery of coded-wire tags (CWT) from harvested fish in terminal fishery areas in the Clearwater River basin is inadequate, and sampling in natural spawning areas where fish have been outplanted is limited. A coast-wide CWT goal of 20% recovery of all CWTs from returning adult fish has been advocated by the LSRCP Coordinator.*

Recommendation DW25: The Service should continue to work with cooperators to assess the mark sampling program.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to DW25: NPT supports a review of the CWT tag recovery program as part of a long-term M&E plan referenced in DW21. However, intensive/target tag recovery in terminal areas may not be required or support established M&E objectives or routine management decisions. Actual need for such data should be clearly established prior to recommending increasing M&E tag recovery funding requirements.

Issue DW26: *Data obtained from recovery of coded-wire tags by the Service and LSRCP cooperators are not reported in a timely manner, inhibiting adaptive management based on the most current information. For example, brood year 1999 is the last complete brood year for which recoveries of coded wire tags have been reported by IDFG. The Pacific Salmon Commission's Data Standards Work Group Report states, under Specifications and Definitions for the Exchange of Coded-Wire Tag Data for the North American Pacific Coast, that "Preliminary (Recovery) data for the current calendar year should be reported no later than JANUARY 31 of the following year."*

Recommendation DW26: The Service should develop a data management plan that incorporates tagging goals and objectives, data management, and reporting requirements of coded-wire tag data at both the program and regional levels. This could be incorporated into cooperative agreements between the Service, ACOE, and LSRCP office and cooperators (i.e. IDFG and tribes).

Comanagers Response to DW26: The Idaho FRO is very aware of this issue and will work towards complete and timely reporting of Dworshak data. NPT concurs with recommendation and supports the Service's efforts to reestablish timely CWT reporting.

Issue DW27: *Dworshak NFH, Kooskia NFH, and the Service's Idaho Fisheries Resource Office (Idaho FRO; Orofino, ID) do not participate fully in a centralized Service maintained database program. Exclusion of data in a Service maintained database from Dworshak and Kooskia NFHs inhibits system-wide hatchery evaluations and the sharing of information with other data systems such as StreamNet. Staff at all National Fish Hatcheries in the Columbia River basin - except those at Dworshak and Kooskia NFHs – create, maintain, and submit the necessary data files for the Columbia River information System (CRiS), maintained by the Columbia River Fisheries Program Office (Vancouver, WA,) or the Research Monitoring Information System (RMIS,) maintained by the Western Washington Fish and Wildlife Office.*

Recommendation DW27: Dworshak NFH, Kooskia NFH, and the Idaho FRO should participate fully in a Service maintained database, including creation and submission of the desired data files within the desired time frames. A Service maintained data base should function as the database repository of all Service data and facilitate data management between all Service offices. Use of central database files and programs achieves the following multiple purposes: (1) greatly reduces the amount of effort expended to meet reporting requirements, (2) increases the quality and consistency of data collected at different hatcheries at different times, (3) facilitates development of common software usable at many facilities, (4) provides a single software platform on which to build effective evaluation tools that can be used by hatcheries, fisheries offices, and the regional office, and (5) facilitates the exchange of information with other agencies.⁶

⁶ Although the Cris database is based on software initially developed over 10 years ago (DOS version of Dbase III), it does provide a straightforward and standardized method for tracking large amounts of fish culture and adult return data obtained at many facilities over multiple years and multiple fish generations. The U.S. Fish & Wildlife Service Hatchery Review Team does recognize, though, that this software should be updated to a standardized, region-wide format that all federal and non-federal hatchery programs in the region can use.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to DW27: The Idaho FRO is very aware of this issue and looks forward to participation in the development of an updated database platform that is user friendly and readily accessible. NPT concurs with this recommendation.

Education and Outreach

Issue DW28: *Dworshak NFH has a well-developed education and outreach program. This program has been innovative and proactive with respect to providing benefits to the local community and region.*

Recommendation DW28: Continue support for existing education and outreach efforts, including evaluation of the effectiveness of those efforts.

Comanagers Response to DW28: NPT concurs and FWS agrees.

Issue DW29: *Signage providing directions to the hatchery and at the entrance of the facility is inadequate. Additionally, existing signage does not identify Dworshak NFH as a U.S. Fish & Wildlife Service operated facility.*

Recommendation DW29: Establish appropriate signage for the facility.

Comanagers Response to DW29: The FWS operates the facility but the COE owns the facility. As owners they have the prerogative to sign the facility as they deem appropriate. Also, the COE as owner of Dworshak Hatchery does not consider the facility a National Fish Hatchery. This issue is not worth taking time to debate.

NPT somewhat concurs with FWS comments; however, if signage is a sore point, then let us resolve it and fairly represent everyone. Associated with signage, I receive many requests from Tribal members noting that the Tribal logo should be displayed on the FWS web site that posts Dworshak Fish Hatchery profiles; especially since the SRBA Settlement Agreement identifies the NPT as a Joint-Manager. So there are concerned individuals and agencies to whom not resolving this would continue to perpetuate conflict between managers. There are too many other valid management needs that require our time to spend any agencies' time on conflict over displaying the logo, authority, and responsibility of each agency. The NPT would welcome the opportunity to be recognized and to recognize co-managers in a positive and proactive display of signage/logos.

Issue DW30: *Access to progress reports and publications regarding Dworshak NFH, the Idaho Fisheries Resource Office, and the Idaho Fish Health Center is limited. The public is provided access to reports and publications for facilities in other regions via regularly updated web sites.*

Recommendation DW30: Provide public access to reports and publications accessible to the public via the Dworshak NFH Complex web site and the LSRCP web site.

Comanagers Response to DW30: NPT concurs. The FWS will pursue this recommendation. It may take several years to scan all appropriate documents into PDF format and place online.

Dworshak NFH Spring Chinook

Program goals and objectives

Issue DW31: *Program goals for Dworshak NFH spring Chinook are not fully expressed in terms of numeric outcomes that quantify intended benefits. This hatchery program lacks specific numeric goals for harvest although providing fish for harvest is a primary purpose of the program. The proportional Snake River spring Chinook mitigation goal for adult returns from Dworshak NFH upstream of Lower Granite Dam is 9,135 fish, but no numeric harvest goals within the Clearwater basin, or for on-station releases from Dworshak NFH, have been identified.*

Recommendation DW31: Restate program goals to identify the number of harvestable adult spring Chinook from Dworshak NFH for the Clearwater River basin. For example, based on the mitigation goal (9,135 adults) and broodstock needs, the harvest goal could be as high as 7,022 adult fish, assuming 90% survival from Lower Granite Dams to the fishery and hatchery.

Comanagers Response to DW31: The IDFG, NPT, and USFWS agree that it would be beneficial to update or establish numerical goals for broodstock needs, harvest, and natural spawning escapement in the Clearwater River basin. These types of goals are contained in latest version of the Clearwater Subbasin Summary and Management Plan (2003), although all co-managers have not specifically agreed with these numbers.

Table 3, Clearwater Subbasin Management Plan (11/2003) provides a profile as proposed by NPT for anadromous adult returns for the Clearwater subbasin. These goals are derived from various management plans as described in Appendix A, Table 8 of this plan and do not imply consensus by all management agencies. Nevertheless, it does provide a reference and a beginning point for managers to consider establishing return goals and to discuss and set goals; i.e., future, existing conditions, long-term return, natural spawning components, hatchery components (broodstock and rack return), and harvest components, and/or other goals each manager may desire.

Issue DW32: *Current conditions affecting the survival of salmon and steelhead in the Snake and Columbia rivers (operation of the hydropower system, habitat, harvest, and ESA listings) downstream from Dworshak NFH differ from the assumptions that were used to establish LSRCP mitigation goals. These different conditions inhibit consistent achievement of Dworshak NFH's contribution (9,135 adult spring Chinook) towards meeting the LSRCP mitigation goal of 58,700 adult spring/summer Chinook returning annually upstream of Lower Granite Dam, as developed initially by the Army Corps of Engineers in the mid-1970's.*

Recommendation DW32: Continue to work through various regional processes such as (a) implementation of the mainstem *Federal Columbia River Power System* Biological Opinion to improve migration survival, (b) *US vs. OR* discussions to address harvest issues, (c) NOAA Fisheries to complete ESA consultations on hatchery mitigation programs, and (d) local watershed groups to continue improving habitat, to allow the Service and cooperators meet Army Corps of Engineers and LSRCP mitigation goals on a consistent basis. Reexamine current approaches for contributing 9,135

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

adult spring Chinook to the LSRCP mitigation goal of 58,700 adult spring/summer Chinook (upstream of Lower Granite Dam) to determine whether the current hatchery program should be modified to account for existing conditions and capabilities at Dworshak NFH.

Comanagers Response to DW32: The IDFG, NPT, and USFWS agree that they will work through the various regional processes in an attempt to improve adult returns and meet LSRCP and COE mitigation goals on a consistent basis. They also agree that it would be beneficial to reexamine current production approaches at routine intervals and to determine how program modifications can be implemented to achieve established goals.

Broodstock Choice and Collection

Issue DW33: *The number of spring Chinook collected for broodstock is above the number necessary to meet the 1.4 million egg-take goal.* -Currently, 1200 adults is the collection goal for a 1.05 million yearling smolt release. Assuming a 5% pre-spawning mortality of fish held for broodstock, a maximum 8% loss of fertilized eggs due to culling of high risk females for bacterial kidney disease (BKD), an average fecundity is 3,500 eggs per female, and an 85% eyed egg to smolt survival, approximately 406 females total would need to be retained for broodstock to produce 1.05 M smolts (1.42M eggs at 3,500 egg/female).

Recommendation DW33: Reduce adult collection goal to approximately 812 adults consistent with obtaining approximately 406 females to provide a minimum of 1.4 million eggs sufficient to produce 1.05 million smolts.

Comanagers Response to DW33: NPT and USFWS feel that the 1,200 adult collection goal is a good number for planning purposes – especially for developing harvest plans. It is helpful to have a consistent number to plan for and then make annual adjustments if necessary. Through the Annual Operation Plan, co-managers determine annually what actual broodstock needs are based on run size, environmental conditions, projected returns to other basin facilities, etc. In 2008, co-managers agreed to hold 1,000 fish for broodstock at Dworshak.

Issue DW34: *In the past, Rapid River stock was used to “backfill” for broodstock shortages. Backfilling is inconsistent with the principles of local adaptation and managing hatchery stocks for maximum viability. Additionally, backfilling of egg shortages substantially increases straying risks because juvenile fish are released into watersheds different from the source population and watershed to which parental fish homed and returned*

Recommendation DW34: Eliminate backfilling of the spring Chinook broodstock at Dworshak NFH to maintain a locally-adapted stock at Dworshak NFH and minimize straying risks to natural populations in the Columbia and Snake rivers. If other stocks are used to meet harvest or mitigation agreements in the Clearwater River, then (a) the imported fish should be differentially marked or tagged, (b) released on station (i.e., not outplanted) to maximize recapture rates as returning adults, and (c) excluded from the Dworshak NFH broodstock.

Comanagers Response to DW34: NPT does not support this recommendation. Spring Chinook were extirpated from the Clearwater River by Lewiston Dam. Rapid River stock was

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

used (along with out of basin stocks from the Columbia River) to reintroduce spring Chinook salmon to the Clearwater. The Dworshak spring Chinook program provides a very important “on reservation” mitigation program for the NPT. Spring Chinook produced at Dworshak are released on station. We do not support a differential marking program or excluding “other stock” adults from the Dworshak broodstock.

The FWS hopes that returns even in low survival periods will be adequate to meet broodstock needs. If the situation arises, it may be possible to “backfill” from Kooskia NFH since these fish are adapted to the Clearwater Drainage and have been mixed with Dworshak fish before.

Hatchery and Natural Spawning, Adult Returns

Issue DW35: *Stray rates for Dworshak NFH spring Chinook into tributaries downstream of the hatchery in the Columbia basin are high compared to other hatchery stocks of spring Chinook, thus posing a genetic risk to natural populations in other watersheds. For example, for broodyears (BY) 1986-1993, 15% of all code-wire tag recoveries for Dworshak NFH spring Chinook occurred in the Deschutes River. However, for BY 1996-2000, straying rates were less than those observed for BY 1986-1993. . .*

Recommendation DW35: The Idaho Fisheries Resource Office should quantify homing and straying of spring Chinook released from Dworshak NFH. Attempts should be made to correlate variable stray rates with factors that may contribute to straying including variable fish culture practices (e.g., level of backfilling, mean size at release, etc.), water management practices, and barging vs. volitional transport of smolts through the hydropower system. Straying risks to other populations in the Clearwater, Snake and Columbia rivers should be assessed.

Comanagers Response to DW35: NPT, USFWS support further analysis of straying, however, manageable mechanisms must also be identified.

Issue DW36: *MS-222 is currently used to anesthetize spring Chinook during spawning. This precludes the use of carcasses for nutrient enhancement of streams and other beneficial uses that could result in immediate consumption by humans or game animals. The U.S. Food and Drug Administration has not approved MS-222 for use on animals that could be consumed by humans or other animals within 30 days of use.*

Recommendation DW36: Consider an alternative method of anesthetizing broodstock at the time of spawning. Alternatives include, but are not limited to, electro-anesthesia and carbon dioxide.

Comanagers Response to DW36: FWS and NPT supports investigating alternative anesthetics, however, at the time of spawning fish are really not fit for human consumption. Efforts are currently made to use CO2 if outplanting or human consumption are potential uses for select groups of fish. Carcasses unfit for human consumption are provided to stream fertilization, and bear and eagle re-habilitation programs.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Incubation and Rearing

Issue DW37: *Exposure of anadromous fish to the water supply (N.F. Clearwater River) for Dworshak NFH increases disease risks for spring Chinook reared on station. Reliance on pumped water for rearing spring Chinook increases demographic risks of fish losses.*

Recommendation DW37: Investigate options to increase the amount of gravity-feed water available from Dworshak Reservoir. The long term benefit of developing an adequate water supply from Dworshak reservoir may significantly reduce current power costs required to pump water to the facility, increase operational efficiencies, increase fish health, produce a higher quality smolt, more efficiently meet appropriate fish size at release, and increase survival.

Comanagers Response to DW37: FWS and NPT concur and strongly support the development of a gravity-feed water supply from Dworshak Reservoir (see comments in response to DW9).

Release and Outmigration

No specific issues were identified related to the release and outmigration of spring Chinook from Dworshak NFH.

Facilities/Operations

Refer to the Facilities/Operations section under Recommendations for the Dworshak NFH B-run Steelhead program.

Research, Monitoring, and Accountability

Issue DW38: *Coded-wire tagged fish may not accurately represent all progeny groups released from Dworshak NFH. Currently, 120,000 fish in four of the thirty raceways of spring Chinook are coded-wire tagged. Because fish in different raceways can differ (e.g., mean age and size) and the pond environments can differ slightly (e.g., flow index and flow pattern), the practice of tagging fish in just a few raceways may not accurately represent the entire brood year of fish that will be released. In most NFH salmon and steelhead programs, fish are spawned from throughout the entire adult return to ensure that most segments of the run are represented in the resulting progeny. This procedure usually results in many different spawn “takes”. The fish are ponded by take/hatch date into a series of raceways that, when fully populated, can differ in mean age and size between raceways. Post-release monitoring of each release group using coded-wire tags requires that the tags represent the entire population.*

Recommendation DW38: Consult with the Idaho Fishery Resource Office and the Columbia River Fisheries Program Office coded-wire tagging team to insure that the tagging strategy accurately represents the entire population of progeny from all spawn groups for a particular brood year. For example, all spawn groups should be proportionately represented among tag groups and raceways.

Comanagers Response to DW38: NPT and USFWS support a review of the CWT marking groups as part of a long-term M&E plan referenced in DW21. However, proportionately

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

distributing tags across all raceways does not meet some ongoing M&E objectives/study designs and is not the only way to adequately represent entire population performance.

Issue DW39: *The PIT tag program for spring Chinook (greater than 50,000/year) currently depends on funding from the Comparative Survival Study (CSS) which compares smolt-to-adult return rates (SARs) of fish transported downstream in barges versus SARs for juvenile fish negotiating the passage systems at each dam on the Columbia and Snake Rivers. Once the CSS study is complete, funding for the PIT tag program will cease. PIT tagging and monitoring are required to continue evaluating post-release migration and survival of spring Chinook released from Dworshak NFH.*

Recommendation DW39: Establish a PIT tag program independent of the CSS to monitor migration and survival of spring Chinook, and to assist with in-season harvest management of returning fish. The PIT tagging program should be consistent with regional goals and objectives and concurrent goals and objectives for the hatchery program.

Comanagers Response to DW39: NPT and USFWS support a review of the PIT tag marking groups as part of a long-term M&E plan referenced in DW21. However, proportionately distributing tags across all raceways does not meet some ongoing M&E objectives/study designs and is not the only way to adequately represent entire population performance. It is important to the Tribe to minimize the amount marking, including PIT tagging, fish are subjected to. As such, much effort is occurring to integrate PIT tagging studies. We object to the establishment of an independent PIT tagging effort. If and when the CSS tagging program ends, LSRCP is committed to a PIT tag program for continued evaluation.

Issue DW40: *Recovery of coded-wire tags (CWT) from harvested fish in terminal fishery areas in the Clearwater River basin is inadequate. Harvest benefits associated with the spring Chinook program at Dworshak NFH cannot be accurately distinguished from those for Kooskia NFH and Clearwater Anadromous Fish Hatcher. This latter deficiency is true also for the spring Chinook programs at Kooskia NFH and Clearwater Fish Hatchery. A coast-wide CWT goal of 20% recovery of all CWTs from returning adult fish has been advocated by the LSRCP Coordinator.*

Recommendation DW40: The Service should continue to work with cooperators to assess the mark sampling program, improve CWT recovery rates, and quantify the harvest benefits separately for the spring Chinook programs at Dworshak NFH, Kooskia NFH, and Clearwater Fish Hatchery.

Comanagers Response to DW40: NPT and USFWS support a review of the CWT tag recovery program as part of a long-term M&E plan referenced in DW21. However, intensive/target tag recovery in terminal areas may not be required or support established M&E objectives or routine management decisions. Actual need for such data should be clearly established prior to recommending increasing M&E tag recovery funding requirements.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Issue DW41: *Data obtained from recovery of coded-wire tags by the Service and LSRCP cooperators are not reported within the required time frames, inhibiting adaptive management based on the most current information. The Pacific Salmon Commission's Data Standards Work Group Report states, under Specifications and Definitions for the Exchange of Coded-Wire Tag Data for the North American Pacific Coast, state that "Preliminary (Recovery) data for the current calendar year should be reported no later than JANUARY 31 of the following year."*

Recommendation DW41: The Service should develop a data management plan that incorporates tagging goals and objectives, data management, and reporting requirements of coded-wire tag data at both the program and regional levels. This could be incorporated into the cooperative agreements between the LSRCP office and cooperators (i.e. IDFG and tribes).

Comanagers Response to DW41: The Idaho FRO is very aware of this issue and will work towards complete and timely reporting of Dworshak data. NPT concurs and supports the Service's efforts to reestablish timely reporting.

Refer to Issues and Recommendations DW26 and 27 in the Dworshak NFH B-run steelhead section as they also pertain to the Dworshak NFH spring Chinook program.

Education and Outreach

Refer to the Education and Outreach section under Recommendations for the Dworshak NFH B-run Steelhead program.

Kooskia NFH Spring Chinook

Program goals and objectives

Issue KO1: *Program goals for Kooskia NFH spring Chinook are not fully expressed in terms of numeric outcomes that quantify intended benefits. This hatchery program lacks specific numeric goals for harvest, although providing fish for harvest is a primary purpose of the program.*

Recommendation KO1: Restate program goals to identify the number of harvestable adult spring Chinook from Kooskia NFH for the Clearwater River basin.

Comanagers Response to KO1: The IDFG, NPT, and USFWS agree that it would be beneficial to update or establish numerical goals for broodstock needs, harvest, and natural spawning escapement in the Clearwater River basin. These types of goals are contained in latest version of the Clearwater Subbasin Summary and Management Plan (2003), although all co-managers have not specifically agreed with these numbers.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Table 3, Clearwater Subbasin Management Plan (11/2003) provides a profile as proposed by NPT for anadromous adult returns for the Clearwater subbasin. These goals are derived from various management plans as described in Appendix A, Table 8 of this plan and do not imply consensus by all management agencies. Nevertheless, it does provide a reference and a beginning point for managers to consider establishing return goals and to discuss and set goals; i.e., future, existing conditions, long-term return, natural spawning components, hatchery components (broodstock and rack return), and harvest components, and/or other goals each manager may desire.

Issue KO2: *Current conditions affecting the survival of salmon and steelhead in the Snake and Columbia rivers (operation of the hydropower system, habitat, harvest, and ESA listings) downstream from Kooskia NFH differ from those when the hatchery was built in the late 1960's. Current conditions inhibit consistent achievement of adult return and mitigation goals for spring Chinook at Kooskia NFH.*

Recommendation KO2: Continue to work through various regional processes such as (a) implementation of the mainstem *Federal Columbia River Power System* Biological Opinion to improve migration survival, (b) *US vs. OR* discussions to address harvest issues, (c) NOAA Fisheries to complete ESA consultations on hatchery mitigation programs, and (d) local watershed groups to continue improving habitat, to allow the Service and cooperators to meet mitigation goals on a consistent basis.

Comanagers Response to KO2: The IDFG, NPT, and USFWS agree that they will work through the various regional processes in an attempt to improve adult returns and meet LSRCP and COE mitigation goals on a consistent basis. They also agree that it would be beneficial to reexamine current production approaches to determine if the program should be modified.

Broodstock Choice and Collection

Issue KO3: *Under current protocols, if the number of spring Chinook collected at Kooskia NFH is insufficient to meet broodstock needs, fish (or eggs) representing other stocks (Dworshak NFH, Clearwater State Hatchery or Rapid River State Hatchery) may be imported to supplement on-station releases of hatchery-produced smolts. Although not a specified requirement, imported fish are differentially marked prior to release so that they are not spawned – as returning adults - as part of the Kooskia NFH broodstock. Imported fish are expected to exhibit higher strays and lower smolt-to-adult return rates back to the point of release than fish representing the locally adapted Kooskia NFH stock.*

Recommendation KO3a: Do not import fish or eggs from other facilities or stocks to compensate for adult returns that do not meet broodstock objectives at Kooskia NFH.

Recommendation KO3b: If adult returns are substantially below broodstock needs and other stocks are used to meet on-station release objectives or other commitments, all imported fish should be differentially marked or tagged prior to release to distinguish them from Kooskia NFH fish as returning adults. No imported fish should be used for broodstock at Kooskia NFH except as an emergency conservation or broodstock restoration measure. Additionally, all imported smolts should be released at Kooskia NFH so they can be recaptured as returning adults.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to KO3: NPT response – The NPT, IDFG, and USFWS are working on developing a broodstock management plan for Kooskia spring Chinook production consistent with the U.S. vs. Oregon Management Agreement – see language below. Kooskia spring Chinook production provides a very important tribal harvest opportunity – at a location with much cultural significance. Over the course of production history at Kooskia Hatchery many different stocks were utilized to initiate the program and have since been infused into the broodstock (including Dworshak and Rapid River). To date, it's our understanding that the adult return data does not show a significant difference between stocks used for production.

“The NPT, IDFG, and USFWS have agreed to utilize ISS and other supplementation information to develop an integrated broodstock management guideline to reimplement supplementation in Clear Creek. Planning will occur in 2008 with broodstock management protocols to be implemented with BY09. Kooskia stock will be utilized for supplementation of Clear Creek. Fish production will be prioritized with the first 50,000 (non ad-clipped) allocated for supplementation of Clear Creek, the next 500,000 (ad-clipped) for fishery purpose. Production in excess of 550,000 will be discussed by the Parties to allocate to supplementation or fisheries. The Parties are working to assess options to increase smolt production from Kooskia Hatchery either through programmatic changes or facility modifications. As a result, the target release number may change during the course of this Agreement.

The number of non ad-clipped or ad-clipped fish at Kooskia NFH may be greater than 50,000 pending Party discussion on allocation of production greater than 550,000 smolts.”

NPT does not concur with Recommendation KO3a. We will consider Recommendation KO3b as we work with our co-managers to develop a longer term production program for Kooskia. The FWS will work with the NPT and others to address these issues as they arise.

Hatchery and Natural Spawning, Adult Returns

Issue KO4: *Stray rates for Kooskia NFH spring Chinook in the Columbia River Basin are high, compared to other hatchery stocks of spring Chinook, thus posing a genetic straying risk to other stocks. For broodyears 1986-1993, 5% of all coded-wire tag recoveries for Kooskia NFH spring Chinook occurred in the Deschutes River and 4% of all coded-wire tags were collected at Wells Dam in the upper Columbia River. However, the stray rates for brood years 1996-2000 are not as high as those for brood years 1986-1993.*

Recommendation KO4: The Idaho Fisheries Resource Office should quantify homing and straying of spring Chinook released from Kooskia NFH. Attempts should be made to correlate variable stray rates with factors that may contribute to straying including variable fish culture practices (e.g., level of backfilling, mean size at release, etc.), water management practices, and barging vs. volitional transport of smolts through the hydropower system. Straying risks to other populations in the Clearwater, Snake and Columbia rivers should be assessed.

Comanagers Response to KO4: NPT and FWS support further analysis of straying, however, manageable mechanisms must also be identified.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Issue KO5: *MS-222 is currently used to anesthetize spring Chinook during spawning. This precludes the use of carcasses for nutrient enhancement of streams and other beneficial uses that could result in immediate consumption by humans or game animals. The U.S. Food and Drug Administration has not approved MS-222 for use on animals that could be consumed by humans or other animals within 21 days of use.*

Recommendation KO5: Develop an alternative method of anesthetizing broodstock at the time of spawning. Alternatives include but are not limited to electro-anesthesia and carbon dioxide.

Comanagers Response to KO05: FWS and NPT supports investigating alternative anesthetics, however, at the time of spawning fish are really not fit for human consumption.

Issue KO6: *High water temperatures in Clear Creek during the summer precludes use of the adult pond for holding spring Chinook broodstock. Adults trapped at Kooskia NFH are transferred to Dworshak NFH, spawned, and the resulting fertilized eggs are incubated at Dworshak NFH to the eyed stage. Eyed eggs are then transferred to Kooskia NFH for final incubation and hatch prior to ponding.*

Recommendation KO6: Investigate expanding the well field to provide ground water, if feasible, for holding broodstock and spawning at Kooskia NFH.

Comanagers Response to KO06: FWS and NPT do not feel this is feasible. Existing wells draw down the water table in dry years and impact neighboring wells. More wells will not solve the problem only exacerbate it. While we have considered further exploration of ground water resources; the history strongly indicates that additional groundwater is not available; i.e., only one of five wells drilled still provides water and yield has declined over time to approximately 300 gpm.

Incubation and Rearing

Issue KO7: *The use of Clear Creek water during egg incubation increases the risk of *Icthyophthirius* (Ich) infection and other diseases when the fish hatch.*

Recommendation KO7: Switch from surface water to chilled well water before the fertilized eggs hatch and maintain the fish on well water through early fry rearing. Alternatively, use chilled well water for all of incubation instead of Clear Creek water. If necessary, purchase and install a new water chiller (50 gpm) for incubation. If Clear Creek water continues to be used for incubation, then a disinfection unit may be required to prevent future disease outbreaks.

Comanagers Response to KO07: The FWS does not agree with these recommendations. There is currently inadequate funding to run the hatchery. Any of these recommendations will cost money that is not available

Issue KO8: *The cost of electricity for operating the facility's main water chiller for single-pass well water is high (>\$6,000/month).*

Recommendation KO8: Investigate alternatives to the current method of chilling well water for incubation (e.g., use of heat exchanger, separate smaller chiller) and consider rehabilitation of the incubation water reuse system to reduce electricity costs and wear on the main chiller.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to KO08: The FWS and NPT have no money available for this recommendation.

Issue KO9: *Limited water availability and temperature fluctuations associated with surface water (Clear Creek) pose a fish health risk to spring Chinook. Ich infections occur annually, well water is currently limited, and the temperature of Clear Creek water exceeds maximum guidelines for spring Chinook during the summer months. The hatchery depends on a water reuse system with well water makeup because of limited water availability. A water chiller also needs to be used to reduce the temperature of the reuse water to the desired temperature for spring Chinook during the summer.*

Recommendation KO9: Investigate installation of an UV disinfection system for the reuse water supply for the ponds. Reuse water supplied to the ponds has a low volume of suspended solids; therefore, free swimming *Ich* could be reduced or eliminated via UV treatment, thus reducing dependence on Formalin. A disinfection unit may also be more reliable mechanically than a chiller [Note: The Team considered and rejected the concept of establishing an additional water supply from the mainstem Clearwater River because of temperature issues and rejected the potential addition of new wells due to water flow limitations of the aquifer beneath Kooskia NFH].

Comanagers Response to KO09: The FWS and NPT have no funding to address this issue. Recent quote (Oct 2008) for an adequate UV system was \$105,000 for the unit alone, without installation.

Issue KO10: *Rearing densities for spring Chinook at Kooskia NFH attain levels greater than D.I. = 0.4 in the outdoor nursery tanks during May each year. In June, fish are transferred to Burrows ponds which immediately reduces densities to approximately D.I. = 0.06. The general culture guideline for spring Chinook is a maximum rearing density of D.I. = 0.2.*

Recommendation KO10: The hatchery staff, Nez Perce Tribe, Idaho Fisheries Research Office, and Idaho Fish Health Center should collaboratively investigate options for reducing rearing densities, and determine the rearing density and water flow indexes necessary to achieve optimum health and survival of Kooskia NFH spring Chinook, both on station and following release, for meeting program goals for harvest and escapement back to the hatchery.

Comanagers Response to KO10: The FWS has not experienced any problems in recent years which can be attributed to too high a rearing density. Water quality monitoring of reuse system shows good water quality throughout rearing cycle. FWS and NPT will address this issue if it becomes a problem.

Release and Outmigration

Refer to Issues and Recommendations KO2, KO3, and related issues and recommendations in the Research, Monitoring and Accountability section.

Facilities/Operations

Issue KO11: *The water intake design and location for the hatchery creates problems with debris buildup during high water flow in spring and icing problems during winter. The debris and ice can block the intake, posing a demographic risk of major fish losses on station. The need to manually remove ice from*

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHS Assessments and Recommendations Report – June 2009

the water intake 24 hours/day during severe winter conditions further poses a human health and safety risk to hatchery personnel.

Recommendation KO11: Investigate options for improving the water intake structure to reduce debris buildup and icing. For example, alternative types of screens and the use of well water to de-ice the intake structure during winter (e.g., as implemented at Sawtooth State Hatchery in Stanley, Idaho) could reduce demographic and physical risks. Establishing additional sources of water from an expanded well field may assist with implementation of this recommendation (see also Recommendations KO7 and KO8).

Comanagers Response to KO11: Modifications to the water intake were completed in September 2008. This will address some of the issues. An expanded well field is not an option. Two electrically heated screens would prevent much of the icing problems but no funding exists for this.

Issue KO12: *The water intake screen does not comply with current NOAA Fisheries ESA screening criteria. The screen mesh is 3/8"; however, NOAA's criteria specify 3/32" mesh. NOAA Fisheries criteria also include parameters associated with approach velocity, sweeping velocity, and screen angle.*

Recommendation KO12: Replace the water intake screen so that it complies with NOAA Fisheries ESA criteria (couple with Recommendation KO11).

Comanagers Response to KO12: The screen chamber also acts as a settling basin and then accumulated solids must be discharged back into Clear Creek to keep the system operating properly. This operation does not comply with current NPDES regulations. Major modifications of the screen building are required to comply with NPDES and NOAA Fisheries ESA guidelines. The FWS has no funding to address this issue. It may be less expensive to study the impacts; i.e., number of juvenile fish entrained by the current screen to assess the need for screen replacement than to assume a high level of impact and cost. This is a more practical approach to providing the answer to this assuming question.

Issue KO13: *Surface water intake during the summer can dewater Clear Creek during low flows. The use of aerial sprinklers for grass irrigation during the summer may contribute to this problem. In addition, the use of aerial sprinklers for irrigation and the potential aerosol transmission of Ich increases disease risks to fish in outdoor ponds .*

Recommendation KO13: Minimize or eliminate the use of aerial sprinklers for irrigation and use alternative methods (drip irrigation, micro spray, and/or xeric landscaping as alternatives) to conserve water during the summer.

Comanagers Response to KO13: The FWS will minimize use of sprinklers.

Issue KO14: *The shade cover over the adult holding pond needs maintenance to prevent further deterioration.*

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Recommendation KO14: Rehabilitate the pole barn roof over the adult holding pond. This proposed project is currently in the Service's Service Asset Maintenance Management System (SAMMS) database and will likely become a deferred maintenance project.

Comanagers Response to KO14: The FWS completed this task in July 2008.

Research, Monitoring, and Accountability

Issue KO15: *Coded-wire tagged fish may not accurately represent all progeny groups released from Kooskia NFH. Currently, 60,000 fish in one raceway of spring Chinook are coded-wire tagged. Because the fish in different raceways can differ with respect to mean size and age, and the pond environments can differ with respect to flow index, flow pattern, direct sunlight, etc., the practice of tagging fish in just one raceway may not accurately represent the entire population for a brood year. In most NFH programs, salmon are spawned throughout the adult return to ensure that most segments of the run are represented in the resulting progeny. This procedure usually results in many different spawn "takes" of varying ages at the time of release. The fry are ponded by take/hatch date into a series of raceways that, when fully populated, differ in age and size of fish (initially) between raceways. Monitoring and evaluation using coded-wire tags requires that the tags accurately represent the entire population at the time of release.*

Recommendation KO15: Consult with the Idaho Fishery Resource Office and the Columbia River Fisheries Program Office coded-wire tagging team to ensure that the tagging strategy accurately represents the entire population of progeny from all spawn groups for each brood year. For example, all spawn groups should be proportionately represented among tag groups and raceways.

Comanagers Response to KO15: NPT supports a review of the CWT marking groups as part of a long-term M&E plan referenced in DW21. However, proportionately distributing tags across all raceways does not meet some ongoing M&E objectives/study designs and is not the only way to adequately represent entire population performance.

Issue KO16: *The proposed release of 50,000 spring Chinook without clipped adipose fins will result in hatchery-origin fish that are indistinguishable from natural-origin fish, including natural-origin progeny of hatchery fish that spawn successfully. Starting with broodyear 2009, a supplementation program has been proposed in which hatchery-origin spring Chinook returning to Kooskia NFH will be allowed to spawn naturally in Clear Creek as part of the Idaho Supplementation Studies. If 50,000 spring Chinook are released without adipose-fin clips, then evaluation of the supplementation program will be compromised.*

Recommendation KO16: Apply a secondary mark or tag, such as a coded-wire tag, to all unclipped spring Chinook released from Kooskia NFH so that unclipped hatchery and natural-origin fish can be distinguished. This would allow proper evaluation of the supplementation program.

Comanagers Response to KO16: Specific marking plans for this supplementation effort have not yet been developed. It is the co-manager's intention to have some type of distinguishable mark, CWT or other, in order to support broodstock management and evaluations. Also the timing of this program and the presence of a distinguishable mark will not compromise the ISS program.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Issue KO17: *(Same as issue/recommendation DW39 for Dworshak NFH) The PIT tag program for spring Chinook (greater than 50,000/year) currently depends on funding from the Comparative Survival Study (CSS) which compares smolt-to-adult return rates (SARs) of fish transported downstream in barges versus SARs for juvenile fish negotiating the passage systems at each dam on the Columbia and Snake Rivers. Once the CSS study is complete, funding for the PIT tag program will cease. PIT tagging and monitoring are required to continue evaluating post-release migration and survival of spring Chinook released from Dworshak NFH.*

Recommendation KO17: Establish a PIT tag program independent of the CSS to monitor migration and survival of spring Chinook, and to assist with in-season harvest management of returning fish. The PIT tagging program should be consistent with (a) regional goals and objectives and (b) concurrent goals and objectives for the hatchery program. [Note: The Service has provided a significant amount of base funds to Kooskia NFH and the Idaho Fishery Resource Office (USFWS, Ahsahka, ID) for PIT tagging spring Chinook at Kooskia NFH.]

Comanagers Response to KO17: NPT supports a review of the PIT tag marking groups as part of a long-term M&E plan referenced in DW21. However, proportionately distributing tags across all raceways does not meet some ongoing M&E objectives/study designs and is not the only way to adequately represent entire population performance. It is important to the Tribe to minimize the amount marking, including PIT tagging, fish are subjected to. As such, much effort is occurring to integrate PIT tagging studies. We object to the establishment of an independent PIT tagging effort.

Issue KO18: *(Same as issue/recommendation DW40 for Dworshak NFH) Recovery of coded-wire tags (CWT) from harvested fish in terminal fishery areas in the Clearwater River basin is inadequate. Harvest benefits associated with the spring Chinook program at Dworshak NFH cannot be accurately distinguished from those for Kooskia NFH and Clearwater Anadromous Fish Hatcher. This latter deficiency is true also for the spring Chinook programs at Kooskia NFH and Clearwater Fish Hatchery. A coast-wide CWT goal of 20% recovery of all CWTs from returning adult fish has been advocated by the LSRCP Coordinator.*

Recommendation KO18: The Service should continue to work with cooperators to assess the mark sampling program, improve CWT recovery rates, and quantify the harvest benefits separately for the spring Chinook programs at Dworshak NFH, Kooskia NFH, and Clearwater Fish Hatchery.

Comanagers Response to KO18: NPT and USFWS support a review of the CWT tag recovery program as part of a long-term M&E plan referenced in DW21. However, intensive/target tag recovery in terminal areas may not be required or support established M&E objectives or routine management decisions. Actual need for such data should be clearly established prior to recommending increasing M&E tag recovery funding requirements.

Issue KO19: *(Same as issue/recommendation DW26 for Dworshak NFH) Data obtained from recovery of coded-wire tags by the Service and LSRCP cooperators are not reported in a timely manner, inhibiting adaptive management based on the most current information. The Pacific Salmon Commission's Data Standards Work Group Report states, under Specifications and Definitions for the Exchange of Coded-Wire Tag Data for the North American Pacific Coast, that "Preliminary (Recovery) data for the current calendar year should be reported no later than JANUARY 31 of the following year."*

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Recommendation KO19: The Service should develop a data management plan that includes tagging goals and objectives, data management, and reporting requirements of coded-wire tag data at both the program and regional levels. This could be incorporated into cooperative agreements between the Service, Army Corps of Engineers, and LSRCP office and cooperators (i.e. IDFG and tribes).

Comanagers Response to KO19: The Idaho FRO is very aware of this issue and will work towards complete and timely reporting of Dworshak data. NPT supports this recommendation.

Issue KO20: (Same as issue/recommendation DW27 for Dworshak NFH) *Dworshak NFH, Kooskia NFH, and the Service's Idaho Fisheries Resource Office (Idaho FRO; Orofino, ID) do not participate fully in a centralized Service maintained database program. Exclusion of data in a Service maintained database from Dworshak and Kooskia NFHs inhibits system-wide hatchery evaluations and the sharing of information with other data systems such as StreamNet. Staff at all National Fish Hatcheries in the Columbia River basin - except those at Dworshak and Kooskia NFHs – create, maintain, and submit the necessary data files for the Columbia River information System (CRiS) maintained by the Columbia River Fishery Program Office (Vancouver, WA) and the Research Monitoring Information System (RMIS) maintained by the Western Washington Fish and Wildlife Office (Lacey, WA).*

Recommendation KO20: Dworshak NFH, Kooskia NFH, and the Idaho FRO should participate fully in a Service maintained database, including creation and submission of the desired data files within the desired time frames. A Service maintained data base should function as the database repository of all Service data and facilitate data management between all Service offices. Use of central database files and programs achieves the following multiple purposes: (1) greatly reduces the amount of effort expended to meet reporting requirements, (2) increases the quality and consistency of data collected at different hatcheries at different times, (3) facilitates development of common software usable at many facilities, (4) provides a single software platform on which to build effective evaluation tools that can be used by hatcheries, fisheries offices, and the regional office, and (5) facilitates the exchange of information with other agencies.⁷

Comanagers Response to KO20: The Idaho FRO is very aware of this issue and looks forward to participation in the development of an updated database platform that is user friendly and readily accessible. NPT supports this recommendation.

Education and Outreach

Issue KO21: *Access to progress reports and publications regarding Kooskia NFH, the Idaho Fisheries Resource Office and the Idaho Fish Health Center is limited. The public is provided access to reports and publications for facilities in other regions via regularly updated web sites.*

Recommendation KO21: Provide public access to reports and publications via the Kooskia NFH Complex web site and the LSRCP web site.

Comanagers Response to KO21: NPT supports this recommendation.

⁷ Although the CrIS database is based on software initially developed over 10 years ago (DOS version of Dbase III), it does provide a straightforward and standardized method for tracking large amounts of fish culture and adult return data obtained at many facilities over multiple years and multiple fish generations. The U.S. Fish & Wildlife Service Hatchery Review Team does recognize, though, that this software should be updated to a standardized, region-wide format that all federal and non-federal hatchery programs in the region can use.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Clearwater Coho

Program goals and objectives

Issue CC1: *Separate numeric goals for harvest versus natural spawning escapement in the Clearwater River basin have not been established. The long-term goal is to establish a total adult return of 14,000 coho to the Clearwater Basin, with about 2,000 coho for hatchery broodstock. The remaining 12,000 coho would go to harvest and natural escapement.*

Recommendation CC1: Establish separate harvest and natural spawning escapement goals for coho in the Clearwater River basin.

Comanagers Response to CC1: The IDFG, NPT, and USFWS agree that it would be beneficial to update or establish numerical goals for broodstock needs, harvest, and natural spawning escapement in the Clearwater River basin. These types of goals are contained in latest version of the Clearwater Subbasin Summary and Management Plan (2003), although all co-managers have not specifically agreed with these numbers.

Issue CC2: *The goals and objectives of Phase I of the Master Plan have not been met. Phase I of the master plan included off-station releases and adult recoveries with weirs. This approach complicated the establishment of self-sustaining, hatchery propagated runs back to the Clearwater Basin.*

Recommendation CC2: Reassess the approach toward meeting goals and objectives of Phase I. As a first priority for reintroducing coho salmon to the Clearwater Basin, establish a self-sustaining hatchery propagated run of coho salmon in the Clearwater River, with broodstock collection, rearing and release at Dworshak NFH, Kooskia NFH and/or Nez Perce Tribal Hatchery. The Nez Perce Tribal Hatchery, as proposed for future modification, is identified in the Master Plan as the primary location for the long-term propagation of coho salmon in the Clearwater River basin. Achievement of this goal would eliminate the need for imports from lower Columbia River hatcheries. (see also the Recommended Alternative for Kooskia NFH under the spring Chinook program).

Comanagers Response to CC2: The NPT has focused on establishing a self sustaining hatchery broodstock. This is one of the reasons we moved the release of coho smolts from the Potlatch River to Clear Creek. As a result, in 2008 we succeeded in collecting enough broodstock to provide eggs for the entire program – including the production of 550,000 smolts reared at Eagle Creek. The FWS concurs with NPT.

Broodstock Choice and Collection

Issue CC3: *Collection of coho salmon for broodstock within the Clearwater River basin is currently limited. Dworshak NFH is currently the primary location for collecting broodstock, but the fish ladder is only opened intermittently after collection of steelhead broodstock in the fall is complete. This intermittent operation of the fish ladder limits the ability to collect sufficient number of broodstock to meet Phase I goals of the program. Additionally, low water flows in Clear Creek during the early fall when coho*

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

return may limit the ability to collect broodstock at Kooskia NFH. However, the ability to collect additional broodstock at Kooskia NFH may increase with increased numbers of coho smolts released into Clear Creek.

Recommendation CC3a: Operate the fish ladder at Dworshak NFH ladder in a manner that increases the likelihood that broodstock needs will be met. This may require leaving the ladder open during the fall when adult coho are returning to the Clearwater River (see also Issue and Recommendation DW3 under the Dworshak NFH steelhead program).

Recommendation CC3b: Investigate opportunities to trap and collect coho broodstock at Kooskia NFH, as planned based on recent Phase I objectives. Since coho smolts have been released into Clear Creek since XXXX, plans should be made to accommodate the collection and spawning of the adult returns.

| |
|--|
| <p>Comanagers Response to CC3: NPT and FWS have already implemented these recommendations in coordination with our co-managers.</p> |
|--|

Hatchery and Natural Spawning, Adult Returns

No specific issues were identified that are not covered in other categories.

Incubation and Rearing

Issue CC4: Juvenile rearing densities at Dworshak NFH, particularly during early rearing in the indoor nursery tanks, exceed culture guidelines for coho salmon

Recommendation CC4: Maintain rearing densities of D.I.<0.2 D.I. for the indoor nursery tanks and D.I. <0.3 for the outside raceways.

| |
|--|
| <p>Comanagers Response to CC4: In 2009, the outdoor rearing will occur in Burrows ponds. Density will not be an issue outside. The indoor densities have not caused a problem thus far.</p> |
|--|

Issue CC5: The continued importation of fish from lower Columbia River hatcheries impedes achievement of the Phase One goal of establishing a self-sustaining hatchery propagated population of coho salmon in the Clearwater Basin.

Recommendation CC5: Provide additional incubation and rearing space at Dworshak NFH, Kooskia NFH, and/or Nez Perce Tribal Hatchery to replace the 550,000 smolts imported from Eagle Creek NFH. This would reduce spring Chinook and/or steelhead production at Dworshak NFH or Kooskia NFH. Discontinuance of outplants (275,000 smolts) into Lapwai Creek (Recommendation CC6b) would reduce, by approximately 50%, the amount of additional rearing space required for coho at Dworshak NFH or Kooskia NFH in lieu of importing fish from Eagle Creek NFH. The Service should continue to support development of Nez Perce Tribal Hatchery Phase II.

| |
|---|
| <p>Comanagers Response to CC5: The NPT has worked each year since 1997 to increase broodstock recovery in order to accomplish this goal of reducing dependence on out-of-basin brood sources. Since 2001, at least 280,000 of the 1.1 million release goal has been provided</p> |
|---|

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

by adults returning to the Clearwater river. In 2008, for the first time, we have spawned 1.5 million eggs, enough to provide for both the 300,000 release from Dworshak and to provide eggs to Eagle Creek NFH for the rearing of 550,000 smolts for release 2010.

Additional rearing space within the Clearwater hatchery systems is not currently available to rear the 1.1 million smolts for the CCR program. Even at NPTH, without implementing Phase II construction, this goal could not currently be met.

In order to provide rearing space at Dworshak Fish Hatchery, a complete remodel of the hatchery will be required. Such action is justifiable due to the age and condition of Dworshak and changes in water laws (Clean Water Act) and recovery and restoration goals of managers and opportunities for significant energy conservation in excess of \$2-4 million annually.

Release and Outmigration

Issue CC6: *The continued importation of fish from lower Columbia River hatcheries impedes achievement of the Phase One goal of establishing a self-sustaining hatchery propagated population in the Clearwater Basin. In addition, offsite-releases and direct outplanting of juveniles into streams without adult recapture capabilities reduces the likelihood of meeting broodstock collection goals under Phase I.*

Recommendation CC6a: Phase out the direct release of coho salmon juveniles from lower Columbia hatcheries into the Clearwater Basin.

Recommendation CC6b: Release all hatchery-origin coho from Dworshak NFH, Kooskia NFH, and/or Nez Perce Tribal Hatchery to maximize the number of returning adult fish that can be captured for developing a localized broodstock. This includes discontinuing direct stream releases or outplants of Eagle Creek NFH coho into Lapwai Creek until the goals of Phase I are achieved and implementation of Phase II is initiated. After a localized, self-sustaining hatchery population has been established within the Clearwater River (Phase I), resume activities to establish naturally spawning populations of coho in the Clearwater River basin.

Comanagers Response to CC6: NPT response – It is our intent to implement Recommendation CC6a. If we hadn't run into logistical challenges with snow storms in the winter of 2008, the release of juveniles in 2010 (BY08) would all be progeny of coho that returned to the Snake River basin, were collected and spawned at Dworshak. It is our intent to transition to a local broodstock and we are hopeful that adult returns will increase to support a self-sustaining broodstock annually.

Issue CC7: *Coho released in the Clearwater Basin from different release sites cannot be distinguished by release location.*

Recommendation CC7: Ensure that a representative group of fish at each release location has a unique mark and/or tag. For example, 10,000 PIT tags could be applied to each unique release group. Alternatively, an external fin clip and/or coded-wire tag could be used.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to CC7: NPT response – We concur that some form of representative marking is desirable, although mass marking with fin clips is not supported. Through the Mitchell Act ME&R budget the USFWS has provided 15,000 PIT tags for the 2009 release. Discussions are underway on how to best distribute tags across release groups. In addition, two groups of 30,000 CWT only and 30,000 CWT/AD clip double mark index groups have been applied on Eagle Creek NFH supplied smolts to date; 30,000 CWT/AD mark groups are being maintained in Lapwai Creek and Clear Creek releases.

Facilities/Operations

See the Education and Outreach sections for steelhead at Dworshak NFH and spring Chinook at Kooskia NFH.

Research, Monitoring, and Accountability

Issue CC8: *Coho released in the Clearwater Basin are not adequately marked or tagged to evaluate the reintroduction program. For example, currently 550,000 unmarked hatchery coho from Eagle Creek NFH are released into Clear Creek and Lapwai Creek (275,000 smolts each).*

Recommendation CC8: All hatchery-origin coho released into the Clearwater River should carry a distinguishing mark or tag so that they can be distinguished from natural-origin coho. Current harvest rates for coho salmon in marine and lower Columbia River fisheries are substantially less than historical levels, thus facilitating upriver escapement of hatchery-origin fish. See also Recommendation CC7.

Comanagers Response to CC8: NPT response – NPT agrees that there is currently not adequate marking of coho salmon released in the Clearwater Basin. Due to budget constraints we are not able to afford the marking or the desired level of evaluation for the program. Mass marking with fin clips will not be supported by the Tribe.

Issue and Recommendation CC9: *See Issue and Recommendation DW27 under Dworshak NFH spring Chinook program.*

Issue CC10: *The Clearwater coho program is under funded The Clearwater coho program is funded by Mitchell Act, BPA, and the Pacific Coastal Salmon Recovery Fund. Funding levels have been insufficient to support the program as laid out in the Nez Perce Tribe's Clearwater Coho Master Plan. Due to insufficient funds, the program has been partially implemented and monitoring and evaluation activities have not been supported.*

Recommendation CC10: Continue to support existing funding sources, including Mitchell Act support. Advocate BPA funding of the Nez Perce Tribe's Clearwater Coho Master Plan, including recommendations described in this report. Restored funding related to recent budget cuts should emphasize the need for increased monitoring and evaluation that are needed to assess the program.

Comanagers Response to CC10: NPT and FWS concur with Recommendation CC10.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Education and Outreach

See the *Education and Outreach* sections under *Dworshak NFH B-run steelhead* and *Kooskia NFH spring Chinook*.

Hagerman NFH B-run Steelhead

Program goals and objectives

Issue HA1: *Present program goals for B-run steelhead reared at Hagerman NFH are not fully expressed in terms of numeric outcomes that quantify intended benefits or goals. Actual harvest contributions vary widely in response to variations in post-release survivals, marine conditions, and harvest regimes. Like most other programs, this hatchery program lacks specific numeric goals for contribution to harvest or other benefits. The LSRCP adult return goal for A-run and B-run steelhead reared at Hagerman NFH and released in the Salmon River is to return a total of 13,600 adult steelhead (A-run and B-run fish combined) upstream of Lower Granite Dam in the Snake River Basin. Specific harvest goals for Dworshak B-run in the Salmon River have not been specified, thus preventing evaluation of harvest benefits relative to goals and risks.*

Recommendation HA1: Establish a harvest goal for Dworshak B-run steelhead released from Hagerman NFH into the Salmon River basin so that program benefits can be evaluated relative to those goals and the risks that the program poses.(see HA17-HA25 under Research, Monitoring, and Evaluation).

Comanagers Response to HA1: The IDFG, NPT, and USFWS agree that it would be beneficial to update or establish numerical goals for broodstock needs, harvest, and natural spawning escapement in the Salmon River basin. The NPT prefer that transfer and release of Dworshak B steelhead in the Salmon River be discontinued and a local stock be developed and utilized for production.

Issue HA2: *Current conditions affecting the survival of salmon and steelhead in the Snake and Columbia rivers (operation of the hydropower system, habitat, harvest, and ESA listings) downstream from release sites in the Salmon River differ from the assumptions that were used to establish LSRCP mitigation goals. These different conditions inhibit consistent achievement of Hagerman NFH's contribution (13,600 adult steelhead) towards meeting the LSRCP mitigation goal of 55,100 adult steelhead returning annually upstream of Lower Granite Dam, as developed initially by the Army Corps of Engineers in the mid-1970's.*

Recommendation HA2: Continue to work through various regional processes such as (a) implementation of the mainstem Federal Columbia River Power System *Biological Opinion* to improve migration survival, (b) US vs. OR discussions to address harvest issues, (c) NOAA Fisheries to complete ESA consultations on hatchery mitigation programs, and (d) local watershed groups to continue improving habitat, to allow the Service and cooperators meet Army Corps of Engineers and LSRCP mitigation goals on a consistent basis. Reexamine current approaches for contributing 13,600 adult steelhead to the LSRCP mitigation goal of 55,100 adult steelhead (upstream of Lower Granite Dam) to determine whether the current hatchery program should be modified to account for existing conditions and capabilities at Hagerman NFH.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to HA2: The IDFG, NPT, and USFWS agree that they will work through the various regional processes in an attempt to improve adult returns and meet LSRCP and COE mitigation goals on a consistent basis. They also agree that it would be beneficial to reexamine current production approaches to determine if the program should be modified.

Broodstock Choice and Collection

Issue HA3: *The continual release of Dworshak NFH B-run steelhead into the Salmon River (a) is inconsistent with the principles of local adaptation and managing hatchery stocks for maximum viability, (b) poses biological risks to ESA listed natural salmon and steelhead populations in the Salmon River, and (c) poses straying risks within the Salmon River basin. IDFG analyzed nine years of “complete” B-stock return data to the Salmon River starting with 1989 releases and found that, given similar release numbers, fish derived from returning East Fork fish were recovered in statistically significant greater numbers in the fishery compared to progeny that were from fish spawned at Dworshak NFH.*

Recommendation HA3: If the transfer of Dworshak NFH B-run steelhead eggs to Hagerman NFH continues, then LSRCP cooperators should develop acclimation facilities with adult recapture capabilities at release sites to reduce risks to natural populations (e.g. sites that increase homing and reduce straying). Implementation of this recommendation may necessitate new release sites. Alternatively, fish could be released from existing facilities (e.g., Pahsimeroi Fish Hatchery) that may also allow development of local broodstocks and eventual termination of eyed egg transfers from the Clearwater River basin. Adult recapture capabilities would also assist with assessing adult return rates and potential benefits of the program (see related M&E Rec).

Comanagers Response to HA3: IDFG response to HA3 is see response to DW4.

Refer to the Dworshak NFH B-run steelhead section for other broodstock choice and collection recommendations associated with this program.

Hatchery and Natural Spawning, Adult Returns

Refer to HA3 and the Dworshak NF Hatchery and Natural Spawning, Adult Returns section under Recommendations for the Dworshak NFH B-run steelhead program.

Incubation and Rearing

Issue HA4: *Dworshak NFH B-run steelhead are more difficult to rear and suffer higher mortality rates at Hagerman NFH than A-run steelhead reared at Hagerman NFH. . Dworshak NFH B-run steelhead have higher incidences of fish health problems, bacterial infections, and pre-release mortality rates than A-run steelhead during the final four months of rearing prior to transport to the Salmon River. Increasing mortality rates prior to transportation and release into the Salmon River raises concerns regarding the post-release survival of smolts.*

Recommendation HA4: Continue to assess and ascertain the causes of pre-release mortality of Dworshak NFH B-run steelhead during the final four months of rearing at Hagerman NFH. Discontinue the program if survival cannot be improved.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to HA4: NPT response – Given the number of years this program has been implemented and the consistent results to date - in addition to our objections to expressed in HA1 we believe the Dworshak B releases in the Salmon River should be discontinued.

***Issue HA5:** *Nucleospora salmonis*, a parasite known to impair the immune function of fish, is annually detected in the steelhead stocks at Hagerman NFH. Dworshak NFH B-run steelhead appear to be more susceptible to this endemic parasite than the locally adapted Salmon River stocks based on higher mortality rates under similar culture conditions. Stocks that are more susceptible to the parasite may have poorer survival rates after release, serve as reservoirs of infestation and spread the parasite to other fish and aquatic hosts. The source of the *Nucleospora* parasite at Hagerman NFH is unknown.*

Recommendation HA5a: Implement a study to determine the epizootiology of *Nucleospora salmonis*, including the source of infection, alternate hosts and salmonid stock resistance. One hypothesized source may be the snails in the water supply.

Recommendation HA5b: Assess survival rates and levels of *N. salmonis* in Dworshak B-run and Sawtooth A-run steelhead in a post-transport survival study (see recommendation HA9).

Recommendation HA5c: Develop localized stock to enhance development of resistance to endemic parasite(s) and water conditions (see Issue HA3) or discontinue program.

Comanagers Response to HA5: NPT response – We concur with Recommendation HA5c.

***Issue HA6:** *Feed strategies designed to slow growth during winter months to compensate for warm water temperatures and meet the release size criteria (180-250 mm fork length) of NOAA Fisheries may increase physiological stress and pose a fish health risk (e.g. "soreback") .**

Recommendation HA6: Develop alternative rearing strategies for meeting targeted release sizes without limiting feed (e.g., chilling eggs during incubation). Implementation of this recommendation may require working with IDFG to change protocols at Clearwater Fish Hatchery where the eggs are incubated to the eyed stage prior to transfer to Hagerman NFH.

Comanagers Response to HA6: NPT has no objection to this recommendation.

***Issue HA7:** *Rearing densities in the indoor nursery tanks (0.8 max DI) exceed culture guidelines for steelhead, thus increasing fish health risks. Steelhead are reared in the indoor nursery tanks until they reach a size at which they can be marked and tagged while being transferred to the outdoor raceways. This protocol results in density indexes attaining D.I. = 0.8 in the indoor nursery tanks prior to transfer to the outdoor raceways.**

Recommendation HA7: Reduce rearing densities in the indoor nursery tanks to a maximum of D.I. = 0.5 by reducing the total number of Dworshak B-run fish reared, increasing the number of nursery tanks, and/or marking and tagging the fish after they are transferred to the outside raceways.

Comanagers Response to HA7: NPT has no objection to this recommendation.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Issue HA8: *Flow indexes [Total weight of fish/(mean length of fish)(water flow in gpm)] may exceed recommended guidelines because of the serial reuse of water between three banks of raceways (upper bank to middle bank to lower bank). The [Production Capacity Report](#) for Hagerman NFH indicated that growth rates decreased at a density index greater than 0.5 and a flow index greater than 1.5. Those results suggest that D.I. = 0.5 and F.I. = 1.5 are the upper carrying capacity limits for the hatchery, above which fish are stressed physiologically. The recommended carrying capacity flow index for steelhead reared at Hagerman NFH may be exceeded if the amount of water available for rearing continues to decline.*

Recommendation HA8: Flow index for individual raceways should not exceed 30% of the total system flow index when three banks are in use or 50% if only two banks are used. For example, if the total flow index for all three banks is calculated to be 1.25, then the flow index calculated separately for each deck of raceways should not exceed F.I. = 0.38 if all three decks are being used.

| |
|------------------------------------|
| Comanagers Response to HA8: |
|------------------------------------|

Release and Outmigration

Issue HA9: *The loading (via pumps) and long-distance hauling of steelhead smolts in tanker trucks from Hagerman NFH to the Salmon River (Little Salmon and East Fork Salmon River) results in crowding and potential stress prior to release. Fish are further stressed when water temperatures at the Salmon River release sites are several degrees cooler than the water temperature in the transport truck. Transport over Galena Pass from the Snake River Valley may result in nitrogen supersaturation of the water at lower atmospheric pressures, potentially leading to “gas bubble disease.” In addition, these fish can be infected with the parasite *Nucleospora salmonis* which impairs the immune system. All of these factors may result in poor acclimation and reduced survivals immediately after transport and release into the Salmon River.*

Recommendation HA9: Conduct post-release survival studies in the Salmon River to assess survivals within 48 hours after release. For example, live boxes or cages with a random sample of fish could be set up at each release site to assess immediate post-release survival. A random sample of fish should also be sacrificed for assessing physiological stress parameters in the blood at the time of release. Include testing to assess levels of *Nucleospora salmonis* in mortalities and survivors. Dissolved oxygen and nitrogen in the tanker trucks should be measured at the time of departure from Hagerman NFH, at Galena Pass, and at the time of release. A report summarizing the results of these separate assessments should be prepared.

| |
|---|
| <p>Comanagers Response to HA9: While IDFG agrees that long distance smolt hauling may affect smolt survival, we do not see an indication of hauling induced differential survival (based on estimated survival from release to Lower Granite Dam with the use of PIT tags) of fish released from HNFH and other hatcheries, or fish released from HNFH that were hauled over Galena relative to those hauled to the Little Salmon River. While steelhead released into the Little Salmon River do on average (2001-2008) have a higher estimated survival to Lower Granite dam than those released at Sawtooth Hatchery (80% compared to 72% respectively), the difference is not beyond what we would expect due to the shorter migration distance associated with the Little Salmon River release. Relative to other hatcheries, average survival rates are similar. For the migration years 2000-2008 average estimated survival rates for A-run steelhead released from Hagerman, Niagara and Magic Valley fish hatcheries were 72%,</p> |
|---|

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

77%, and 75% respectively. Over the same time period estimated survival of steelhead released from Clearwater Fish Hatchery averaged 72%.

Facilities/Operations

Issue HA10: *Lack of shade covers over the raceway increases crowding of fish, particularly during the summer months, potentially increasing stress and disease risks to steelhead juveniles.*

Recommendation HA10: Construct covers over the raceways. Initial experimentation with floating covers would help quantify potential fish health benefits

Comanagers Response to HA10:

Issue HA11: *Water flows from springs supplying Hagerman NFH continue to decline, presumably due to increased water withdrawals from the aquifer and exacerbated by drought conditions. Of the total water rights owned by the Service, 84.59 cfs can be diverted for fish production at the Hatchery. However, actual flow available for fish production decreased to 65 cfs in March of 2008. Flows continue to decline at a rate of 0.1 cfs per year. Although these decreasing water flows are largely due to factors external to the hatchery, Hagerman NFH can implement several compensatory actions.*

Recommendation HA11a: Repair the degraded pipelines and plumb Spring 17 to the Main Spring pool to provide the hatchery greater flexibility for water management. This would allow more efficient use of this water in Steelhead raceways but also could be used in the Trout raceways during the steelhead off-season. It would extend the beneficial use of this water right to all year.

Recommendation HA11b: Continue to actively monitor spring flows and prioritize the strains and stocks reared at Hagerman NFH, then reduce the total number of fish reared on station as water flows continue to decline. .

Recommendation HA11c: Develop contingency plans for modifying the existing water delivery infrastructure and identifying technological enhancements (e.g., oxygenation, conditioned reuse, etc.) to compensate for continuing declines in water availability

Recommendation HA11d: The Service should continue to seek opportunities to negotiate a mitigation settlement for loss of water at Hagerman NFH.

Also see Recommendation HA40a under Recommendations for the Hagerman NFH Resident Rainbow Trout program, which states “the Service should establish a flow target which triggers a reduction in the number, time, and/or size at release of rainbow trout produced if the Hagerman NFH’s if water supply continues to decline”

Comanagers Response to HA11:

Issue HA12: *A significant amount of water is used to clean the raceways. Currently, raceways are flushed via a standpipe to the Off-line settling pond. This method of cleaning requires a high volume of water, thus only four raceways can be cleaned at the same time. Cleaning more than four raceways in the upper two decks at one time would rob water from the downstream raceways*

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Recommendation HA12: Investigate alternative cleaning methods and determine whether modifications can be made to the settling pond that would allow more efficient use of water.

Comanagers Response to HA12:

Issue HA13: The electric controller on the valve to the steelhead raceways in the Mixing Chamber is not functioning properly.

Recommendation HA13: Replace the valve immediately.

Comanagers Response to HA13:

Issue HA14: The weir in Riley Creek has not been operated for several years because its location in poses a safety risk to anglers and others recreating in Riley Creek. The weir was intended to prevent fish in Riley Creek from swimming upstream into the facility; however, Hagerman NFH has not indicated that fish are entering the facility.

Recommendation HA14: Decommission the weir. If it is found a weir is needed, relocate the weir closer to the facility and/or improve protection around the weir to reduce safety risks.

Comanagers Response to HA14:

Issue HA15: The presence of invasive New Zealand mud snails in the water supply poses a physical risk to the facility and an ecological risk to off-station locations where fish are released (e.g., Salmon River). The presence of New Zealand mud snails has prevented the release of Dworshak NFH B-run steelhead back into the Clearwater River Basin (mud snails have not been detected in the Clearwater River). The continued release of steelhead from Hagerman NFH into the Salmon River increases ecological risks due to the potential amplification of the existing snail populations in that watershed .

Recommendation HA15: Continue to implement that Hazard Analysis and Critical Control Point (HACCP) plan. Investigate methods (e.g. water purification system) that could help prevent snails from accessing the hatchery facility, and, thusly, reduce the potential for transferring the snails off-station.

Comanagers Response to HA15:

Issue HA16: The fish display pond for visitors does not comply with the American Disabilities Act (ADA). For example, the display pond is not accessible to wheelchairs, although Hagerman NFH receives many visitors.

Recommendation HA16: The Team supports the current improvement of access and safety in the visitor's area so that it is ADA compliant.

Comanagers Response to HA16:

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Research, Monitoring, and Accountability

Issue HA17: *The propagation of multiple stocks, including rainbow trout, at Hagerman NFH, coupled with its location in proximity to commercial trout farms and the University of Idaho's Hagerman Fish Culture Experiment Station, substantially increases fish health risks relative to other National Fish Hatcheries that are more insulated from other fish culture facilities.*

Recommendation HA17a: Increase interactive communication of fish health issues among the Service, IDFG, the Idaho Aquaculture Industry, and the University of Idaho. Ensure that written records of all fish health exams (monthly/diagnostic, certifications and inspections) performed by the Idaho Fish Health Center (IDFHC) are kept on station to allow for ready communication with other fish health entities and to maintain historical records. The completion of the new U.S. Fish & Wildlife Service Fish Health Database, now in development at the IDFHC, should be expedited to help promote more effective communication of fish health information.

Recommendation HA17b: To prevent possible disease transmission risks between facilities, the MOU between the University of Idaho (for the Hagerman Fish Culture Experiment Station sited next to Hagerman NFH) and the U.S. Fish & Wildlife Service should be reviewed by both parties to facilitate the 1999 agreements and to clarify the responsibilities of each party. These recommendations include the following. (a) As described in the MOU and Right of Way documents: install signage for traffic access to the UI station. (b) Ensure that written operational protocols exist at and for each station to identify and resolve potential disease transmission risks (traffic, aerosols from irrigation and sprinkler systems, predators, outdoor fish tanks/raceways, import of exotic species, review of effluent treatment systems, etc.) that might impact the other facility. This is specified in the MOU for the UI station but not for the Hagerman NFH. (c) Fish health preview and/or inspection exams as required by federal and state policies should be completed prior to the transfer of aquatic animals into and out of both stations. (d) A fish health designee for each station should oversee fish health inspections/diagnostic exams and treatment, and expedite communication between the two stations on current fish health issues that may impact the other station. As necessary, fish health monitoring should be increased to allow identification and/or reduction of endemic pathogens that affect the fish facilities in the Hagerman Valley. (e) To prevent possible disease transmission risks between facilities, the MOU between the University of Idaho and the U.S. Fish & Wildlife Service should be modified/clarified to identify and resolve potential disease risks that could be incurred from the activities of both facilities. As an example, the use of the access road into the Hagerman NFH should be limited to the trucking of those fish being reared at and released from the hatchery. Given the proximity of the research station to the Hagerman NFH, the IDFHC should be the intermediary resource to promulgate the U.S. Fish & Wildlife Service Fish Health Policy, providing expertise to both stations to prevent the spread of disease and the import of non-endemic pathogens onto the premises. As necessary, increased fish health monitoring at Hagerman NFH (and possibly, the research station) should be done to allow identification and/or reduction of endemic pathogens that affect the fish facilities in the Hagerman Valley.

| |
|---|
| Comanagers Response to HA17: NPT has no objection to this. |
|---|

Issue HA18: *Accountability and coordination of monitoring activities are critically important for assessing the benefits and risks of the program. The Service is responsible for on-station rearing and evaluation of fish performance at Hagerman NFH, while the Idaho Department of Fish and Game is responsible for evaluating post-release survival of juveniles and adult contributions to fisheries and achievement of mitigation goals. However, the information available currently for evaluating the Dworshak NFH B-run steelhead program is sparse, and post-release monitoring and evaluation of the program do not appear to be jointly managed or high priorities.*

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Recommendation HA18: Coordination of monitoring activities between the Service and Idaho Department of Fish and Game needs to be improved. (1) State of Idaho biologists need to be brought into the Service's Hatchery Evaluation Team forum and coordinated through the LSRCP program. The group should meet at least once per year after fish are released and before eggs are brought on-station to coordinate monitoring and evaluation efforts for the upcoming year. (2) Both on-station and off-station performance measures should be cooperatively investigated. This cooperation could include fish health monitoring at Hagerman NFH (Recommendation HA17) because of the geographic distance of the Services' Idaho Fish Health Center in Ahsahka, Idaho, and the comparatively close proximity of IDFG's fish health lab in Eagle, Idaho. (3) Evaluation projects need to be discussed, proposed, funded and cooperatively implemented. Cooperative research and monitoring projects with University of Idaho's Hagerman Fish Culture Experiment Station Lab could also be developed.

Comanagers Response to HA18: NPT response – We agree with the concept that increased coordination/communication would be beneficial. However, a fair amount of coordination does occur through annual discussion of M&E, in-hatchery and post-release, currently occurs during the Salmon River Annual Operating Plan meetings/document. This is a LSRCP lead process. In addition, an annual LSRCP cooperators meeting is held in which M&E results are commonly presented. Recommendation should be; Continue current comanager coordination and consider options for more collaboration.

Issue HA19: *Currently, monitoring and evaluation of the physiological effects of transport and post-release survival of Dworshak NFH B-run steelhead in the Salmon River do not occur (see Issue HA9). A PIT tag program is being established in 2008 to assess outmigrant survival of Hagerman NFH A and B-run steelhead to lower Granite Dam, but those studies are not designed to evaluate physiological stress and immediate post-release survival at the release sites.*

Recommendation HA19: The Service should collaborate with the tribes and IDFG to perform post-release survival studies. Such studies should include measures of physiological stress at the time of release, ability of the released fish to acclimate physiologically to the receiving water, potentially as a function of temperature differences between the truck tank water and stream water, and predation risks – including angling – in the vicinity of the release sites (see also Recommendation HA9).

Comanagers Response to HA19: NPT, FWS, and IDFG agree a long term M&E plan would be beneficial and will work cooperatively to develop. Such a plan, will enable description of multiple aspects of uncertainty similar as that described in HA19, and will enable prioritization of available M&E funding.

Issue HA20: *Abundance and productivity data for natural populations of steelhead in the Salmon River are inadequate. Without a better understanding of the abundance and productivity of natural populations, assessments of the genetic risks posed by the continued outplanting of Dworshak B-run on natural steelhead populations in the Salmon River Basin cannot be adequately assessed. .*

Recommendation HA20: The Service should work with IDFG to develop protocols (sampling, marking, etc.) for estimating and monitoring the abundance and productivity of natural populations of steelhead in the Salmon River basin. This monitoring could include collection of small amounts of fin tissue (e.g., 10 sq. mm) from samples of fish for genetic analysis to couple genetic monitoring with population monitoring for assessing the genetic risks of continued outplanting of out-of-basin fish.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to HA20: We concur. Efforts to collect steelhead population status information have been proposed in the past and continue to date. Significant physical/environmental and financial constraints are limiting. Tribes are part of this effort and should be included in the recommendation.

Issue HA21: *Coded-wire tagged fish may not accurately represent all progeny groups released from Hagerman NFH. Currently, a total of 60,000 Dworshak NFH B-run steelhead in four of nine raceways are coded-wire tagged. Because the fish in different raceways can differ (e.g., mean age and size) and the pond environments can differ slightly (e.g., flow index and flow pattern), tagging fish in just a few raceways may not represent the entire population for that brood year. In most NFH production programs, salmon are spawned throughout the adult return to ensure that most segments of the run are represented in the resulting progeny. This procedure usually results in many different spawn “takes”. The fry are ponded by take/hatch date into a series of raceways that, when fully populated, differ in age and size of fish (initially) between raceways. Production monitoring using coded-wire tags requires that the tags represent the entire population.*

Recommendation HA21: Hatchery staff should consult with the Idaho Fishery Resource Office (USFWS; Ahsahka, Idaho) and IDFG to ensure that the tagging strategy accurately represents the entire population of progeny from all spawn groups for each brood year. For example, all spawn groups should be proportionately represented among tag groups and raceways.

Comanagers Response to HA21: NPT supports a review of the CWT marking groups as part of a long-term M&E plan referenced in DW21. However, proportionately distributing tags across all raceways does not meet some ongoing M&E objectives/study designs and is not the only way to adequately represent entire population performance.

Issue HA22: *Accurate estimates of the number of hatchery-origin steelhead, both A-run and B-Run, returning to the Salmon River do not exist for fish reared at Hagerman NFH.*

Recommendation HA22a: The Service should continue to work with IDFG to develop PIT tagging protocols that will allow annual estimates of adult returns to the Snake and Salmon rivers, including subsequent reporting of contributions of Dworshak NFH B-run steelhead to fisheries in the Salmon River. The Service has drafted Best Management Practices for the marking and tagging of juvenile salmon and steelhead prior to release. The initial benchmark is a minimum of 15,000 PIT tags for Dworshak NFH B-run steelhead reared at Hagerman NFH. The Best Management Practices should be established as one product of the Biological Opinion for the hatchery program.

Recommendation HA22b: Implement the PIT tag program to monitor downstream migration and smolt-to-adult return rates, including assistance with in-season harvest management.

Recommendation HA22c: The Service should work with states and tribes to develop a PIT tagging program consistent with program goals and objectives and linked to regional goals and objectives, and improve marking technology.

Comanagers Response to HA22: IDFG supports Recommendation HA22c. We implemented representative PIT tagging of all brood year 2007 production at LSRP A and B-run hatcheries and at all Idaho Power hatcheries (except Niagara Springs production which will be included for BY 2008). Approximately 140,000 PIT tags will be applied to BY 2008

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

production. Tagging at these levels will enable managers to estimate smolt survival through the hydro system and adult returns by hatchery/run/release site. PIT tags are not suitable for similar estimates among harvested fish because sample numbers from creel programs are often small and PIT tags are seldom retained in gutted fish seen during creel surveys. IDFG is promoting the implementation of an annual full parentage analysis of all fish used in hatchery broodstocks and assignment of fish to specific hatchery parental pairs in subsequent adult returns. Using this approach, sample size issues become secondary because every hatchery fish is in effect “tagged” and the tag can be detected from any tissue sample collected. PIT tagging and genetics based parental analysis are ideally suited for use in concert to estimate hatchery returns to the production are above Lower Granite Dam and their subsequent contributions to specific time and area strata in fisheries. NPT supports IDFG comments.

Issue HA23: *Accurate estimates of adult returns of Dworshak NFH B-run steelhead to the Salmon River (harvest and spawning grounds) are not available for fish reared at Hagerman NFH. The current sampling rate of coded-wire tags from harvested fish is unknown. From the sampling data that do exist, sampling rates in state and tribal fisheries appear to be inadequate and inconsistent, and sample monitoring in natural spawning areas is limited. The LSRCP office has advocated a coast-wide recovery goal of 20% from all harvested and recovered fish bearing coded-wire tags.*

Recommendation HA23: The Service should continue to work with cooperators to develop the sampling and recovery program for coded-wire tags.

Comanagers Response to HA23: IDFG supports increased coded-wire tagging and sampling efforts for estimates of stock specific contributions to harvest. However, in many cases increasing tagging and sampling rates in fisheries, especially in some spatial and temporal strata will not result in enough tag recoveries to make meaningful stock contribution estimates and is not cost effective. IDFG supports development of genetics based full parental analysis of steelhead returns as an alternative to the CWT technology for harvest stock assignment. NPT supports a review of the CWT marking groups as part of a long-term M&E plan referenced in DW21. NPT supports IDFG comments and consideration/validation of the full parental analysis.

Issue HA24: *Available data for Dworshak NFH B-run steelhead released into the Salmon River, but reared at Magic Valley State Hatchery, suggest that smolt-to-adult return rates are only 10-15% of those for “A-run” steelhead released into the Salmon River.*

Recommendation HA24: Assess existing coded-wire tag and sampling rates to determine the statistical robustness of those estimates, and whether existing tagging and sampling rates are sufficient. Tagging and sampling rates need to be sufficient statistically to minimize the standard errors of the estimates.

Comanagers Response to HA24: See IDFG response to HA22 & HA23. Additionally, while adult return rates for B-run fish from Dworshak National Fish Hatchery are significantly lower than A-run fish, they also spend an additional year in the ocean. Furthermore, adults originating from the localized upper Salmon River B-run stock have return rates that are double those observed for the Dworshak Hatchery releases in the upper Salmon River. PIT tag

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

and genetics based analyses will permit far more precise estimates of survival for these groups. NPT supports IDFG comments.

Issue HA25: *The evaluation and dissemination of tag recovery data are inadequate, thus inhibiting the ability of managers to make decisions based on current information. Data reporting does not meet the specified standards of the Pacific Salmon Commission. Those standards require preliminary reporting of data for the current calendar year no later than January 31 of the following year” reference*

Recommendation HA25: The Service should work with LSRCP cooperators to develop a data management plan that incorporates tagging goals and objectives, data management, and reporting requirements of coded-wire tag data at both the program and regional levels. This could be incorporated into the cooperative agreement between the LSRCP office and cooperators (IDFG and tribes).

Comanagers Response to HA25: NPT supports recommendation.

Issue HA26: *The Visitors Center at Hagerman NFH and available handouts are outdated. The existing displays were installed in the 1980s when the facility was reconstructed.*

Recommendation HA26: Update the displays in the Visitors Center and handouts available to the public.

Comanagers Response to HA26: NPT has no comment on this recommendation.

Education and Outreach

No issues identified.

Hagerman NFH A-run Steelhead

Program Goals and Objectives

Issue HA27: *Present program goals for A-run steelhead at Hagerman NFH are not fully expressed in terms of numeric outcomes that quantify intended benefits or goals. Harvest contributions vary widely in response to post-release survivals, marine conditions, and harvest regime. Like most other programs, this hatchery program lacks specific numeric goals for contribution to harvest or other benefits. Overall, the Hagerman NFH LSRCP adult return goal of 13,600 steelhead upstream of Lower Granite Dam is for A and B-runs combined. Harvest goals for A-run steelhead reared at Hagerman NFH and released into the Salmon River should be specified as “benchmarks” to allow monitoring and evaluation of the harvest benefits resulting from the A-run program.*

Recommendation HA27: Restate program goals to identify the number of harvestable A-run steelhead adults from Hagerman NFH for the Salmon River basin. For example, based on the mitigation goal (13,600 adults) and broodstock needs and assuming only A-run steelhead are reared at Hagerman NFH, the harvest goal could be as high as XXXX adults, assuming 100% survival from lower Granite Dam to the fishery and hatchery.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to HA27: The IDFG, NPT, and USFWS agree that it would be beneficial to update or establish numerical goals for broodstock needs, harvest, and natural spawning escapement in the Salmon River basin. The NPT prefer that transfer and release of Dworshak B steelhead in the Salmon River be discontinued and a local stock be developed and utilized for production.

Issue HA28: *Current conditions affecting the survival of salmon and steelhead in the Snake and Columbia rivers (operation of the hydropower system, habitat, harvest, and ESA listings) downstream from release sites in the Salmon River differ from the assumptions that were used to establish LSRCP mitigation goals. These different conditions inhibit consistent achievement of Hagerman NFH's contribution (13,600 adult steelhead) towards meeting the LSRCP mitigation goal of 55,100 adult steelhead returning annually upstream of Lower Granite Dam, as developed initially by the Army Corps of Engineers in the mid-1970's.*

Recommendation HA28: Continue to work through various regional processes such as (a) implementation of the mainstem *Federal Columbia River Power System Biological Opinion* to improve migration survival, (b) *US vs. OR* discussions to address harvest issues, (c) NOAA Fisheries to complete ESA consultations on hatchery mitigation programs, and (d) local watershed groups to continue improving habitat, to allow the Service and cooperators meet Army Corps of Engineers and LSRCP mitigation goals on a consistent basis. Reexamine current approaches for contributing 13,600 adult steelhead to the LSRCP mitigation goal of 55,100 adult steelhead (upstream of Lower Granite Dam) to determine whether the current hatchery program should be modified to account for existing conditions and capabilities at Hagerman NFH.

Comanagers Response to HA28: The IDFG, NPT, and USFWS agree that they will work through the various regional processes in an attempt to improve adult returns and meet LSRCP and COE mitigation goals on a consistent basis. They also agree that it would be beneficial to reexamine current production approaches to determine if the program should be modified.

Broodstock Choice and Collection

Issue HA29: *Hagerman NFH rears A-run steelhead from broodstock collected at Sawtooth and Pahsimeroi Fish Hatcheries. Hagerman NFH is scheduled to receive 1.15 million eyed eggs from Sawtooth Hatchery and 215,000 eyed eggs from Pahsimeroi Hatchery annually. Similarly, Magic Valley Hatchery is scheduled to receive 480,000 and 475,000 eyed eggs from Sawtooth and Pahsimeroi Fish Hatcheries, respectively. Rearing multiple stocks at both facilities creates a "criss-cross" network of egg and fish transfers among broodstock collection facilities, rearing facilities, and release locations that complicates the culture and logistics of rearing and transferring steelhead smolts to multiple locations in the Salmon River. For example, rearing multiple stocks in smaller lots increases inefficiencies in rearing space utilization and marking/tagging programs.*

Recommendation HA29: Discontinue rearing Pahsimeroi A-run steelhead at Hagerman NFH and rear all Sawtooth A-run steelhead released in the Salmon River at Hagerman NFH. This could be accomplished by the following: (a) transfer the responsibility of rearing 200,000 Pahsimeroi A-run steelhead from Hagerman NFH to Magic Valley Fish Hatchery, (b) discontinue rearing Dworshak NFH B-run steelhead (200,000 smolts) at Hagerman NFH (see recommendation DW4 and recommended Alternative 6 for the Dworshak B-run program at Hagerman NFH), (c) discontinue rearing Sawtooth A-run steelhead at Magic Valley Fish Hatchery, and (d) rear up to an additional 400,000 Sawtooth A-run steelhead smolts at Hagerman NFH (see also Recommendation HA29a).

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Comanagers Response to HA29: IDFG Response: We do not feel that rearing individual stocks at more than one facility creates undue logistical constraints but rather maintains a safety net in the event of catastrophic loss. NPT does not have an objection to the current rearing strategy but suggests it may be helpful to evaluate the Recommendation HA29 option to determine if there are cost savings or other benefits.

Issue HA30: *Egg take shortages at Sawtooth and Pahsimeroi Hatcheries, two sources of eyed eggs for Hagerman NFH, are backfilled with eyed eggs from Oxbow Hatchery in the Hells Canyon area of the Snake River when adult returns to Sawtooth and Pahsimeroi hatcheries are insufficient to meet eyed egg objectives at Hagerman NFH and Magic Valley FH. In addition, Sawtooth and Pahsimeroi eggs may each be used to backfill shortages at the facility. Backfilling of egg shortages among hatcheries is inconsistent with the principles of local adaptation and is expected - in the long run - to prevent individual stocks from attaining their respective viability potentials, thus reducing smolt-to-adult return rates. "Backfilling" can occur at several stages in the culture cycle because fish from each facility are not differentially marked or tagged prior to release; for example, "backfilling" can occur when (a) eyed eggs are shipped to Hagerman NFH, (b) fish from one hatchery (Sawtooth, Pahsimeroi, or Oxbow) are released at the adult collection site for another hatchery, or (c) fish are released in areas (e.g., mainstem Salmon River) that results in adults straying into a another facility.*

Recommendation HA30: Discontinue backfilling egg take shortages at Sawtooth and Pahsimeroi fish hatcheries to meet facility capacities at Hagerman NFH. Sawtooth A-run steelhead, Pahsimeroi A-run steelhead, and Oxbow A-run steelhead should be managed as three distinct broodstocks to maximize local adaptations and individual stock viabilities. Backfilling of egg shortages for broodstock should only occur as an emergency conservation measure when adult returns to a particular hatchery are sufficiently low over multiple years to increase genetic and demographic risks to the hatchery stock itself. If backfilling is used to meet fishery or other mitigation responsibilities in the upper Salmon River, then fish resulting from backfilled eggs should be reared separately and given differential marks or tags to exclude the non-origin fish from the local broodstock when those fish return as adults to the backfilled facility.

Comanagers Response to HA30: IDFG response - Keeping in mind that the Sawtooth-A, Pahsimeroi-A and Oxbow-A stocks were all founded from the Hells Canyon (Snake River) ancestral stock, IDFG currently manages to maintain separate Sawtooth A, Pahsimeroi A and Oxbow-A stocks. Broodstock collection for the upper Salmon River Sawtooth-A and Pahsimeroi-A programs come exclusively from adults collected at Sawtooth and Pahsimeroi Fish Hatcheries. Since 2000 all fish released from Sawtooth Fish Hatchery have been Sawtooth-A stock. Additionally, between 1997 and 2000, the Pahsimeroi-A component represented less than 10% of the Sawtooth Fish Hatchery releases. Sawtooth-A stock has never been used to supplement the releases at Pahsimeroi Fish Hatchery. Since 1994, fish released at Hells Canyon Dam have come exclusively from adults trapped at Hells Canyon Dam with the exception of one year in which Sawtooth-A stock was used to supplement the release

Hatchery and Natural Spawning, Adult Returns

Issue HA31: *Eyed eggs transferred to Hagerman NFH from Sawtooth Fish Hatchery may not accurately represent all the adults returning to Sawtooth Hatchery. For example, for brood year 2007, eyed eggs transferred to Hagerman NFH were from only 8 of 12 spawn takes at Sawtooth Fish Hatchery.*

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

However, Sawtooth A-run steelhead reared at Hagerman NFH are the source of future broodstock at Sawtooth Fish Hatchery and should accurately represent all egg takes from adults trapped and spawned at the hatchery.

Recommendation H31: Transfer eyed eggs from all spawn takes at Sawtooth Fish Hatchery to Hagerman NFH for rearing and subsequent release as smolts at Sawtooth FH. If Recommendation HA27 is implemented, then all Sawtooth A-run steelhead would be reared at Hagerman NFH, facilitating implementation of Recommendation HA29 described here.

Comanagers Response to HA31: IDFG and NPT agree that broodstock used to create the Sawtooth Fish Hatchery release should represent the entire run of adults the return to the Sawtooth Hatchery Weir.

Incubation and Rearing

Refer to HA5, HA6, and HA7 under Recommendations for the Hagerman NFH B-run steelhead program.

Release and Outmigration

Issue HA32: *The interior Columbia River Technical Recovery Team (ICTRT) has identified the mainstem Salmon River and tributaries upstream of the East Fork Salmon River as a “demographically independent population”, distinct from the East Fork and the mainstem Salmon River downstream of the East Fork, for the purpose of recovering the Snake River steelhead “distinct population segment” (DPS). The unintended residualism of smolts and potential natural spawning of Sawtooth A run steelhead in tributaries with listed salmon and steelhead poses ecological and genetic risks to ESA listed populations.*

Recommendation HA32: Discontinue the release of Sawtooth A run steelhead in the mainstem Salmon River where opportunities to recapture unharvested adults do not exist. Restrict the release of Sawtooth A-run steelhead to (a) immediately below the weir at Sawtooth Hatchery to support downstream fisheries and provide sufficient numbers of returning adults back to Sawtooth Fish Hatchery for broodstock, and (b) other areas consistent with recovery strategies for ESA listed salmonids in the Salmon River.

Comanagers Response to HA33: The only offsite releases in the upper Salmon River (Yankee Fork Salmon River) of Sawtooth-A steelhead released from Hagerman National Fish Hatchery (HNFH) are those established as part of negotiations through the U.S. vs. Oregon process. These releases are in Yankee Fork, not in the mainstem Salmon River. It is likely that these tributary releases return to the some fidelity to the Yankee Fork. Furthermore, the Shoshone/Bannock Tribe has included the development of localized broodstock for both Chinook and steelhead in their proposed list of fish and wildlife projects. As stated in the IDFG response to HA32, there is only one offsite release of Sawtooth-A steelhead in the upper Salmon River released from HNFH and it is negotiated through the U.S. vs. Oregon process. IDFG acknowledges some of the potential biological risks that off-site hatchery releases pose to natural populations. Nevertheless, IDFG also views off-site releases as a potential management tool for hatchery releases designed to mitigate for lost fishing

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

opportunities. We are opposed to taking the option for well designed off-site releases off the table.

Issue HA33: *Sawtooth A-run hatchery steelhead are released at several locations (e.g., Yankee Fork, mainstem Salmon River downstream from East Fork Salmon River) that preclude collection of returning adults for broodstock at Sawtooth Fish Hatchery. Those off-site releases reduce the ability to meet broodstock collection goals at Sawtooth Fish Hatchery in low adult return years if the total number of fish released from Sawtooth Fish Hatchery is reduced to meet off-site release objectives.*

Recommendation HA33: Establish Sawtooth Hatchery as the *first priority* for releases of Sawtooth A-run steelhead. This is particularly important in brood years resulting from low numbers of returning adults. In addition, when the number of adult steelhead trapped at Sawtooth Fish Hatchery is insufficient to meet all release objectives for Sawtooth A-run steelhead in the upper Salmon River (i.e., upstream from the East Fork Salmon River), a portion of their progeny released at Sawtooth Fish Hatchery can be unmarked (unclipped adipose fish) but 100% tagged with coded-wire tags to increase survival through the fisheries and allow their identification at the hatchery (see also Recommendation HA28 regarding “backfilling” of egg shortages). Reduce the total number of release sites for Sawtooth A run steelhead in the Salmon River (see Recommendation HA30) and/or reduce the number of fish released at off-station locations when the total number of smolts available for release is below program objectives.

Comanagers Response to HA33: As stated in the IDFG response to HA32, there is only one offsite release of Sawtooth-A steelhead in the upper Salmon River released from HNFH and it is negotiated through the U.S. vs. Oregon process

Issue HA34: *According to the comanagers’ 2008 Annual Operations Plan for the Salmon River, 170,000 and 50,000 Sawtooth A-run steelhead smolts are intended to be released in the Yankee Fork and Valley Creek, respectively, with intact adipose fins and no coded (or blank) wire tags (3,200 of those 220,000 smolts will carry PIT tags). [Note: 140,000 of those fish are reared at Hagerman NFH and 80,000 are reared at Magic Valley FH.] Similarly, 200,000 (reared at Hagerman NFH) and 60,000 (reared at Magic Valley Fish Hatchery) Pahsimeroi A-run steelhead with intact adipose fins and no wire tags are intended to be released into the Little Salmon River and Slate Creek, respectively (7,100 of those 260,000 smolts will carry PIT tags). The release of large numbers (≈470,000) of unmarked and untagged smolts in the upper Salmon River precludes accurate assessments of program benefits and risks related to comanager goals for harvest and conservation.*

Recommendation HA34: Mark or tag all A-run steelhead reared at Hagerman NFH and released into the Salmon River. This recommendation applies also to all hatchery-origin fish released into the Salmon River.

Comanagers Response to HA34: All adipose-intact releases from HNFH resulted from negotiations through the US v OR process. Under the current U.S. vs. Oregon agreement: 1) 440,000 Sawtooth-A steelhead are to be released into Yankee Fork of which 220,000 will have adipose fins intact and 2) up to 650,000 Pahsimeroi-A and Oxbow –A steelhead will be released into the Little Salmon River and are to be 100% adipose fin clipped.

Issue HA35: *Pahsimeroi stock steelhead reared at Hagerman NFH are released into the Little Salmon River. However, if Recommendation HA27 is implemented, Pahsimeroi steelhead will not be reared at Hagerman NFH and only Sawtooth steelhead would be reared.*

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Recommendation HA35: Discontinue the release of A-run steelhead from Hagerman NFH into the Little Salmon River as part of the reprogramming outlined in Recommendation HA27.

Comanagers Response to HA35: We believe the reviewers are referencing HA29 and not HA27. If that is the case, see the IDFG response to HA29

Issue HA9 under Recommendations for the Hagerman NFH B-run steelhead program also applies to A-run steelhead.

Facilities/Operations

Refer to the Facilities/Operations section under Recommendations for the Hagerman NFH B-run steelhead program.

Research, Monitoring, and Accountability

Issue HA36: Coded-wire tagged fish may not accurately represent all progeny groups released from Hagerman NFH. Currently, a total of 80,000 Sawtooth A-run steelhead in only four of 48 raceways at Hagerman NFH are given coded-wire tags (of the 810,000 smolts released at Sawtooth FH). Because the fish in different raceways can differ (e.g., mean age and size) and the pond environments can differ slightly (e.g., flow index and flow pattern), the practice of tagging fish in just a few raceways may not represent the entire population for that brood year. In most NFH production programs, salmon are spawned throughout the adult return to ensure that most segments of the run are represented in the resulting progeny. This procedure usually results in many different spawn “takes”. The fry are ponded by take/hatch date into a series of raceways that, when fully populated, differ in age and size of fish (initially) between raceways. Production monitoring using coded-wire tags requires that the tags represent the entire population

Recommendation HA36: Idaho Department of Fish and Game should consult with the staff at Hagerman NFH, the Idaho Fishery Resource Office (Ahsahka, ID), and the tagging crew at the Columbia River Fisheries Program Office (Vancouver, WA) to ensure that the tagging strategy at Hagerman NFH accurately represents the entire population of progeny from all spawn groups for a particular brood year. For example, all spawn groups should be proportionately represented among tag groups and raceways.

Comanagers Response to HA36: IDFG agrees with the reviewers that CWT mark groups should represent the entire release. IDFG has already initiated a process to reevaluate marking strategies and will be working with Service and tribal cooperators on this endeavor. NPT supports a review of the CWT marking groups as part of a long-term M&E plan referenced in DW21. However, proportionately distributing tags across all raceways does not meet some ongoing M&E objectives/study designs and is not the only way to adequately represent entire population performance.

Issue HA37: The tagging of A-run steelhead reared at Hagerman NFH is not consistent among brood years. In some years, A-run steelhead are given coded-wire tags (CWTs) with unique codes according to release sites. In other years, they are not.

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Recommendation HA37: Apply CWTs with different tag codes according to broodstock origin (e.g., Sawtooth vs. Pahsimeroi Fish Hatcheries), rearing location (e.g., Hagerman NFH vs. Magic Valley FH), and release location (e.g., Sawtooth FH weir vs. Yankee Fork). Alternatively, PIT tags would accomplish the same task if sufficient numbers of PIT tags were applied to assess adult returns, contributions to harvest, and return rates to release locations. (see also Recommendations HA22, HA23 and HA25 under the Dworshak B-run program at Hagerman NFH).

Comanagers Response to HA37: Steelhead with CWT released from HNFH are given unique codes relative to broodstock origin, release site, and rearing hatchery. These are protocols established by the regional CWT marking committee.

Issue HA38: *Currently, monitoring and evaluation of the physiological effects of transport and post-release survival of Sawtooth (or Pahsimeroi) A-run steelhead in the Salmon River do not occur (see Issue HA9). Transport over a high elevation pass (>8,000 feet) and water temperature differences between the tanker truck and Salmon River release sites creates uncertainties regarding the physiological ability of released fish to survive the first 24-48 hours after release. A PIT tag program is being established in 2008 to assess outmigrant survival of A and B-run steelhead to lower Granite Dam, but those studies are not designed to evaluate physiological stress and immediate post-release survival at the release sites.*

Recommendation HA38: The Service should collaborate with the tribes and IDFG to perform post-release survival studies. Such studies should include measures of physiological stress at the time of release, ability of the released fish to acclimate physiologically to the receiving water as a function of temperature differences between the truck tank water and stream water, and predation risks – including angling – in the vicinity of the release sites. Disoriented fish at the time of release are expected to be vulnerable to predation. (see also Recommendation HA19 under Dworshak NFH B-run steelhead program at Hagerman NFH).

Comanagers Response to HA38: See IDFG response to HA9 above

Issue HA39: *The outplanting of steelhead into the Yankee Fork and other locations where non-harvested fish cannot be recaptured (e.g., Little Salmon River, Valley Creek) poses genetic risks to natural populations that may exist in the immediate vicinity of the release sites (Note: Habitat characteristics in those outplanted streams may have historically precluded self-sustaining natural populations). Specific conservation and harvest goals for those outplants have not been explicitly stated. The extent that outplanting increases straying to populations outside the target return areas is unknown.*

Recommendation HA39: Evaluate the benefits versus risks of outplanting Sawtooth A-run steelhead into the Yankee Fork, Valley Creek, and Slate Creek (see Recommendation HA33). Discontinue the release of steelhead into those streams if those outplants yield no measurable benefit, or the benefits of those outplants do not outweigh the risks. [Note: If Recommendations HA27 and HA33 are implemented, then fish reared at Hagerman NFH would not be released into the Little Salmon River.]

Comanagers Response to HA39: See IDFG response to HA32 and HA33 above. NPT concurs.

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Refer to the Recommendations for the Hagerman NFH B-run steelhead program (e.g. HA25) for additional Research, Monitoring and Accountability recommendations

Education and Outreach

No issues identified

Idaho Department of Fish and Game

***Comments to the Columbia Basin Hatchery Review Team
On their Draft Assessments and Recommendations for Dworshak,
Kooskia and Hagerman Nations Fish Hatcheries***

29 October 2008

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Dworshak NFH B-run Steelhead

Hatchery and Natural Spawning, Adult Returns

Issue DW4: *Approximately 1.3-1.4 million fertilized green eggs from Dworshak NFH steelhead are transferred to Clearwater FH for eventual outplanting in the Salmon River basin:*

Hagerman NFH and Magic Valley FH respectively receive 215,000 and 830,000 Dworshak NFH steelhead eyed eggs from Clearwater Hatchery for subsequent rearing and release as yearling smolts in the Salmon River basin. The annual transfer and releases of Dworshak NFH B-run steelhead into the Salmon River are inconsistent with the principles of local adaptation and managing hatchery stocks for maximum viability. These transfers also pose genetic and ecological risks to ESA listed natural populations in the Salmon River (e.g., natural populations in the East, South, and Middle Forks of the Salmon River). In addition, neither the Clearwater Hatchery nor Dworshak NFH have the space to rear those outplanted fish. Instead, those fish are reared at Hagerman NFH and Magic Valley State Hatchery in the Hagerman Valley, the water sources for which pose culture problems and increased disease risks to steelhead from the Clearwater River (see Hagerman NFH section of this report).

Recommendation DW4: Discontinue steelhead egg takes at Dworshak NFH for outplanting into the Salmon River basin and develop an alternative long-term strategy for meeting the fishery management goals of those outplants. For example, if the benefits of releasing Dworshak NFH steelhead in the Salmon River are determined to outweigh the risks of those releases to natural populations, then a local Salmon River broodstock derived from Dworshak NFH steelhead should be developed at a location where non-harvested returning adults can be captured efficiently and used for broodstock. Refer to Hagerman B-run steelhead recommendation HA3 and the recommended alternative (Alternative 2) for that program for more information.

IDFG Response to DW4 :

IDFG concurs with the recommendation to build a program and infrastructure (adult capture and holding facilities) for a developing a locally adapted B-run broodstock in the South Fork Clearwater. In fact, the recently ratified US vs. OR management agreement has endorsed that approach as well and fish production and release plans in that agreement have been structured to move in that direction.

IDFG also supports developing a localized broodstock for B-run steelhead releases in the Upper salmon River Basin. Historically anglers in the Salmon River fished for B-run fish destined for the South Fork Salmon and the Middle Fork Salmon. To mitigate for lost opportunity with respect to fishing for large 2-ocean B-run steelhead, IDFG is committed to developing a B run hatchery population that is locally adapted to upper Salmon River Basin. The Upper salmon River Basin is an area we have designated as suitable for hatchery mitigation production for harvest because there is little evidence of viable ancestral natural populations remaining there and releases of hatchery produced B-run fish in the area are spatially segregated far upstream of wild stock sanctuaries in the South Fork Salmon and Middle For Salmon River. We concur with the HRT that the existing annual releases of F1 generation smolts from Dworshak Hatchery into the Upper salmon River is not desirable biologically. While moving the B-run releases to an existing hatchery and adult capture facility (e.g. Pahsimeroi) to accommodate broodstock management is an option, we believe that installing a permanent adult weir and capture facility on the lower East Fork Salmon is a better option. The option for a weir and trapping facility on the lower east Fork Salmon River could be used to

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

capture broodstock for a segregated locally adapted Upper salmon B-run, manage hatchery and natural spawning for the existing integrated East Fork Natural A –run, and exclude A-run fish from the segregated hatchery programs at Sawtooth and Pahsimeroi.

Issue DW5: *Approximately 3,000 to 4,000 fish are trapped currently for broodstock each year; however, only 1200 females need to be trapped to meet all egg take requirements for all release programs. Excess broodstock are taken because females outnumber males by a ratio of approximately 2.3 to 1 (3 females: 1-2 males) and the hatchery spawns all adults pairwise (1 female: 1 male). Approximately 60% of the crosses are required to produce fish for on station rearing, while 40% are required for egg transfers to Clearwater Hatchery. Egg transfers to Clearwater Hatchery eventually result in fish that are outplanted in the S.F. Clearwater River or the Salmon River. Consequently, those latter fish do not contribute to adult returns back to Dworshak NFH, and genetic concerns regarding minimum effective number of breeders do not apply.*

Recommendation DW5: Consider reducing the total number of fish retained for broodstock to achieve a spawning ratio of 2 females to 1 male for adult steelhead retained for the Clearwater Hatchery programs. Although the current spawning protocol is consistent with genetic management guidelines, strict pairwise spawning is not necessary to produce fish for harvest in outplanted areas (e.g., Salmon River). Reducing the total number of fish retained for broodstock is expected to reduce labor and provide additional fish for harvest or direct surplusing to tribes. Adult steelhead spawned for on-station releases at Dworshak NFH should continue to implement pairwise spawning of males and females to maximize the genetic effective number of breeders (N_b) contributing to future generations of steelhead at Dworshak NFH.⁵²

IDFG Response to DW5 :

See IDFG response to DW4. Through time, conversion to localized broodstock for B-run steelhead releases in the Upper salmon River and in the South Fork Clearwater river will result in a need to collect fewer fish for broodstock at the Dworshak facility.

Release and Outmigration

Issue DW10: *Currently, 600,000 Dworshak NFH B-run steelhead smolts, reared at Dworshak NFH, are outplanted directly into the South Fork Clearwater Basin for harvest. In addition, approximately 840,000 Dworshak NFH B-run steelhead smolts , reared at Clearwater Fish Hatchery, are outplanted to several sites in the South Fork Clearwater River (\approx 800,000 smolts) and Lolo Creek (50,000 smolts). Those outplanting programs depend on adult returns to Dworshak NFH for broodstock each year, thus circumventing potential development of a localized South Fork Clearwater broodstock. In addition, the majority of those fish are released in the lower reaches of the S.F. Clearwater River to support terminal fisheries, but no facilities exist in those reaches to recapture unharvested adults. The potential natural spawning of unharvested hatchery-origin steelhead poses unknown genetic and ecological risks to natural populations.*

Recommendation DW10a: Phase out the direct outplanting of Dworshak NFH B-run

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

steelhead into the South Fork Clearwater River and Lolo Creek.

Recommendation DW10b: (i) Increase the number of steelhead smolts released from existing smolt acclimation and adult recapture satellite facilities (i.e., Red and Crooked rivers) and at Dworshak NFH and/or (ii) develop new satellite facilities in the S.F. Clearwater River for acclimating smolts prior to release and for recapturing unharvested hatchery-origin adults. If conservation and viability of naturally-spawning populations of steelhead in the South Fork are comanager goals or priorities, then hatchery-origin steelhead (i.e., from a segregated hatchery program) should constitute no more than 5% of the total number of naturally spawning fish, as per NOAA Fisheries and HSRG guidelines. The Team recognizes the economic costs and logistic difficulties of establishing new satellite facilities, including the monitoring needed to evaluate such programs.

Recommendation DW10c: Develop a localized broodstock of South Fork B-run steelhead derived from adult returns to the South Fork Clearwater River and associated satellite facilities described in Recommendation 9b. If B-run steelhead from Dworshak NFH continue to be outplanted in the S.F. Clearwater River, then those fish should be differentially marked from smolts representing the progeny of adults returning to and trapped in the South Fork. A local South Fork broodstock could be developed and managed as a segregated or integrated population relative to naturally spawning populations in the South Fork Clearwater River (see also recommendations of the independent Hatchery and Scientific Review Group).

IDFG Response to DW10 :

IDFG concurs with recommendation DW10c. (See also IDFG responses to DW4 and DW5)

Hagerman NFH B-run Steelhead

Broodstock Choice and Collection

Issue HA3: *The continual release of Dworshak NFH B-run steelhead into the Salmon River (a) is inconsistent with the principles of local adaptation and managing hatchery stocks for maximum viability, (b) poses biological risks to ESA listed natural salmon and steelhead populations in the Salmon River, and (c) poses straying risks within the Salmon River basin. IDFG analyzed nine years of “complete” B-stock return data to the Salmon River starting with 1989 releases and found that, given similar release numbers, fish derived from returning East Fork fish were recovered in statistically significant greater numbers in the fishery compared to progeny that were from fish spawned at Dworshak NFH.*⁹⁸

Recommendation HA3: If the transfer of Dworshak NFH B-run steelhead eggs to Hagerman NFH continues, then LSRCP cooperators should develop acclimation facilities with adult recapture capabilities at release sites to reduce risks to natural populations (e.g. sites that increase homing and reduce straying). Implementation of this recommendation may necessitate new release sites. Alternatively, fish could be released from existing facilities (e.g., Pahsimeroi Fish Hatchery) that may also allow development of local broodstocks and eventual termination of eyed egg transfers from the Clearwater River basin. Adult recapture capabilities

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

would also assist with assessing adult return rates and potential benefits of the program (see related M&E Rec.

IDFG Response to HA3

See IDFG response to DW 4 :

Incubation and Rearing

Issue HA9 under Recommendations for the Hagerman NFH B-run steelhead program also applies to A-run steelhead.

Issue HA9: The loading (via pumps) and long-distance hauling of steelhead smolts in tanker trucks from Hagerman NFH to the Salmon River (Little Salmon and East Fork Salmon River) results in crowding and potential stress prior to release. Fish are further stressed when water temperatures at the Salmon River release sites are several degrees cooler than the water temperature in the transport truck. Transport over Galena Pass from the Snake River Valley may result in nitrogen supersaturation of the water at lower atmospheric pressures, potentially leading to “gas bubble disease.” In addition, these fish can be infected with the parasite *Nucleospora salmonis* which impairs the immune system. All of these factors may result in poor acclimation and reduced survivals immediately after transport and release into the Salmon River.

Recommendation HA9: Conduct post-release survival studies in the Salmon River to assess survivals within 48 hours after release. For example, live boxes or cages with a random sample of fish could be set up at each release site to assess immediate post-release survival. A random sample of fish should also be sacrificed for assessing physiological stress parameters in the blood at the time of release. Include testing to assess levels of *Nucleospora salmonis* in mortalities and survivors. Dissolved oxygen and nitrogen in the tanker trucks should be measured at the time of departure from Hagerman NFH, at Galena Pass, and at the time of release. A report summarizing the results of these separate assessments should be prepared.

IDFG Response to HA9: While IDFG agrees that long distance smolt hauling may affect smolt survival, we do not see an indication of hauling induced differential survival (based on estimated survival from release to Lower Granite Dam with the use of PIT tags) of fish released from HNFH and other hatcheries, or fish released from HNFH that were hauled over Galena relative to those hauled to the Little Salmon River. While steelhead released into the Little Salmon River do on average (2001-2008) have a higher estimated survival to Lower Granite dam than those released at Sawtooth Hatchery (80% compared to 72% respectively), the difference is not beyond what we would expect due to the shorter migration distance associated with the Little Salmon River release. Relative to other hatcheries, average survival rates are similar. For the migration years 2000-2008 average estimated survival rates for A-run steelhead released from Hagerman, Niagara and Magic Valley fish hatcheries were 72%, 77%, and 75% respectively. Over the same time period estimated survival of steelhead released from Clearwater Fish Hatchery averaged 72%.

Issue HA22: Accurate estimates of the number of hatchery-origin steelhead, both A-run and B-run returning to the Salmon River do not exist for fish reared at Hagerman NFH.

Recommendation HA22a: The Service should continue to work with IDFG to develop PIT tagging protocols that will allow annual estimates of adult returns to the Snake and Salmon

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

ivers, including subsequent reporting of contributions of Dworshak NFH B-run steelhead to fisheries in the Salmon River. The Service has drafted Best Management Practices for the marking and tagging of juvenile salmon and steelhead prior to release. The initial benchmark is a minimum of 15,000 PIT tags for Dworshak NFH B-run steelhead reared at Hagerman NFH. The Best Management Practices should be established as one product of the Biological Opinion for the hatchery program.

Recommendation HA22b: Implement the PIT tag program to monitor downstream migration and smolt-to-adult return rates, including assistance with in-season harvest management.

Recommendation HA22c: The Service should work with states and tribes to develop a PIT tagging program consistent with program goals and objectives and linked to regional goals and objectives, and improve marking technology.

IDFG Response to HA22

IDFG supports Recommendation HA22c. We implemented representative PIT tagging of all brood year 2007 production a LSRP A and B-run hatcheries and at all Idaho Power hatcheries (except Niagara Springs production which will for included for BY 2008). Approximately 140,000 PIT tags will be applied to BY 2008 production. Tagging at these levels will enable managers to estimate smolt survival through the hydro system and adult returns by hatchery/run/release site. PIT tags are not suitable for similar estimates among harvested fish because sample numbers from creel programs are often small and PIT tags are seldom retained in gutted fish seen during creel surveys. IDFG is promoting the implementation of an annual full parentage analysis of all fish used in hatchery broodstocks and assignment of fish to specific hatchery parental pairs in subsequent adult returns. Using this approach, sample size issues become secondary because every hatchery fish is in effect “tagged” and the tag can detected from any tissue sample collected. PIT tagging and genetics based parental analysis are ideally suited for use in concert to estimate hatchery returns to the production are above Lower granite Dam and their subsequent contributions to specific time and area strata in fisheries.

Issue HA23: *Accurate estimates of adult returns of Dworshak NFH B-run steelhead to the Salmon River (harvest and spawning grounds) are not available for fish reared at Hagerman NFH.*

The current sampling rate of coded-wire tags from harvested fish is unknown. From the sampling data that do exist, sampling rates in state and tribal fisheries are appear to be inadequate and inconsistent, and sample monitoring in natural spawning areas is limited. The LSRCP office has advocated a coast-wide recovery goal of 20% from all harvested and recovered fish bearing coded-wire tags.

Recommendation HA23: The Service should continue to work with cooperators to develop the sampling and recovery program for coded-wire tags.

IDFG Response to HA23

IDFG supports increased coded-wire tagging and sampling efforts for estimates of stock specific contributions to harvest. However, in many cases increasing tagging and sampling rates in fisheries, especially in some spatial and temporal strata will not result in enough tag recoveries to make meaningful stock contribution estimates and is not cost effective. IDFG supports

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

development of genetics based full parental analysis of steelhead returns as an alternative to the CWT technology for harvest stock assignment.

Issue HA24: Available data for Dworshak NFH B-run steelhead released into the Salmon River, but reared at Magic Valley State Hatchery, suggest that smolt-to-adult return rates are only 10-15% of those for “A-run” steelhead released into the Salmon River.

Recommendation HA24: Assess existing coded-wire tag and sampling rates to determine the statistical robustness of those estimates, and whether existing tagging and sampling rates are sufficient. Tagging and sampling rates need to be sufficient statistically to minimize the standard errors of the estimates.

IDFG Response to HA24

See IDFG response to HA22 & HA23. Additionally, while adult return rates for B-run fish from Dworshak National Fish Hatchery are significantly lower than A-run fish, they also spend an additional year in the ocean. Furthermore, adults originating from the localized upper Salmon River B-run stock have return rates that are double those observed for the Dworshak Hatchery releases in the upper Salmon River. PIT tag and genetics based analyses will permit far more precise estimates of survival for these groups.

Hagerman NFH A-run Steelhead

Broodstock Choice and Collection

Issue HA29: Hagerman NFH rears A-run steelhead from broodstock collected at Sawtooth and Pahsimeroi Fish Hatcheries. Hagerman NFH is scheduled to receive 1.15 million eyed eggs from Sawtooth Hatchery and 215,000 eyed eggs from Pahsimeroi Hatchery annually. Similarly, Magic Valley Hatchery is scheduled to receive 480,000 and 475,000 eyed eggs from Sawtooth and Pahsimeroi Fish Hatcheries, respectively. Rearing multiple stocks at both facilities creates a “criss-cross” network of egg and fish transfers among broodstock collection facilities, rearing facilities, and release locations that complicates the culture and logistics of rearing and transferring steelhead smolts to multiple locations in the Salmon River. For example, rearing multiple stocks in smaller lots increases inefficiencies in rearing space utilization and marking/tagging programs.

Recommendation HA29: Discontinue rearing Pahsimeroi A-run steelhead at Hagerman NFH and rear all Sawtooth A-run steelhead released in the Salmon River at Hagerman NFH. This could be accomplished by the following: (a) transfer the responsibility of rearing 200,000 Pahsimeroi A-run steelhead from Hagerman NFH to Magic Valley Fish Hatchery, (b) discontinue rearing Dworshak NFH B-run steelhead (200,000 smolts) at Hagerman NFH (see recommendation DW4 and recommended Alternative 6 for the Dworshak B-run program at Hagerman NFH), (c) discontinue rearing Sawtooth A-run steelhead at Magic Valley Fish Hatchery, and (d) rear up to an additional 400,000 Sawtooth A-run steelhead smolts at Hagerman NFH (see also Recommendation HA29a).

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

IDFG Response to HA29: We do not feel that rearing individual stocks at more than one facility creates undue logistical constraints but rather maintains a safety net in the event of catastrophic loss.

Issue HA30: *Egg take shortages at Sawtooth and Pahsimeroi Hatcheries, two sources of eyed eggs for Hagerman NFH, are backfilled with eyed eggs from Oxbow Hatchery in the Hells Canyon area of the Snake River when adult returns to Sawtooth and Pahsimeroi hatcheries are insufficient to meet eyed egg objectives at Hagerman NFH and Magic Valley FH. In addition, Sawtooth and Pahsimeroi eggs may each be used to backfill shortages at the facility. Backfilling of egg shortages among hatcheries is inconsistent with the principles of local adaptation and is expected - in the long run - to prevent individual stocks from attaining their respective viability potentials, thus reducing smolt-to-adult return rates. "Backfilling" can occur at several stages in the culture cycle because fish from each facility are not differentially marked or tagged prior to release; for example, "backfilling" can occur when (a) eyed eggs are shipped to Hagerman NFH, (b) fish from one hatchery (Sawtooth, Pahsimeroi, or Oxbow) are released at the adult collection site for another hatchery, or (c) fish are released in areas (e.g., mainstem Salmon River) that results in adults straying into a another facility.*

Recommendation HA30: Discontinue backfilling egg take shortages at Sawtooth and Pahsimeroi fish hatcheries to meet facility capacities at Hagerman NFH. Sawtooth A-run steelhead, Pahsimeroi A-run steelhead, and Oxbow A-run steelhead should be managed as three distinct broodstocks to maximize local adaptations and individual stock viabilities. Backfilling of egg shortages for broodstock should only occur as an emergency conservation measure when adult returns to a particular hatchery are sufficiently low over multiple years to increase genetic and demographic risks to the hatchery stock itself. If backfilling is used to meet fishery or other mitigation responsibilities in the upper Salmon River, then fish resulting from backfilled eggs should be reared separately and given differential marks or tags to exclude the non-origin fish from the local broodstock when those fish return as adults to the backfilled facility.

IDFG Response to HA30: Keeping in mind that the Sawtooth-A, Pahsimeroi-A and Oxbow-A stocks were all founded from the Hells Canyon (Snake River) ancestral stock, IDFG currently manages to maintain separate Sawtooth A, Pahsimeroi A and Oxbow-A stocks. Broodstock collection for the upper Salmon River Sawtooth-A and Pahsimeroi-A programs come exclusively from adults collected at Sawtooth and Pahsimeroi Fish Hatcheries. Since 2000 all fish released from Sawtooth Fish Hatchery have been Sawtooth-A stock. Additionally, between 1997 and 2000, the Pahsimeroi-A component represented less than 10% of the Sawtooth Fish Hatchery releases. Sawtooth-A stock has never been used to supplement the releases at Pahsimeroi Fish Hatchery. Since 1994, fish released at Hells Canyon Dam have come exclusively from adults trapped at Hells Canyon Dam with the exception of one year in which Sawtooth-A stock was used to supplement the release.

Hatchery and Natural Spawning, Adult Returns

Issue HA31: *Eyed eggs transferred to Hagerman NFH from Sawtooth Fish Hatchery may not accurately represent all the adults returning to Sawtooth Hatchery. For example, for brood year 2007, eyed eggs transferred to Hagerman NFH were from only 8 of 12 spawn takes at Sawtooth Fish Hatchery. However, Sawtooth A-run steelhead reared at Hagerman NFH are*

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

the source of future broodstock at Sawtooth Fish Hatchery and should accurately represent all egg takes from adults trapped and spawned at the hatchery.

Recommendation H31: Transfer eyed eggs from all spawn takes at Sawtooth Fish Hatchery to Hagerman NFH for rearing and subsequent release as smolts at Sawtooth FH. If Recommendation HA27 is implemented, then all Sawtooth A-run steelhead would be reared at Hagerman NFH, facilitating implementation of Recommendation HA29 described here.

IDFG Response to HA31: IDFG agrees that broodstock used to create the Sawtooth Fish Hatchery release should represent the entire run of adults the return to the Sawtooth Hatchery Weir.

Release and Outmigration

Issue HA32: *The interior Columbia River Technical Recovery Team (ICTRT) has identified the mainstem Salmon River and tributaries upstream of the East Fork Salmon River as a “demographically independent population”, distinct from the East Fork and the mainstem Salmon River downstream of the East Fork, for the purpose of recovering the Snake River steelhead “distinct population segment” (DPS). The unintended residualism of smolts and potential natural spawning of Sawtooth A run steelhead in tributaries with listed salmon and steelhead poses ecological and genetic risks to ESA listed populations.*

Recommendation HA32: Discontinue the release of Sawtooth A run steelhead in the mainstem Salmon River where opportunities to recapture unharvested adults do not exist. Restrict the release of Sawtooth A-run steelhead to (a) immediately below the weir at Sawtooth Hatchery to support downstream fisheries and provide sufficient numbers of returning adults back to Sawtooth Fish Hatchery for broodstock, and (b) other areas consistent with recovery strategies for ESA listed salmonids in the Salmon River.

IDFG Response to HA32: The only offsite releases in the upper Salmon River (Yankee Fork Salmon River) of Sawtooth-A steelhead released from Hagerman National Fish Hatchery (HNFH) are those established as part of negotiations through the US v OR process. These releases are in Yankee Fork, not in the mainstem Salmon River. It is likely that these tributary releases return to the with some fidelity to the Yankee Fork . Furthermore, the Shoshone/Bannock Tribe has included the development of localized broodstock for both Chinook and steelhead in their proposed list of fish and wildlife projects.

IDFG acknowledges some of the potential biological risks that off-site hatchery releases pose to natural populations. Nevertheless, IDFG also views off-site releases as a potential management tool for hatchery releases designed to mitigate for lost fishing opportunities. We are opposed to taking the option for well designed off-site releases off the table. .

Issue HA33: *Sawtooth A-run hatchery steelhead are released at several locations (e.g., Yankee Fork, mainstem Salmon River downstream from East Fork Salmon River) that preclude collection of returning adults for broodstock at Sawtooth Fish Hatchery. Those off-site releases reduce the ability to meet broodstock collection goals at Sawtooth Fish Hatchery in low adult return years if the total number of fish released from Sawtooth Fish Hatchery is reduced to meet off-site release objectives.*

Recommendation HA33: Establish Sawtooth Hatchery as the *first priority* for releases of

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Sawtooth A-run steelhead. This is particularly important in brood years resulting from low numbers of returning adults. In addition, when the number of adult steelhead trapped at Sawtooth Fish Hatchery is insufficient to meet all release objectives for Sawtooth A-run steelhead in the upper Salmon River (i.e., upstream from the East Fork Salmon River), a portion of their progeny released at Sawtooth Fish Hatchery can be unmarked (unclipped adipose fish) but 100% tagged with coded-wire tags to increase survival through the fisheries and allow their identification at the hatchery (see also Recommendation HA28 regarding “backfilling” of egg shortages). Reduce the total number of release sites for Sawtooth A run steelhead in the Salmon River (see Recommendation HA30) and/or reduce the number of fish released at off-station locations when the total number of smolts available for release is below program objectives.

IDFG Response to HA33: As stated in the IDFG response to HA32, there is only one offsite release of Sawtooth-A steelhead in the upper Salmon River released from HNFH and it is negotiated through the US v OR process.

Issue HA34: According to the co-managers’ 2008 Annual Operations Plan for the Salmon River, 170,000 and 50,000 Sawtooth A-run steelhead smolts are intended to be released in the Yankee Fork and Valley Creek, respectively, with intact adipose fins and no coded (or blank) wire tags (3,200 of those 220,000 smolts will carry PIT tags). [Note: 140,000 of those fish are reared at Hagerman NFH and 80,000 are reared at Magic Valley FH.] Similarly, 200,000 (reared at Hagerman NFH) and 60,000 (reared at Magic Valley Fish Hatchery) Pahsimeroi A-run steelhead with intact adipose fins and no wire tags are intended to be released into the Little Salmon River and Slate Creek, respectively (7,100 of those 260,000 smolts will carry PIT tags). The release of large numbers (≈470,000) of unmarked and untagged smolts in the upper Salmon River precludes accurate assessments of program benefits and risks related to co-manager goals for harvest and conservation.

Recommendation HA34: Mark or tag all A-run steelhead reared at Hagerman NFH and released into the Salmon River. This recommendation applies also to all hatchery-origin fish released into the Salmon River.

IDFG Response to HA34: All adipose-intact releases from HNFH resulted from negotiations through the US v OR process. Under the current US v OR agreement: 1) 440,000 Sawtooth-A steelhead are to be released into Yankee Fork of which 220,000 will have adipose fins intact and 2) up to 650,000 Pahsimeroi-A and Oxbow –A steelhead will be released into the Little Salmon River and are to be 100% adipose fin clipped.

Issue HA35: Pahsimeroi stock steelhead reared at Hagerman NFH are released into the Little Salmon River. However, if Recommendation HA27 is implemented, Pahsimeroi steelhead will not be reared at Hagerman NFH and only Sawtooth steelhead would be reared.

Recommendation HA35: Discontinue the release of A-run steelhead from Hagerman NFH into the Little Salmon River as part of the reprogramming outlined in Recommendation HA27.

IDFG Response to HA35: We believe the reviewers are referencing HA29 and not HA27. If that is the case, see the IDFG response to HA29

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Research, Monitoring, and Accountability

Issue HA36: *Coded-wire tagged fish may not accurately represent all progeny groups released from Hagerman NFH. Currently, a total of 80,000 Sawtooth A-run steelhead in only four of 48 raceways at Hagerman NFH are given coded-wire tags (of the 810,000 smolts released at Sawtooth FH). Because the fish in different raceways can differ (e.g., mean age and size) and the pond environments can differ slightly (e.g., flow index and flow pattern), the practice of tagging fish in just a few raceways may not represent the entire population for that brood year. In most NFH production programs, salmon are spawned throughout the adult return to ensure that most segments of the run are represented in the resulting progeny. This procedure usually results in many different spawn “takes”. The fry are ponded by take/hatch date into a series of raceways that, when fully populated, differ in age and size of fish (initially) between raceways. Production monitoring using coded-wire tags requires that the tags represent the entire population*

Recommendation HA36: Idaho Department of Fish and Game should consult with the staff at Hagerman NFH, the Idaho Fishery Resource Office (Ahsahka, ID), and the tagging crew at the Columbia River Fisheries Program Office (Vancouver, WA) to ensure that the tagging strategy at Hagerman NFH accurately represents the entire population of progeny from all spawn groups for a particular brood year. For example, all spawn groups should be proportionately represented among tag groups and raceways.

IDFG Response to HA36: IDFG agrees with the reviewers that CWT mark groups should represent the entire release. IDFG has already initiated a process to reevaluate marking strategies and will be working with Service and tribal cooperators on this endeavor.

Issue HA37: *The tagging of A-run steelhead reared at Hagerman NFH is not consistent among brood years. In some years, A-run steelhead are given coded-wire tags (CWTs) with unique codes according to release sites. In other years, they are not.*

Recommendation HA37: Apply CWTs with different tag codes according to broodstock origin (e.g., Sawtooth vs. Pahsimeroi Fish Hatcheries), rearing location (e.g., Hagerman NFH vs. Magic Valley FH), and release location (e.g., Sawtooth FH weir vs. Yankee Fork). Alternatively, PIT tags would accomplish the same task if sufficient numbers of PIT tags were applied to assess adult returns, contributions to harvest, and return rates to release locations.

IDFG Response to HA37: Steelhead with CWT released from HNFH are given unique codes relative to broodstock origin, release site, and rearing hatchery. These are protocols established by the regional CWT marking committee.

Issue HA38: *Currently, monitoring and evaluation of the physiological effects of transport and post-release survival of Sawtooth (or Pahsimeroi) A-run steelhead in the Salmon River do not occur (see Issue HA9). Transport over a high elevation pass (>8,000 feet) and water temperature differences between the tanker truck and Salmon River release sites creates uncertainties regarding the physiological ability of released fish to survive the first 24-48 hours after release. A PIT tag program is being established in 2008 to assess outmigrant survival of A and B-run steelhead to lower Granite Dam, but those studies are not designed to evaluate physiological stress and immediate post-release survival at the release sites.*

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

Recommendation HA38: The Service should collaborate with the tribes and IDFG to perform post-release survival studies. Such studies should include measures of physiological stress at the time of release, ability of the released fish to acclimate physiologically to the receiving water as a function of temperature differences between the truck tank water and stream water, and predation risks – including angling – in the vicinity of the release sites (see also Recommendation HA9).

IDFG response to HA38: See IDFG response to HA9 above

Issue HA39: *The outplanting of steelhead into the Yankee Fork and other locations where non harvested fish cannot be recaptured (e.g., Little Salmon River, Valley Creek) poses genetic risks to natural populations that may exist in the immediate vicinity of the release sites (Note: Habitat characteristics in those outplanted streams may have historically precluded self sustaining natural populations). Specific conservation and harvest goals for those outplants have not been explicitly stated. The extent that outplanting increases straying to populations outside the target return areas is unknown.*

Recommendation HA39: Evaluate the benefits versus risks of outplanting Sawtooth A-run steelhead into the Yankee Fork, Valley Creek, and Slate Creek (see Recommendation HA33). Discontinue the release of steelhead into those streams if those outplants yield no measurable benefit, or the benefits of those outplants do not outweigh the risks. [Note: If Recommendations HA27 and HA33 are implemented, then fish reared at Hagerman NFH would not be released into the Little Salmon River.]

IDFG Response to HA39: See IDFG response to HA32 and HA33 above

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

03/02/2007 14:01 FAX

002/005

The SHOSHONE-BANNOCK TRIBES

FORT HALL INDIAN RESERVATION
PHONE (208) 478-3700
FAX # (208) 237-0797



FORT HALL BUSINESS COUNCIL
P.O. BOX 306
FORT HALL, IDAHO 83203

14 November 2008

Michael Schmidt
CB Hatchery Review Team Facilitator
Long Live the Kings
1326 Fifth Avenue, Suite 450
Seattle, WA 98101

Subject: Idaho National Fish Hatcheries

Mr. Schmidt

The Tribes are pleased to have reviewed and provided comments on the Columbia River Hatchery Review Team's (HRT) assessments and recommendations for Dworshak, Kooskia, and Hagerman National Fish Hatcheries. The Tribes believe that hatchery reform is critically necessary to maintain sustainable fisheries while promoting recovery and conservation of natural populations of salmon and steelhead. While conducting these assessments, the HRT also needs to consider the U.S. vs. Oregon production agreements and Columbia Basin Fish Accords in consideration of all programs. We support the continued review of the remaining Columbia River Basin hatcheries and implementation of hatchery reform and provide the following comments.

We identified and developed 41 total comments primarily for three sections: Salmon River Overview, Hagerman B-run Steelhead program, and the Hagerman A-run Steelhead program. These comments are provided in the enclosed spreadsheet listed by page number and relevant section.

After reviewing the recommendations for the Hagerman B-run Steelhead program, the Tribes recommend an alternative to the current program that incorporates a combination of alternative one, two, and three. Under this change, we propose to continue with the current program while developing a localized broodstock in the East Fork Salmon River with the potential of integrating native B-run steelhead from the South and Middle Forks. This modified alternative would continue to provide fishing opportunities for B-run steelhead, eventually eliminate the need for Dworshak National Fish Hatchery (NFH) broodstock, increase survival over time, reduce potential straying rates, and provide a mechanism for conservation of native steelhead stocks. In the interim, there needs to be

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

03/02/2009 14:01 FAX

003/005

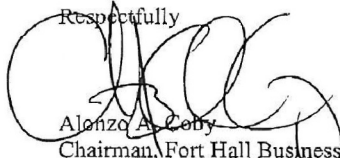
increased monitor and evaluation activities to quantify B-run steelhead harvest benefits relative to A-run steelhead.

As for the Hagerman A-run Steelhead program, the Tribes are willing to support alternative one with the following modifications: Continue to support the Tribal program in the Yankee Fork (YF) and support the development of a localized broodstock in YF through integration of Sawtooth hatchery-origin and YF natural-origin adults. This program would continue to provide fishing opportunities for Tribal and recreational fisheries as well as provide a means for conservation of native stocks of steelhead. The Columbia Basin Fish Accord with the Shoshone-Bannock Tribes identifies the construction of an adult trapping facility in the YF and a hatchery at Crystal Springs to promote development of localized broodstock and provide acclimation for juveniles and adult holding and spawning.

The Tribes support future hatchery evaluations and will continue to provide comments and concerns to the Columbia Basin HRT. If you have any technical questions please feel free to contact Lytle Denny, Anadromous Fisheries Manager, at 208-239-4560 (ldenny@shoshonebannocktribes.com) or policy questions contact Claudio Broncho, Fish and Wildlife Policy Representative, at 208-239-4563 (cbroncho@shoshonebannocktribes.com).

Thank you for your consideration.

Respectfully



Alonzo A. Coffy
Chairman, Fort Hall Business Council
Shoshone-Bannock Tribes

Enclosure
Cc: FHBC (7)
Attorneys
SBT Fish and Wildlife Department

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

03/02/2007 14:02 FAX

004/005

Shoshone-Bannock Tribes
November 14, 2008
HRT Comments

| Comment # | Page | Section | Comment |
|-----------|------|-----------------------------------|--|
| | | Salmon River Overview | |
| 1 | 142 | Watershed | Need to have a map of the watersheds since they are different than the ICTRT MPG and populations for Chinook, Steelhead, and Sockeye as this gets confusing in the descriptions to follow. |
| 2 | 142 | Steelhead | Hatchery-origin steelhead resulting.....support significant recreational and tribal fisheries..... |
| 3 | 142 | Steelhead | The Tribes harvest about 300 steelhead/year in the East Fork, Yankee Fork, and Upper Salmon fisheries |
| 4 | 142 | Spring/Summer Chinook | The heading should read Spring/Summer Chinook salmon |
| 5 | 142 | Spring/Summer Chinook | The South Fork Salmon River has been the most consistent tribal fishery since 1992. |
| 6 | 143 | Spring/Summer Chinook | Sport fishing for wild.....in 1975. Shoshone-Bannock Tribal harvest of wild chinook salmon has always occurred, except at a significantly reduced level from about 1980-1997. |
| 7 | 143 | Spring/Summer Chinook Salmon | This is not the first time the ICTRT is referenced and author should consider moving the full name to the first reference point and all points thereafter reference ICTRT. |
| 8 | 143 | Spring/Summer Chinook Salmon | Portions of the.....are inaccessible due to physical blockage, dewatering or severe water quality limitation. The HRT should not portray that the Salmon River sub-basin contains alot of physical blockages, when indeed this watershed is extremely healthy and has very few habitat problems as a whole. |
| 9 | 143 | Spring/Summer Chinook Salmon | Twenty-two Chinook populationsare identified. This should be separate paragraph with a small description of why the ICTRT classified 22 populations. |
| 10 | 143 | Spring/Summer Chinook Salmon | The paragraph, "Chinook salmon of the upper Salmon River," contains information about the ICTRT population delineations and should be combined with comment number 9. There are nine populations in the Upper Salmon River Major Population Group (MPG): Panther Creek, North Fork Salmon River, Lemhi River, Salmon River Lower Main, Pahsimeroi River, East Fork Salmon River, Yankee Fork Salmon River, Valley Creek, and Salmon River Upper Main. |
| 11 | 143 | Spring/Summer Chinook Salmon | The HRT should have one paragraph about the Salmon River MPGs and all 22 populations, with additional paragraphs discussing the status of each MPG and populations. |
| 12 | 143 | Conservation | Recommend a map of the MPGs and populations as classified by the ICTRT for each species. |
| 13 | 144 | Sockeye salmon | The Shoshone-Bannock Tribes petitioned to have Sockeye Salmon located in the Salmon River listed under the ESA in 1991. Snake River sockeye salmon.....in the world..... |
| 14 | 144 | Steelhead | The Upper Salmon River and Upper Salmon watershed appear to be different areas. Reconsider using the Upper Salmon River area as defined by everything above the confluence with the Middle Fork Salmon River. This would be the same for comment number 9. The HRT should give a description of the Salmon River MPG and populations and reference this with the table on pg. 145. |
| 15 | 145 | Steelhead | The table needs to be referenced in the document with comment # 13 and include a label and description. |
| 16 | 146 | Habitat | There seems to be a lot of focus on the East Fork Salmon River and Little Salmon River watersheds? If there is a real reason for this emphasis, the HRT should elude to this in the opening habitat paragraph. |
| 17 | 146 | Current Status of Salmonid Stocks | We disagree with the classification of 17 stocks as proposed. To keep this section consistent the HRT should included 22 stocks for natural and hatchery Snake River spring/summer chinook (this includes the South Fork, Pahsimeroi, and Sawtooth hatcheries, JCAPE, and YFCSS), 1 additional stock for hatchery-origin Rapid River, 12 stocks for natural-origin Snake River Steelhead, 2 stocks of hatchery-origin steelhead (Pahsimeroi and Sawtooth), one stock for natural/hatchery Snake River Fall Chinook, and one stock for natural/hatchery Snake River Sockeye Salmon. Oxbow FH is not located within the Salmon River which is the basis for this section. |
| 18 | 147 | Current Status of Salmonid Stocks | Traditionally, two prominent Snake River Steelhead life history..... |
| 19 | 148 | Current Status of Salmonid Stocks | Delete Idaho HGMP and start this sentence with Minimum abundance thresholds..... and reference the table. Also need to add a table heading and description. After this sentence include the minimum abundance thresholds for A-run steelhead in the MPG and include a table for A-run steelhead with appropriate referencing. |
| 20 | 152 | Secondary Purposes | The Shoshone-Bannock Tribes strongly supports the re-introduction of chinook salmon above the Hells Canyon Complex and place a high conservation value on this stock. |
| 21 | 153 | Harvest | The Tribal chinook fishery, prior to 1976 was not limited to any harvest guidelines, dates, tributaries, or specific seasons. The fishery was managed solely by the individual tribal fisherman harvesting only what was needed for subsistence. In 1976, the Shoshone-Bannock Tribal chinook salmon fishery was regulated by the number of salmon a family could catch and all areas were considered open with no formal season established. Prior to 1981, the Shoshone-Bannock Tribes considered all areas of the Snake River open to chinook salmon fishing and harvest is largely unknown. From 1981 - 1986, the Tribes curtailed fishing in the South Fork Salmon River to rebuild natural populations. Fishing was re-initiated in 1987 for both hatchery and natural-origin chinook salmon. The number of hatchery fish harvested from 1987-2008 ranges from 0 - 1,359 (average = 266) and the number of natural-origin fish harvested ranges from 0 - 313 (average = 62). Harvest according to the ten-year average (1999-2008) increased to 513 hatchery and 109 natural fish. |
| 22 | 154 | Type | Sho-Ban Tribe should be Shoshone-Bannock Tribes |

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

03/02/2007 14:02 FAX

005/005

Shoshone-Bannock Tribes
November 14, 2008
HRT Comments

| | | | |
|----|-----|-----------------------------------|---|
| 23 | 154 | Secondary Purposes | The Shoshone-Bannock Tribes Dollar Creek Supplementation Program is intended to supplement natural-origin chinook salmon in the South Fork Salmon River by releasing eggs and allowing natural-selection to select successful progeny to survive. |
| 24 | 155 | Biological Significance | The Middle Fork Salmon River is located.....and is managed by IDFG and the Shoshone-Bannock Tribes as a |
| 25 | 156 | Harvest | The Tribal chinook fishery, prior to 1978 was limited solely by the individual tribal fisherman harvesting only what was necessary for subsistence in all areas of the Snake River. In 1978, the Shoshone-Bannock Tribes established sanctuary areas (curtailed to fishing) for the following streams from 1978-1983: South Fork Salmon River, Johnson Creek, Marsh Creek, Big Creek, Camas Creek, Loon Creek and the mainstem Middle Fork Salmon River and Bear Valley Creek. Over the next several years, fisheries were re-establishing in Bear Valley Creek (1981), Marsh Creek (1983), and South Fork Salmon River (1983). Tribal harvest currently occurs in Bear Valley Creek, Marsh Creek, Loon Creek and Camas Creek, although all areas are open. |
| 26 | 156 | ESA Status | The Shoshone-Bannock Tribes operate the Yankee Fork Chinook Salmon Supplementation Project, where they are re-establishing a spring run of chinook salmon using Sawtooth hatchery-origin chinook. |
| 27 | 178 | Other species of concern | Delete the comment about the Northern Idaho Ground Squirrel, as it is irrelevant. |
| | | Hagerman B-run Steelhead | |
| 28 | 184 | Hatchery and Natural Spawning | Current IDFG reports for harvest data are 5+ years out of date..... The Shoshone-Bannock Tribes are the primary beneficiary of the B-run steelhead release in the lower East Fork Salmon River. Proper funding for monitoring and evaluation is necessary to report benefits. |
| 29 | 201 | Recommendation HA18 | The Tribes need to be included in the monitoring and evaluation of B-run steelhead as well as included on the HRT. The states, tribes, and feds need to mutually develop a clear M & E plan and roles. |
| 30 | 201 | Recommendation HA20 | The states, feds, and tribes need to work together to develop protocols for estimating and monitoring the abundance and productivity of natural populations of steelhead in the Salmon River basin. The Shoshone-Bannock Tribes are already implementing DNA parentage analysis to determine the effects from hatchery steelhead in other tributaries and could take a lead role in development of a proper M & E plan. |
| 31 | 202 | Recommendation HA21 | The states, feds, and tribes need to work together on a proper M&E plan with appropriate tagging representation for each group released in the Salmon River. The IDFG should not solely develop the mark plan without input from other co-managers. |
| 32 | 202 | Recommendation HA22 | Again a proper M&E plan developed by the states, feds, and tribes will outline the PIT tagging protocols that will allow annual estimates of adult returns to be made. |
| | | Hagerman A-run Steelhead | |
| 33 | 216 | Research, Education, and Outreach | The Shoshone-Bannock Tribes.....instream "egg boxes" Should say "streamside upwellers." |
| 34 | 217 | Harvest Benefits | The Tribes harvest about 300 steelhead/year in the East Fork, Yankee Fork, and Upper Salmon fisheries. |
| 35 | 222 | Recommendation HA30 | Due to increased survival and adult returns to the SFH, backfilling should be unnecessary except for emergency situations. |
| 36 | 222 | Recommendation HA31 | In 2006, adult spawning for HNFH at SFH was conducted on each spawn day to represent entire run. |
| 37 | 223 | Recommendation HA32 & HA33 | Continue tribal programs in the Yankee Fork and various tributaries. Near future, Yankee Fork will have a permanent weir to capture returning adults and develop localized broodstock. If necessary, develop a sliding scale based on broodstock level to determine priority release locations until Yankee Fork is fully functional. |
| 38 | 223 | Recommendation HA34 | Currently for Yankee Fork 140K are unclipped and 100K are clipped. Visually there is a return to Yankee Fork of 7:1 unclipped to clipped due to less susceptibility to be harvested in downriver fisheries. A higher proportion of the 140K should be PIT and CWT tagged to collect necessary M&E information. The Tribes would request more funding to properly collect and analyze data. |
| 39 | 225 | Recommendation HA36 | The Tribes should be included to analyze amount of tags for spawn and release groups. |
| 40 | 225 | Recommendation HA36 | The Tribes could easily develop and perform post-release survival studies for the Yankee Fork as smolts are released into two Pond Series instead of the mainstem. |
| 41 | 225 | Recommendation HA39 | With additional funding the Tribes would be able to fully monitor harvest to determine benefits in Yankee Fork, Valley Creek, and Slate Creek. With the addition of a permanent weir in the Yankee Fork, quantifiable numbers of returning adults could easily be collected through trapping. |

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

Army Corps of Engineers

Subject: Comments on Draft Report: Dworshak, Kooskia, and Hagerman
National Fish Hatcheries Assessments and Recommendations, August 2008

Overall:

“The Dworshak Fish Hatchery (Hatchery) was constructed by the U.S. Army Corps of Engineers (Corps) to mitigate impacts to steelhead and rainbow trout that resulted from Dworshak Dam construction. The actual hatchery sizing for mitigation was to rear the offspring from the average of the adult return to the dam site from 1967 through 1971.

The Corps owns and provides funding to the U.S. Fish and Wildlife Service (Service) to operate and maintain the Hatchery. However, the Corps was not consulted with during the development of this draft report. As a result, any plans regarding implementation or alterations that may occur as a result of this Draft Report need to be further coordinated with the Corps.”

Please place the two above paragraphs at the beginning of both the “Summary” and “Introduction” sections.

Specific Technical Comments:

1. Page V, third paragraph, third line. After Dworshak need to add a footnote stating, “Dworshak Fish Hatchery was constructed by the Corps of Engineers and is operated as part of the FCRPS. Technically it is not part of the National Fish Hatchery System.”
2. Page 1, end of third paragraph. Need to add a sentence stating that the hatchery reviews were not coordinated with owners of hatcheries prior to preparation of a public draft. See “Overall” section above for additional information.
3. Page 5, third paragraph. The Corps of Engineers should have been included in this process.
4. Page 12. Third paragraph under Watershed Description. Need to clarify that salmon were already extirpated from the North Fork Clearwater River when Dworshak Dam was constructed.
5. Not sure where this should go. Perhaps in a new “Hatchery History Section”? A brief history for steelhead mitigation and releasing of Dworshak steelhead is needed. This section should include the following: Up to about 1984 or 1985 all steelhead were released directly from the hatchery. Then due to improved returns, congestion problems along the lower Clearwater River from the increased sport fishery caused tremendous traffic and other congestion problems. Harvest success also dropped due to harassment of the fish. This all resulted in many more fish returning to the hatchery than required for hatchery uses, and

USFWS Columbia Basin Hatchery Review Team

Lower Snake NFHs Assessments and Recommendations Report – June 2009

problems with what to do with all of the fish. A task force was formed in 1983 to review the problems with final recommendations to release about half of the hatchery steelhead production upstream of the hatchery in the Mainstem areas of the Clearwater River. These outplants have continued and are considered mitigation releases as long as supplementation activities are not included. Releasing fish in Lolo Creek is a supplementation activity and according to the Corps authorizations and MOU with the Service, should be funded by the Service.

6. Page 17. Should add a footnote that coho production is not an authorized program at Dworshak Fish Hatchery. Same comment for coho write-up on page 28.

7. Page 42. Should add U.S. Army Corps of Engineers to the title in last paragraph. Change second sentence to “The hatchery was constructed by the Corps of Engineers in 1969”. Should specify that the Corps funds only steelhead and rainbow trout mitigation for Dworshak Dam, not all activities. Also delete direct funding from BPA as irrelevant.

8. Page 43. Do not believe Kooskia Hatchery is a LSRCP facility as stated in title.

9. Page 45. Dworshak Fish Hatchery does not have established adult return goals commensurate with LSRCP mitigation goals. Any adult return estimates should be noted that they are what the Service calculated should return from the present hatchery production. Actual hatchery sizing for mitigation was to rear the offspring from the average of the adult return to the dam site from 1967 through 1971.

10. Page 53, second bullet under Release and Outmigration. Should note that these fish are released as supplementation, not mitigation.

11. Page 54, bottom area of page. States there are 84 Burrows ponds and 40 raceways. If steelhead are reared in the Burrows ponds, and Chinook are reared in 30 raceways, what are the other 10 raceways used for?

12. Page 58, first bullet. Second sentence should be rewritten to clarify that these are adult returns from hatchery releases, not actual percent of the steelhead released from the hatchery.

13. Page 62, Issue DW1. Not really correct. The 20,000 fish to return to the Clearwater Basis is what Bill Miller calculated is a reasonable number, but is not an official “mitigation goal”.

14. Page 63. Issue DW3. Rearing coho is not an authorized Dworshak Fish Hatchery program.

15. Page 67. Recommendation DW12. Installing a gravity feed pipeline will not save any dollars in energy. It is actually a net loss in energy as running the water through the turbine units at the dam and then pumping the water at the hatchery generates more power than reclaiming lost power production with a turbine on the pipeline. Adding a gravity feed water supply may be the best option for the hatchery, but will be very expensive. Recent cost

USFWS Columbia Basin Hatchery Review Team
Lower Snake NFHs Assessments and Recommendations Report – June 2009

estimates as discussed by the Service in a recent Columbia Basin Bulletin article are inaccurate.

16. Page 72. Issue DW29. Dworshak Fish Hatchery is owned and funded by the Corps of Engineers. It is not a Service facility. As such it is signed in accordance with the Corps' sign manual. We will be more than happy to replace the sign on assumption of ownership and funding responsibility by the Service.

17. Page 72. Alternatives to Current Program. First paragraph should note that the alternatives are Service suggestions on various alternatives for the hatcheries but may not be in line with facility authorizations. Some alternatives may require the Service to fund them.

18. The Service proposes (Alternative 2, page 73) reducing the steelhead mitigation program and increasing the spring Chinook or coho program. Before such recommendations are written in a document seeking public comment, discussion with the Corps should have occurred to ensure consistency with Corps mitigation requirements and Corps authorizations.

Pacific Region Fishery Resources
911 NE 11th Avenue
Portland, OR 97232
503/872.2763
E-Mail: Don_Campton@fws.gov

U.S. Fish and Wildlife Service
www.fws.gov

For Columbia River Basin Hatchery Review Information
www.fws.gov/pacific/Fisheries/Hatcheryreview/

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.

June 2009

