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Lower Snake River Compensation Plan

Final Proposal Review

for the

Columbia Plateau, Blue Mountain, and Mountain Snake Provinces

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The Review Process	1
LSRCP Production Targets	2
General Findings of the ISRP review	4
Multiple Mandates	4
Program Success To Date	5
Proposal Preparation and the ISRP Review Process.....	5
Stock Origin and Stock Transfers	6
LSRCP Monitoring and Database Issues	6
Final ISRP Recommendation: LSRCP Programmatic Status Review and Immediate Data Management Review	6
 ISRP Review of Individual LSRCP Proposals	 7
LSRCP Columbia Plateau Project Proposals.....	7
Lyons Ferry - Mainstem Snake.....	7
Tucannon Hatchery.....	8
Walla Walla	9
 LSRCP Blue Mountain and Mountain Snake Project Proposals	 11
United States Fish and Wildlife Service Proposals.....	11
Idaho Department of Fish and Game Proposals	12
Washington Department of Fish and Wildlife Proposals	15
Oregon Department of Fish and Wildlife Proposals.....	17
Nez Perce Tribe Proposals	19
Confederated Tribes of the Umatilla Indian Reservation Proposal	21

Lower Snake River Compensation Plan Final Proposal Review

The Review Process

The Lower Snake River Compensation Plan (LSRCP) is a complex program to compensate for losses of fish in the Columbia and Snake Rivers due to construction and operation of the hydroelectric system. The LSRCP oversees operation and maintenance expenses for ten hatcheries and sixteen satellite facilities. The projects include adult trapping and juvenile acclimation and release facilities on/or for the lower Snake, Salmon, Clearwater, Walla Walla, Grande Ronde, Imnaha, Tucannon, Touchet, and Walla Walla subbasins. The program was initiated in response to the Water Resources Development Act of 1976, Public Law (P.L.) 94-587, which Congress adopted to mitigate and compensate for fish and wildlife resource losses caused by the construction and operation of the four federal dams in the lower Snake River -- Ice Harbor (1961), Lower Monumental (1969), Little Goose (1970), and Lower Granite (1975) dams. The fisheries mitigation provisions of the act have evolved into a highly complex program involving several co-managers.

In 1998, the U.S. Congress' Senate-House conference report on the fiscal year 1999 Energy and Water Development Appropriations bill directed the ISRP to annually review all fish and wildlife projects, programs, or measures included in federal agency budgets that are reimbursed by Bonneville. The LSRCP is a major component of this portion of Bonneville's program and, thus, is subject to review by the ISRP to determine whether LSRCP proposals are consistent with the criteria specified for direct program projects in the 1996 amendment.

In April 1999, the ISRP completed its first "Reimbursable" review, which was limited to a description of the program elements and recommendations to reschedule and improve the review for the next year (see www.nwcouncil.org/library/isrp/isrp99-1.htm). This review responds to many of the recommendations raised by the ISRP in its first report. For example, the LSRCP submitted proposal forms consistent with those submitted for Fish and Wildlife Program solicitations, the ISRP review criteria is the same as used for the provincial review, and the review was staggered and incorporated with the provincial reviews. In addition, the LSRCP proponents participated in the provincial review workshop, attending the site visits and providing presentations. This was a good step in presenting at least a subset of the multitude of salmon recovery effort in one venue for the benefit of the reviewers and the project sponsors.

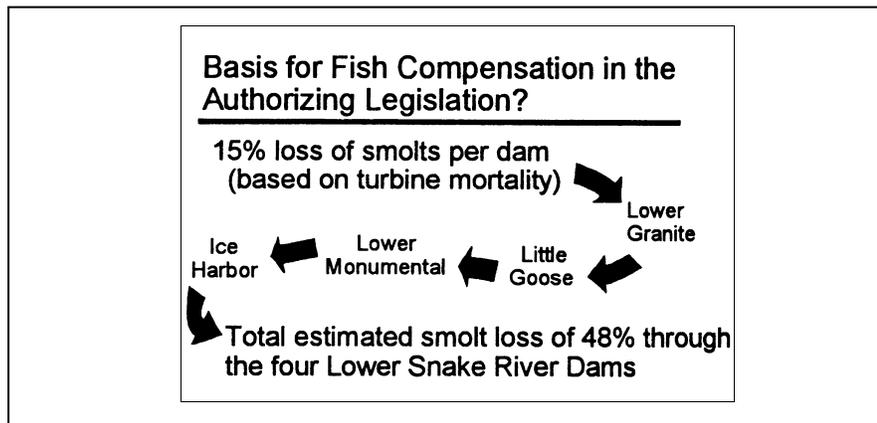
In the spring of 2001, six LSRCP proposals were submitted for review in the Columbia Plateau Provincial Review. These Washington Department of Fish and Wildlife (WDFW) proposals covered LSRCP activities in the Tucannon and Walla Walla subbasins and at Lyons Ferry Hatchery. The ISRP released a preliminary review of those projects on July 13, 2001. The ISRP's preliminary recommendation on the proposals was "fundable if additional information is provided that adequately addresses the ISRP's comments." The LSRCP provided responses to the ISRP concerns. The ISRP's comments on those responses are provided below. In its December 21, 2001 report, the ISRP deferred its final recommendation on the Columbia Plateau Province proposals until completion of the entire LSRCP review contained in this report.

In July of 2001, 20 more LSRCP proposals were submitted for review in the Blue Mountain and Mountain Snake provincial reviews. Due to time constraints and the complexity of the program, the ISRP was unable to review the LSRCP proposals on the same schedule as other proposals in those provinces; consequently, the ISRP's preliminary review was submitted in December 2001 at the same time as the final Blue Mountain and Mountain Snake report (ISRP 2001-12A, December 21, 2001). This report completes the ISRP review of LSRCP proposals submitted for review in 2001.

LSRCP Production Targets

The LSRCP is built around production targets, which were derived from estimates of losses in anadromous fish production as a result of the construction and operation of the Lower Snake River hydrosystem facilities. The basis for the LSRCP production targets was an estimated turbine mortality of 15% of the emigrating smolts at each of the four Lower Snake dams (Figure 1). The cumulative losses were estimated to be 48% of the pre-dam Snake River chinook salmon and steelhead runs (Table 1). The LSRCP called for the construction of hatcheries to produce sufficient juveniles to compensate for that loss. Compensation focused on replacing adult spring/summer and fall chinook and summer steelhead. However, there were other anadromous species (coho and sockeye) still returning to the basin at the time of dam construction.¹ Congress authorized the U.S. Army Corps of Engineers to construct the facilities, Bonneville to repay the treasury for the cost of the program from revenues generated by power sales, and the USFWS or NMFS to administer the program.

Figure 1. Order of smolt losses at the four lower Snake River dams.



¹ It is worth noting today more than twenty years later that coho salmon went extinct in the Snake River basin in the early 1980s, and sockeye salmon were listed as endangered under the ESA in 1991. An expensive rescue effort focusing on captive brood technology has kept Snake Basin sockeye from virtual extinction, but perhaps not functional extinction. The extent of adult sockeye returns, if any, over the next few years to the Snake basin will probably indicate the ultimate fate of that program.

Table 1. Computation of adult anadromous fish losses associated with the four Lower Snake River dams and locks. (Source: Corps of Engineers 1975)

	Fall Chinook	Spring/Summer Chinook	Steelhead trout
Estimated Snake River run	32,663	122,200	114,800
Adult losses attributed to the Lower Snake Projects²	18,300³	58,700	55,100

² Estimated Snake River run times 48% (total estimated turbine-related losses).

³ For fall chinook, formula for adult loss calculation is (Snake R. run minus 5,000 adults) * 48% plus 5,000 adults. The 5,000 adults are credited for those that spawned in the reach inundated by the reservoirs – that loss was direct and therefore added in directly to compute the total loss.

The plan also calls for resident trout production to compensate for the loss of angler days when the dams inundated about 140 miles of spawning habitat. In addition to the adult return goals identified in the compensation plan, the LSRCP also has responsibilities to comply with the ESA and to meet tribal trust responsibilities. Under the ESA, LSRCP actions are not to jeopardize listed species. Fish hatchery production has been adjusted where appropriate to meet ESA requirements.

According to the compensation plan, the LSRCP will continue efforts to maintain non-listed chinook salmon, steelhead, and rainbow trout programs under Section 7 of the ESA for future compensation options. However, as endemic stocks are developed, many of the program's non-local stocks will likely be phased out and replaced with local populations.

Prior to the current review process involving the ISRP, the LSRCP conducted its own internal programmatic reviews, the first in 1990 (Herrig 1990)² after roughly a decade of operation, and a second larger in-depth Status Review by the USFWS in 1998 (Herrig 1998)³. During that symposium, LSRCP-funded fisheries scientists summarized and addressed the status of their projects dealing with steelhead, spring and summer chinook, and fall chinook. Two panels, one of seven independent scientists and another of seven stakeholders, provided comments throughout and at the end of the review.

In most years, the LSRCP Hatchery Program and the LSRCP mitigation efforts have not been able to meet their goals, including adult returns above Lower Granite Dam, the numbers of adults needed for broodstock collection, and juvenile production targets. Thus, at a programmatic level, the LSRCP has failed to compensate for the losses of habitat and anadromous production caused by construction and operation of the Lower Snake river dams.

² Herrig, D. 1990. A review of the Lower Snake River Compensation Plan Hatchery Program. U.S. Fish and Wildlife Service. Report, AFF1/LSR-90-06. Boise, Idaho.

³ Herrig, D, et al. 1998. Lower Snake River Compensation Program Status Review Symposium. U.S. Fish and Wildlife Service. Boise, Idaho.

The original goal of the LSRCP was to compensate for the loss of 48% of the juveniles migrating downstream through the system; the other 52% of the run was expected to be maintained with the mitigation modifications such as installation of turbine intake screens, flip-lip spillway construction at the dams, barging/trucking smolts, and habitat improvement work. Based on the 1998 Status Review assessments, participants concluded that neither the (compensated) hatchery, nor the naturally spawning chinook populations have done as well as expected. Many of the chinook programs are no longer production-oriented programs as envisioned in the authorizing legislation, but rather are supplementation-oriented programs, due to the depressed status of the donor stocks. Steelhead (compensated) hatchery populations have done quite well in a number of years, whereas the naturally spawning populations have deteriorated to the point that all endemic populations in the Snake River basin are now listed under the ESA. The returns remain well below pre-dam levels.

Given the ESA status of Snake River basin anadromous stocks, and the increasing focus of this region's artificial production activities on supplementation and conservation issues, a question arises about the present day applicability of the original authorizing legislation for the LSRCP. The original directives do not seem as relevant today given these constraints, as they were likely viewed in the early 1980s. Whether the mismatch between the original authorizing language and the tasks that the Lower Snake River Compensation Program faces today creates an obstacle to the program's ability to address present concerns is not known by the ISRP; however, this may be a question that is worth investigating at a policy level.

General Findings of the ISRP review

A major concern for these programs is the difficulty in assessing numerous proposals, objectives, and agencies involved in the Lower Snake geographic region. The fragmentation of proposals, responsibilities, and monies leaves a strong sense of uncertainty that the sum of these fragments is a sound scientific program and one that we can learn from. Our sense after these reviews is that there are numerous opportunities for redundancy (how much money is being provided for coordination alone?) and inefficiencies. After all these reviews, the ISRP is uncertain that the proposals constitute a comprehensive and sufficient program, that standardized procedures and data protocols are being applied, and that the appropriate analyses are being conducted and reported. The latter is the only true means to test that the data are adequate and/or that an issue has not been overlooked.

A more programmatic-level review of this geographic region and of the Lower Snake River Compensation Program may be the only means to really review whether a sound scientific program underlies all this work and is appropriate for the funds being provided from several sources. These proposals frequently refer to experimental management, but there is no indication of what the experiments are or decisions to be made depending on outcomes. Experimental management should not simply refer to trial and error. True adaptive management requires a defined experimental framework and testable hypotheses, with later management decisions to be based in part on resulting data and analyses. This framework was not evident in the proposals.

Multiple Mandates

In the Columbia Plateau response, the Washington Department of Fish and Wildlife (WDFW) states, "... we intend to maintain the hatchery mitigation program and its resulting fisheries as congressionally mandated under the LSRCP." The mitigation, the ISRP review, the FWP, and the ESA are all congressionally mandated, and it is not clear that program elements from one should preclude efforts to meet the others. It is also important for the technical credibility of the

Columbia Basin overall program to ensure that hatchery-based program goals are not at cross-purposes with goals of other programs. Many relevant issues are being addressed in the LSRCP reviewed here, but strict adherence to the original compensation goals may conflict with requirements of the Endangered Species Act, and wild fish protection goals. For example, the original authorizing LSRCP mandate does not provide a mechanism to factor in the current ecological (freshwater and marine) and economic conditions.

In addition to the potentially conflicting goals of mitigation and wild fish protection, the diffuse, dispersed, and fragmented nature of fisheries management responsibility and jurisdictional authority in the Columbia River Basin hampers the coordination of salmon recovery efforts.

Program Success To Date

At a program level, the LSRCP mitigation efforts have not been able to meet their goals every year to compensate for the losses of habitat and anadromous production caused by construction and operation of the Lower Snake river dams, which the program has freely acknowledged in its own internal reviews (Herrig 1990; 1998). The program has fallen short in most years for adult returns above Lower Granite Dam, the numbers of adults needed for broodstock collection, and juvenile production targets. One of the conclusions from the 1998 USFWS Status Review Symposium of the LSRCP was that the program needed to rely on science-based management and adaptive management to be successful and that it was somewhat handicapped in doing this by the strong mitigation language in the original authorizing legislation (see section above on Multiple Mandates).

In general, this proposal and response review has shown that the LSRCP personnel have done well what was asked of them and should be complimented for their fine technical performance. The program's overall lack of success in meeting goals points more to the mismatch between enabling legislation and current practices, to flawed assumptions about smolt-to-adult survival, and inadequacies of hydrosystem modifications (turbine intake screens, flip-lips, barging) for increasing smolt-to-adult survival, than to shortcomings of the LSRCP staff or facilities. Nevertheless, broad questions remain with respect to the value of continuing an unsuccessful program (e.g., given the ESA status of most Snake basin stocks, is the program doing more harm than good?), with respect to possible deleterious effects of hatchery fish on wild fish production, with respect to interspecies interactions resulting from hatchery fish production and release, and with respect to coordination of all legal mandates in the Basin not just the LSRCP. These concerns and questions need to be addressed at the Basin level with input from LSRCP office personnel.

Proposal Preparation and the ISRP Review Process

The Lower Snake River Compensation Program projects are relatively new to the BPA-Council-ISRP review process and many of the LSRCP proposals originally submitted did not provide adequate biological descriptions and justifications, and relied too much on the LSRCP authorizing policy statements to justify their projects and actions. However, most of the project sponsors' responses provided organization, clarifications, and additions that were missing from the original proposals. The responses tied the projects together and provided a better overview, making the program more understandable. The total package of information is a vast improvement over that provided for the preliminary review alone. The detail provided on project results also helped very much. This review experience should make future ISRP review of the program faster and more efficient.

Stock Origin and Stock Transfers

Stock transfers have been discouraged as a management tool for some time, yet inter-basin transfer of fish is practiced in this program. The Lower Snake River Compensation Program uses a mix of native and non-native broodstocks, the latter ranging from Lower Columbia River origin (Carson) spring chinook to nearly all of the steelhead stocks under culture through the program. The LSRCP steelhead stocks are native to the upper Snake River above Hells Canyon Dam, but are non-native with respect to the locations where they are outplanted in the Salmon and Clearwater systems. What effect does the use of a non-native stock have on success or failure of LSRCP projects and on remaining endemic Salmon and Clearwater River steelhead stocks?

The goals of rebuilding populations through stocking where wild broodstock are taken and returned at rates that have been, for the most part, below replacement, and stocking to provide recreational opportunity are contradictory to wild stock protection and restoration. All sources of mortality on wild stocks should be removed to attempt recruitment above replacement. One way to increase the science-based management of the LSRCP facilities and program as a whole would be to document the sources of wild fish mortality, measured or modeled, that arise from hatchery operations, including residualism, catch-and-release angling, reduction in reproductive success, or other. This could demonstrate the benefits of supplementation, if evidence of rebuilding was apparent.

LSRCP Monitoring and Database Issues

All LSRCP hatcheries need to provide evidence in their proposals that monitoring data are stored in an appropriate consistent database and are available through a distributed system via the Internet. The data and evaluation should be consistent with the Dworshak use of the Idaho FRO system (see Task 3.c in Proposal 200101) and any database in use by the Oregon Evaluation Studies (Proposal 200109). Results must be described in the proposal even if the data are collected and analyzed by a different project. Responses did not adequately satisfy ISRP concerns on this issue.

Final ISRP Recommendation: LSRCP Programmatic Status Review and Immediate Data Management Review

The ISRP recommends that a LSRCP Status Review Symposium is needed three years from now that is similar in scope to the 1998 status review and incorporates the ISRP “reimbursable” review. In addition to a full and rigorous scientific review, it is imperative that appropriate policy and decision makers attend the status review in order to understand and address the potentially crippling multiple and cross-purpose mandates under which the LSRCP program currently operates.

Prior to the proposed Status Review, the ISRP recommends the allocation (or redistribution) of funding to examine the LSRCP’s data collection, data management protocols, and archiving systems and to assist with management of the program in the future. The comprehensive review should ensure that a uniform standard for reporting and sharing data among facilities is established; e.g. criteria for reporting returning adult numbers.

ISRP Review of Individual LSRCP Proposals

The ISRP reviews of individual LSRCP proposals are provided in the section below arranged by sponsoring entity. In general the set of proposals, augmented by responses, demonstrated that the LSRCP program is implemented in a scientifically sound manner, and further ISRP review is not likely necessary until a larger status review symposium or similar review process takes place in approximately three years. Many of the project-specific issues raised below can be addressed in the LSRCP budget allocation and contracting process, and examined in the Council's Artificial Production Review and Subbasin Planning effort. However, the proposal and response for project 200120, *Reintroduction evaluation of spring chinook salmon and the study of the early life history of summer steelhead in Lookingglass Creek*, was not justified scientifically and needs substantial remedial work and subsequent review.

LSRCP Columbia Plateau Project Proposals

The Columbia Plateau portion of the program is implemented by the Washington Department of Fish and Wildlife (WDFW) and, as presented to the ISRP, was described in three parts. The first part was for the overall program at Lyons Ferry; the second part described the Tucannon River portion of the program, and the third part described the Walla Walla River portion.

Lyons Ferry - Mainstem Snake

Project ID: 200121

Evaluation of salmonids released in the Snake River of Washington under the LSRCP Program

Target Species: Fall Chinook, Summer Steelhead

FY02 Request: \$173,850

Short Description: Rear, release and evaluate fall chinook salmon and summer steelhead as part of the LSRCP mitigation program in a changing ESA environment.

Project ID: 200124

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance

Target Species: *Oncorhynchus mykiss*, summer steelhead and resident rainbow trout,

Oncorhynchus tshawytscha, fall chinook

FY02 Request: \$519,242

Short Description: Restore Snake River Fall Chinook and steelhead fisheries and populations through release of yearling and sub-yearling smolts produced at Lyons Ferry Hatchery and provide recreational opportunities for catchable rainbow trout.

These two proposals are for WDFW to continue operation of the Lyons Ferry Hatchery and associated monitoring and evaluation, as part of the LSCRP. The Lyons Ferry Hatchery serves as a central operational base for a complex of facilities, including the Tucannon Hatchery, and a system of acclimation ponds. Salmon and steelhead from individual parts of the complex are released into the Snake River proper, Tucannon River, and Walla Walla River (steelhead only).

The Plan is intended to produce 18,300 fall chinook salmon adults, 1152 Tucannon River spring chinook salmon adults, and 4656 summer steelhead adults back to the area of their release as smolts. An additional program goal is to produce and stock catchable sized fish to provide 67,500 angler days of recreation.

Tucannon Hatchery

Project ID: 200123

LSRCP Tucannon River Spring Chinook/Summer Steelhead Production and Evaluation Program

Target Species: Spring Chinook Salmon, Summer Steelhead

FY02 Request: \$201,260

Short Description: Rear, release and evaluate the spring chinook and summer steelhead LSRCP programs. Evaluate the effects of the programs on natural populations, and evaluate the development of a local origin wild steelhead broodstock for use in the program.

Project ID: 200125

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance

Target Species: Oncorhynchus mykiss, summer steelhead and resident rainbow trout, Oncorhynchus tshawytscha, spring chinook

FY02 Request: \$299,116

Short Description: Restore Tucannon River spring chinook and steelhead fisheries and populations through release of yearling smolts produced at Lyons Ferry Hatchery and provide recreational opportunities for catchable rainbow trout

Spring chinook salmon. Spring chinook salmon are produced in two programs for the Tucannon Basin: LSRCP supplementation, and a BPA funded captive broodstock project (Project # 200001900). Supplementation fish are produced by trapping about 100 adult spring chinook salmon from the Tucannon River at the Tucannon Fish Hatchery and hauling them to Lyons Ferry Hatchery where they are spawned and their progeny reared for one year. All fish are then marked and transported back to Tucannon Fish Hatchery for rearing and release.

The program includes monitoring and evaluation of adult run size to the Tucannon River, trapping and using only brood fish that will help maintain the genetic integrity of the population (excludes strays), estimating juvenile survivals by age-class, abundance of migrating smolts, smolt size, and comparative performance of supplementation production with captive broodstock production (BPA Project # 2000001900).

Fall chinook salmon – Monitoring of fall chinook salmon includes counts of adults in the Tucannon River. Carcass samples and coded-wire tags help to document the origin of spawners, and smolts are counted in the lower river.

Summer steelhead – The proposal reported that no numeric goals for returning adult summer steelhead were included in the LSCRCP, but steelhead are reared and released in the Tucannon River to provide harvest opportunity. Later in the proposal, however, it was reported that the overall program attempts to return 4,656 steelhead adults to the Snake River in Washington.

Walla Walla

Project ID: 200122

LSRCP Walla Walla basin Summer Steelhead Evaluation Program

Sponsor: Washington Department of Fish and Wildlife

Province: Columbia Plateau

Subbasin: Walla Walla

Target Species: Spring Chinook Salmon, Summer Steelhead

FY02 Request: \$98,490

Short Description: Evaluate the summer steelhead LSRCP program. Evaluate the effects of the programs on natural populations, and evaluate the development of a local origin wild steelhead broodstock for use in the program.

Project ID: 200126

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance

Sponsor: Washington Department of Fish and Wildlife

Province: Columbia Plateau

Subbasin: Walla Walla

FY02 Request: \$198,875

Target Species: Oncorhynchus mykiss, summer steelhead and resident rainbow trout

Short Description: Restore steelhead fisheries and populations through release of yearling smolts produced at Lyons Ferry Hatchery and provide recreational opportunities for catchable rainbow trout.

The Walla Walla portion of the program is a steelhead project. Goals include: 1) establishing broodstock(s); 2) maintaining and enhancing natural populations; 3) returning adults to the LSRCP area; and, 4) improving or re-establishing sport and tribal fisheries. Lyons Ferry Hatchery releases summer steelhead smolts into the Walla Walla and Touchet rivers. In regard to the goal to establish broodstock, the reviewers support the ongoing regional effort to ensure that only appropriate local stocks be used as hatchery brood fish.

ISRP Final Review Comments:

General Comments

Fundable, but issues with stock transfer remain. The authors generally did a good job putting the material together describing, to the program's credit, a substantial commitment to monitoring program elements including hatchery practices, size and time at release, adult returns, smolt survival during migration, relative survival of hatchery and wild fish, and variability in broodstocks. Although the Tucannon and Walla Walla subbasin summaries contain some data on stock status, the summaries and proposals need to include detailed results concerning successes and failures in meeting the program's numerical goals. The proposals should include sufficient amounts of these data and analyses to stand on their own in a technical review.

Project sponsors generally responded adequately to ISRP requests for specific additional information on past results; project implementation; project history; how decisions are made on determining how many fish to stock; survey and monitoring methods; straying rates of hatchery-produced fish into wild populations; ocean and downriver fishery impacts on LSRCP stocks; risk analysis on program effects and planning steps to phase out unsuccessful activities; and

clarification on the kinds and levels of agreement among the CTUIR, the state of Washington and the state of Oregon within the LSRCP program.

Although most of the responses adequately addressed the ISRP's concerns, some of the responses could have been more helpful. In several instances, for example, the respondents referred the ISRP to other documents or publications to search for the information needed to answer a question. In one instance, the authors did not produce the desired data because the information is to be included in a yet to be prepared publication. Presentation of these data to clarify an issue for the ISRP would not preclude publication at a later date.

In response to questions regarding the program's effectiveness in meeting the goals, the authors reported that the steelhead program sometimes exceeded the goal by as many as 10,000 fish. When this happens wouldn't it be prudent to consider reducing the size of the program to prevent further jeopardy to wild fish? The respondents did not make clear the program's effectiveness in meeting goals for chinook salmon.

Some estimates of harvest rates were presented in the response. Although rates for chinook (up to 6% for springs, up to 35% for falls) may be considered low, the impact of these rates on severely depressed spring and fall chinook may be profound. Rates for steelhead were reported to be up to 50%.

Continuing ISRP Concern

The ISRP observed that the response should further describe the goal to establish hatchery broodstocks that are appropriate (i.e. local stocks?). The WDFW response describes a process they are using to phase into local broodstock for steelhead in the Touchet River on a trial basis. They have concerns about "mining" the wild stock excessively; so have limited their initial target to 50,000 smolts from the wild stock and the remaining 75-100,000 smolts required using the Lyons Ferry Hatchery stock. Unknown return rates and straying rates of smolts originating from the wild stock also led to caution at this stage. Evaluation of performance of this broodstock will occur over the next five years before a decision is made that might commit the entire program to wild stock. With respect to the lower Walla Walla River, they are uncertain how to proceed. The status and identification of the steelhead stock is being studied to determine the best way to change to use of the local stock. Extent of straying of this stock is being studied as well. They have a concern that there may be more than one wild stock present in the basin, and do not want to undertake a program that might lead to their blending. Therefore, the Lyons Ferry stock will continue to be used in the lower Walla Walla River, evaluating the returns from that program and the wild steelhead stock status in the Touchet River, the upper Walla Walla River and Mill Creek.

LSRCP Blue Mountain and Mountain Snake Project Proposals

United States Fish and Wildlife Service Proposals

Project ID: 200101

LSRCP Dworshak NFH spring chinook program

Sponsor: U.S. Fish and Wildlife Service

Province: Mountain Snake

Subbasin: Clearwater

Target Species: Clearwater River Spring Chinook Salmon

Short Description: Mitigate for lost spring chinook fisheries in the Clearwater River due to the construction of the four lower Snake River dams, also evaluate rearing, adult survival, fisheries contribution, and fish health for the production program.

ISRP Final Comments:

Fundable, but some issues remain. While the program continues to fall short of its own goal, having provided 9,135 spring chinook adults to the project area above Lower Granite Dam (LSRCP mitigation goal) only two years out of 18, it has provided some measure of success in providing Tribal fisheries in 12 of the last 15 years and sport fisheries in 6 of those 15 years. Smolt release goals were met in 11 of 20 years. The sponsors reported that for the first time, they met their goal of 9,135 returning adults in 2000 and 2001.

Nevertheless, the proposal and response left the ISRP with several unresolved uncertainties that need to be addressed during the upcoming funding cycle. The response was not adequate in addressing concerns on data management, straying, or post-release ecological interaction of hatchery fish with wild fish. The responses indicate no special concern for the role of the fish produced in the ecosystem. The presumption is that they can produce fish that migrate directly to the ocean with little chance for interaction with other fish in the system, a strategy that ignores inter- and intra-species interaction in the river, estuary, and ocean.

The response on the database issue raised more concerns with reviewers than the original proposal. This looks to be a significant issue with the likely potential that data management could deteriorate even further in future. The ISRP recommends a comprehensive review of the LSRCP data management system including the role of this project. The comprehensive review should ensure that a uniform standard for reporting and sharing data among facilities is established; e.g. criteria for reporting returning adult numbers (see ISRP programmatic recommendation).

The response adequately addressed the BKD issue.

Project ID: 200102

Production of Summer Steelhead at Hagerman National Fish Hatchery, Lower Snake River Compensation Plan

Sponsor: U.S. Fish and Wildlife Service, Lower Snake River Compensation Plan Office

Province: Mountain Snake

Subbasin: Salmon

Target Species: Summer Steelhead

Short Description: Mitigate for lost steelhead fisheries in the Salmon River due to the construction of the four Lower Snake River dams. Also evaluate rearing and fish health for the production program.

ISRP Final Comments:

Fundable, but issues remain. The response addressed the issue of adult returns, that is, they will be unable to directly estimate adult return partially due to high harvest rates. This inability complicates any assessment of the success of the Hagerman facility.

The hatchery should be better able to report stray data relevant to its releases, rather than referring reviewers to PSMFC website.

Data management issues with this project, as acknowledged by the proponents, should be dealt with at the program level. See the ISRP recommendation for the LSRCP to undergo a data management review.

The program at Hagerman has not met its mitigation goal so project personnel are trying to get greater survival of the fish they produce. That may be a suitable strategy for hatchery management, but it is likely a poor strategy for incorporating the fish produced into the Columbia-Snake ecosystem. Specific programs such as the LSRCP should not be managed independent of other programs in the basin. Like the database issue, this is an issue that belongs to the entire LSRCP program and should be dealt with programmatically.

Idaho Department of Fish and Game Proposals

Project ID: 200103

Lower Snake River Compensation Plan (LSRCP), Clearwater Fish Hatchery

Sponsor: Idaho Department of Fish and Game

Province: Mountain Snake

Subbasin: Clearwater

Target Species: Oncorhynchus tshawytscha, spring chinook salmon; Oncorhynchus mykiss, summer steelhead (steelhead)

Short Description: As part of the LSRCP, Clearwater Fish Hatchery's objective is to rear juvenile salmon and steelhead to meet the mitigation goals of 12,000 adult chinook salmon and 14,000 adult summer steelhead upstream of Lower Granite Dam.

ISRP Comments:

The goal for this project is to return 12,000 chinook and 14,000 steelhead adults, and to provide compensation for lost resident spawning habitat. Releases of chinook salmon have been made since 1988 (Appendix 1) and in recent years have approached or exceeded 2 million producing a maximum return of 3,978 in 2001, but only 344 adults in 1999. Even in the best chinook year in recorded history, the return was far short of the project goal for chinook. The steelhead program is not productive. Release of steelhead smolts since 1993 in recent years has approximated ¾ million, but returns have been less than 25 adults in each of the last four return years. It is time to

reconsider whether to continue this project or to divert the funds to other strategies for meeting the mitigation goals.

Project ID: 200104

Lower Snake River Compensation Plan (LSRCP), Magic Valley Fish Hatchery

Sponsor: Idaho Department of Fish and Game

Province: Mountain Snake

Subbasin: Salmon

Target Species: Oncorhynchus mykiss, summer steelhead

Short Description: As part of the LSRCP, Magic Valley Fish Hatchery's objective is to rear juvenile summer steelhead (steelhead) to meet the mitigation goal of 11,660 adult steelhead upstream of Lower Granite Dam.

Project ID: 200105

Lower Snake River Compensation Plan (LSRCP), McCall Fish Hatchery

Sponsor: Idaho Department of Fish and Game

Province: Mountain Snake

Subbasin: Salmon

Target Species: Oncorhynchus tshawytscha, summer chinook salmon

Short Description: As part of the LSRCP, McCall Fish Hatchery's objective is to rear juvenile summer chinook salmon to meet the mitigation goal of 8,000 adult salmon upstream of Lower Granite Dam.

Project ID: 200106

Lower Snake River Compensation Plan (LSRCP), Sawtooth Fish Hatchery

Sponsor: Idaho Department of Fish and Game

Province: Mountain Snake

Subbasin: Salmon

Target Species: Oncorhynchus tshawytscha, spring chinook; Oncorhynchus mykiss, summer steelhead

Short Description: As part of the LSRCP, Sawtooth Fish Hatchery's objective is to rear juvenile spring chinook salmon to meet the mitigation goal of 19,000 adult salmon upstream of Lower Granite Dam, and to provide summer steelhead eggs to other LSRCP hatcheries.

ISRP Comments:

The project goal of 19,000 adult spring chinook salmon upstream of Lower Granite Dam has never been achieved; hatchery returns have never been even 2,000 fish. As it stands, the spring chinook salmon goal (19,000) remains far in excess of any return, even the 2001 return.

Project ID: 200119

LSRCP Fish Hatchery Monitoring and Evaluation - Idaho

Sponsor: Idaho Department of Fish and Game

Province: Mountain Snake

Subbasin: Salmon

Target Species: spring/summer chinook salmon, summer steelhead

Short Description: Monitor and evaluate Idaho's Lower Snake River Compensation Plan hatchery program.

ISRP Final Comments on IDFG Proposals 200103, 200104, 200105, 200106, 200119:

Fundable, but issues remain. The added material seems thorough and is very helpful. The project history is particularly good and helps to explain what is going on. It is evident that all or virtually

all effort is directed toward matters internal to the hatcheries and that none or almost none exists regarding effects on ecosystems. It is abundantly clear that the goal is to produce a large number of smolts.

Some effort is being made to help preclude genetic problems with hatchery broodstocks. One strategy is to cull the eggs from adults that show high levels of certain pathogens. However, that effort could be counter-productive if these characteristics are heritable and correlated traits are affected by the culling, or if “select” fish survive to spawn in aggregations of wild fish.

The response clarified the appendix table, and qualifications of the project personnel were provided as requested. For the Clearwater Fish Hatchery, the proponents provided a detailed and thorough response to the IHNV issue raised in the ISRP’s preliminary review.

Respondent states (pg.46) that NMFS has supported LSRCP so the benefits have been produced without causing “... significant negative effects to critical wild fish populations.” The basis for that conclusion by NMFS should be included in documents prepared for technical review and public information.

The response on pages 47-49 is inappropriate. Many hatchery-supported programs in the basin are being managed so as to prevent “domestication” of the hatchery product to help preclude deleterious effects in mixtures of hatchery and wild fish spawning in nature. This includes efforts to prevent selective breeding. The culling practiced in this project may be selective breeding and may contribute to the “domestication” problem that others are attempting to prevent.

Idaho’s biologists are working hard to meet the goals of their part of the program. They state on page 47 “... we believe we are implementing a progressive hatchery program that remains dedicated to meeting LSRCP and IDFG goals.” However, in regard to the ISRP concern about how fish produced by LSRCP are incorporated into the ecosystem, there was inadequate response. The concerns expressed in this ISRP comment must be addressed by system managers/administrators. This large hatchery program should not be operated in isolation from other elements of the Columbia River program. In some cases, efforts to meet LSRCP goals with fixed physical capacity include “improving” survival of the hatchery fish; efforts that are likely to reduce variability, cause selection, and generally further the domestication process.

For the McCall and Sawtooth fish hatcheries and the related Fish Monitoring project (200119), the response presents an itemization of research projects on pages 51-53, but the results and methods are not presented in sufficient detail to assess the scientific credibility of these projects. Our preliminary recommendation was to not provide funds for unspecified research. The response does not provide enough detail to change that recommendation. The ISRP also recommends that additional emphasis should be placed on submitting research results for publication in the fisheries literature. Clearly some of the research projects in progress appropriately fall more in the realm of management monitoring for which annual reports are adequate, but the program should produce some work that is publishable. Indication of that to date, however, was absent from the proposal and from the vitae of the two Fisheries Research Biologists.

Washington Department of Fish and Wildlife Proposals

Project ID: 200112

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance

Sponsor: Washington Department of Fish and Wildlife

Province: Mountain Snake

Subbasin: Clearwater

Target Species: Oncorhynchus tshawytscha, fall chinook; Oncorhynchus mykiss (Kamloop) rainbow trout

Short Description: Restore Snake River Fall Chinook fisheries and populations through release of sub-yearling and yearling smolts produced at the Lyons Ferry Complex. Provide a trout fisheries through release of juvenile rainbow trout produced at the Lyons Ferry Complex

ProjectID: 200114

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance

Sponsor: Washington Department of Fish and Wildlife

Province: Mountain Snake

Subbasin: Salmon

Target Species: Oncorhynchus mykiss - Kamloop and Spokane stock rainbow trout

Short Description: Provide a trout fisheries through release of fry and juvenile rainbow trout produced at the Lyons Ferry Complex.

Project ID: 200113

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance

Sponsor: Washington Department of Fish and Wildlife

Province: Blue Mountain

Subbasin: Grande Ronde

Target Species: Oncorhynchus mykiss, summer steelhead

Short Description: Restore steelhead fisheries and populations through release of yearling smolts produced at Lyons Ferry Hatchery

Project ID: 200115

Lyons Ferry Complex (Lyons Ferry and Tucannon Hatchery) Operations and Maintenance

Sponsor: Washington Department of Fish and Wildlife

Province: Blue Mountain

Subbasin: Snake Hells Canyon

Target Species: Oncorhynchus mykiss, summer steelhead

Short Description: Restore fall chinook and resident trout fisheries and populations through release of yearling smolts produced at Lyons Ferry Hatchery

Project ID: 200116

Monitor and Evaluate Salmonid Production in the Asotin Creek Subbasin of Washington

Sponsor: Washington Department of Fish and Wildlife

Province: Blue Mountain

Subbasin: Asotin

Target Species: Summer steelhead and spring chinook salmon

Short Description: Monitor the status of salmonid populations within the Asotin subbasin in the absence of hatchery supplementation. Recommend hatchery related actions, which may aid recovery of ESA listed populations.

Additional ISRP Comments:

This is a relatively small (\$30K/year) project to monitor wild steelhead and salmon production for comparison with hatchery-origin stream production elsewhere, and to help assess effects of habitat restoration. The tour in August indicated that steelhead have been the focus to date but chinook spawning was occurring in 2001. The tour also showed reviewers that this project is linked to a very active and apparently extremely successful habitat restoration program. This proposal provides an interesting history and many of the goals and objectives are supportable.

Project ID: 200117

LSRCP Grande Ronde River Summer Steelhead and Fall Chinook Production and Evaluation Program

Sponsor: Washington Department of Fish and Wildlife

Province: Blue Mountain

Subbasin: Grande Ronde

Target Species: Summer steelhead and fall chinook salmon (future)

Short Description: Monitor releases of hatchery steelhead mitigation fish in the Grande Ronde. Recommend hatchery related actions, which may aid recovery of ESA listed populations.

Project ID: 200118

Evaluation of salmonids released in the Snake River under the LSRCP Program

Sponsor: Washington Department of Fish and Wildlife

Province: Blue Mountain

Subbasin: Snake Hells Canyon

Target Species: Fall chinook salmon

Summer steelhead

Short Description: Evaluate fall chinook production and releases into the Snake River basin above Lower Granite Dam, and document harvest / return of hatchery reared steelhead produced as part of the LSRCP program.

ISRP Final Review Comments on WDFW Proposals 200112-200118:

Fundable. The respondents presented a helpful package of information and responses to ISRP questions. Their responses amply address the ISRP's preliminary review requests for description of the scientific basis for the program; reference to relevant literature on steelhead residualization and reproductive performance; clarification of technical matters such as sample site selection and assessment of data quality; description of broodstock development; and clarification of harvest goals. If future preparations for review build on this, the processing of the resultant materials should be efficient. WDFW should be congratulated on their efforts to reduce straying, production, and to protect endemic gene pools.

Although they have taken considerable action to prevent their program from causing further jeopardy for wild stocks, and will continue to do so, they inform the ISRP that they will not stop mitigation actions authorized under the LSRCP. They blame NMFS in one instance, for not providing guidance on the amount of reduction needed to preclude deleterious effects in wild fish, but WDFW should take responsibility in determining what steps to take to avoid potential harm caused by the fish they release. The intent of this program is to use LSRCP authorization to produce fish for harvest, but a primary intent of other basin programs is to conserve native species and increase abundance to useful and persistent levels. These differing views of "basin management" may have several incompatibilities.

If hatchery production (Project 200114) was reduced by 7,000 lb annually to redirect some money into habitat structure construction (p 4), does that habitat structure work continue today?

Oregon Department of Fish and Wildlife Proposals

Project ID: 200109

Lower Snake River Compensation Plan--Oregon Evaluation Studies

Sponsor: Oregon Department of Fish and Wildlife

Province: Blue Mountain

Subbasin: Grande Ronde

Target Species: Chinook Salmon and Summer Steelhead

Short Description: This project provides information to assess the success of Oregon's LSRCP program in meeting management objectives. Studies focus on hatchery effectiveness, life history, supplementation, population status, and fisheries restoration.

ISRP Final Review Comments:

Fundable. This is an important proposal that is integrated with several other projects in the Grande Ronde and Imnaha basins. The proposal is informative, provides a good historical overview of the stocks and programs, and has a good record of publications and accomplishments.

ODFW's response adequately addresses most of the ISRP's preliminary review requests for clarification on: the use of the Minam system and stock as a control; how they define populations and measure productivity; the accuracy and methods for estimating natural spawning escapements; the use of LV clips compared to alternatives; the quantitative methods used for the annual estimation of spawning escapement for spring chinook; and the adequacy of their biosample collection. The response also provided appropriate defenses to the ISRP comments on data management and application of the Oregon Plan.

It should not be surprising that in a proposal with the scope of this one, that the ISRP would continue to have comments or suggestions, but overall the program has a sound scientific basis. For example, the ISRP emphasizes that they need to do enough with the control to be certain that it will allow them to make the evaluations they need. While the use and choice of control streams is appropriate, a preferred measure of productivity would be to assess spawner-to-smolts and smolts-to-mature adults. If the controls were largely selected due to their pristine and protected habitats then a measure of freshwater productivity would seem to be important information. Beyond the mouth of the control streams, the ability to improve productivity and to make certain comparisons becomes much less informative.

Concerning the ISRP comments on data archiving and use of the Oregon Plan, that type of comment was common in recent Provincial reviews. While we agree it would be unwise to not fund hatchery evaluations, the ISRP was trying to strengthen the Regional commitment to archiving the data provided by these extensive programs and the need to safeguard this data. The response in this proposal indicates most of their data is stored appropriately and the proponents should clearly indicate this in future proposals. Their comments on the application of the Oregon Plan for sampling were also adequate and they acknowledged the potential application of the Plan to strengthen sampling in some peripheral areas. See the ISRP programmatic recommendation for a review of the LSRCP data management system.

Project ID: 200110

Lower Snake River Fish and Wildlife Compensation Plan

Sponsor: Oregon Dept. of Fish and Wildlife

Province: Blue Mountain

Subbasin: Grande Ronde

Target Species: Oncorhynchus mykiss (summer steelhead), Oncorhynchus tshawytscha (spring chinook)

Short Description: The goal of the LSRCF is to mitigate and compensate for fish resource losses caused by construction and operation of the four lower Snake River dams and navigation lock projects (FWS 2000).

Project ID: 200111

Lower Snake River Fish and Wildlife Compensation Plan Hatcheries O&M

Sponsor: Oregon Dept. of Fish and Wildlife

Province: Blue Mountain

Subbasin: Imnaha

Target Species: Oncorhynchus tshawytscha (spring chinook)

Short Description: The goal of the LSRCF is to mitigate and compensate for fish resource losses caused by construction and operation of the four lower Snake River dams and navigation lock projects (FWS 2000).

ISRP Final Comments on 200110 and 200111:

Fundable. These proposals are well organized and integrated with other associated projects but the proposals only covers the operating expenses for facilities (operated by ODFW) associated with conventional production of spring chinook and steelhead in the Imnaha and Grande Ronde basins. The proposals present a purely fish hatchery approach: so-called compensation rather than dealing with causative problems. There is no deviation from past cost estimates for these activities. The short description in Section 1 is inaccurate and should be corrected to be more descriptive of this actual proposal.

Since these proposals only address facility-operating expenses, it may not be appropriate to comment on data and data management. However, there is a general need for data to be stored in an appropriate consistent database for all LSRCF hatcheries and are available through a distributed system via the Internet. Data available from these programs must be made available for assessments and progress towards project goals. The data and evaluation should be consistent with the Dworshak use of the Idaho FRO system (see Task 3.c in Proposal 200101) and any database in use by the Oregon Evaluation Studies (#200109). Results must be given in the proposal even if collected and analyzed by a different project. In particular, results for returning adults, straying rates, and reproduction of strays that spawn naturally should be given. See the ISRP programmatic recommendation for a review of the LSRCF data management system.

Nez Perce Tribe Proposals

Project ID: 200108

Nez Perce Tribe Lower Snake River Compensation Plan Hatchery Evaluation

Sponsor: Nez Perce Tribe

Province: Mountain Snake

Subbasin: Salmon

Target Species: chinook salmon, steelhead

Short Description: Quantifies natural and hatchery adult salmon relative abundance, age and sex composition and dispersion of hatchery salmon in natural production areas, genetic profile within the SFSR metapopulation, and gene conservation (cryopreservation).

ISRP Final Comments:

Fundable. Sponsors did a reasonable job at putting this large, complex, and important M&E task to paper – well written, with thorough reference list (mainly unpublished literature). Insights on evolutionary implications are included in this proposal far more than in most others. The section on objectives, tasks, and methods seems thorough, and limitations seem to be properly recognized. Their tasks should also include publication.

As large as the proposal is, the ISRP's preliminary review requested more detail on present results and trends. The response was very helpful and adequately addressed this issue. Such material should be included in any future submittal. In addition, the response addressed concerns about coordination of this project with other ongoing projects implemented through the Fish and Wildlife Program (199107300, 199703000, and 198335003). The oversight and evaluation of other related projects should receive the greatest emphasis within this proposal.

The background information provided in the proposal was telling in that it comes close to suggesting that extinction will result despite numerous gallant efforts, including supplementation. It is subtly suggested that freshwater habitat may be as productive as possible. Thus, either harvest or other sources of mortality (dams?) must be addressed. The region will continue to ponder these policy decisions, but meanwhile must support projects such as this, if they assist evaluation and monitoring.

Objectives of the proposal are to coordinate and participate in evaluation activities (conducted by others?), conduct spawning ground surveys, and cryopreservation. On the latter, it is difficult to imagine how this increases effective population size effectively, since it preserves only the male component. Thus, future population size will be limited by the availability of female spawners.

In the original proposal (p. 3), the sponsors state that the project is intended to “monitor post-release aspects of LSRCP hatchery production performance, monitor natural production status and performance, evaluate interactions of hatchery and natural juveniles, promote genetic conservation, and contribute to the co-management of the LSRCP program.” While the response was helpful in addressing these concerns, additional detail is still needed on the specific objectives for these performance objectives, how the sampling program is designed to detect differences among groups, and the project's end-points? What interactions between hatchery and natural fish are being investigated and how are they being evaluated? Evaluation of the relative production from hatchery fish vs. wild fish that are spawning naturally together in the wild should be an important focus of investigation for the study. What are the specific, quantitative objectives of the genetic conservation component, how will they be measured, and what will be the benchmarks for project success or failure?

Project sponsors acknowledge the importance of learning the impact of supplementation on natural production. Part of the assessment is to estimate the ratio of hatchery and wild fish on the spawning grounds. The sponsors should outline the specific questions they are trying to answer with the monitoring. Why, for example, are they estimating the hatchery-wild ratios? Is there a specific ratio that should not be exceeded? If so, why was that ratio selected? They need to show that the proposed sampling methods and intensity are capable of providing data that will answer the question in a timely manner?

Finally, what is the basis for continuing to gather samples for genetic analysis and gamete preservation? The sponsors cannot expect to preserve the entire gene pool, so what is the expectation, and can samples presently on hand fulfill that expectation?

Project ID: 200107

Nez Perce Tribe Lower Snake River Compensation Plan Hatchery Evaluation

Sponsor: Nez Perce Tribe

Province: Blue Mountain

Subbasin: Imnaha

Target Species: Chinook salmon, steelhead, natural and hatchery

Short Description: Determine post-release survival of hatchery chinook salmon smolts, smolt survival, emigration timing and travel time at Snake River dams, SAR of wild/natural chinook; determine adult steelhead spawner abundance; preserve genetic diversity (cryopreserve).

ISRP Final Review Comments:

Fundable. The response provided concise and useful information concerning each of the ISRP's preliminary comments on sampling designs, variability of SAR measurements, variability of daily estimates with trap efficiency, and verification of estimation procedures for snorkel surveys. The original proposal was well prepared and complemented many of the Blue Mountain Province proposals reviewed. The proposal presents some data and graphics from past monitoring efforts, provides evidence of a good reporting record, and provides good rationale for the need for quantitative assessments, maintenance of life history diversity and the integration of supplementation programs that mimic this diversity.

The response also acknowledged certain limitations that the Nez Perce continue to work on (e.g., provision and archiving of data, and estimation of uncertainty in SAR values). Future assessments will need to examine the impact of the variability on their sampling program to determine whether or not their monitoring data will provide answers to management questions. Finally, the ISRP failed to edit the comment "and one major programmatic concern" out of this proposal review. This comment was generalized into a broader comment on the LSRCP and was not intended for this specific proposal.

Confederated Tribes of the Umatilla Indian Reservation Proposal

Project ID: 200120

Reintroduction evaluation of spring chinook salmon and the study of the early life history of summer steelhead in Lookingglass Creek

Sponsor: Confederated Tribes of the Umatilla Indian Reservation

Province: Blue Mountain

Subbasin: Grande Ronde

Target Species: Spring Chinook Salmon, Summer Steelhead

Short Description: Monitor and evaluate survival and life history characteristics of spring chinook salmon and *O. mykiss* in Lookingglass Creek

ISRP Final Review Comments:

Not Fundable. The response from CTUIR continues to demonstrate a clear difference of opinion on this proposal. While their response contains reasonable points of clarification, there was not much consideration of the ISRP comments. In the volume of paper reviewed, the committee certainly could be mistaken on a proposal, but this is also why a few reviewers read each proposal. To fully consider the CTUIR's response on this proposal, we have re-read the proposal and considered our original comments. Clearly our original review could have been more explicit but each of the original reviews made similar comments on focus and value of this research. Comments on focus result from the numerous activities listed in the proposal, but less attention was given to a clear statement of objectives and methods. For example, if the focus of the proposal is contained in the forth and fifth paragraphs of Mr. Contor's comments, these are not well identified in the proposal. To clarify, we address each of the original comments presented in the ISRP review:

- *improvements to the Lookingglass Hatchery water supply ...* the response seems to agree with the ISRP concern. The ISRP was aware that the co-managers agree on the need for this improvement but also that it is not presently scheduled for implementation. Therefore, if pathogen free water is the current issue limiting production in the upper river, what has changed to allow this proposal to proceed?
- *uncertainty ... without careful consideration of experiments that could be conducted in this unique environmental situation.* Our original concern was not about the thoroughness of the experiment proposed but whether that experiment is the best use of this situation. If the experiment was to test the ability of chinook produced through captive broodstock to recolonize the habitat that could be one worthwhile question to test. However, how would the production be introduced to the habitat, what would the observed rates of production be compared against, and was the most informative experimental design being used ... or did the proposal actually result from an opportunity to get surplus production from the captive brood program? We recognize the unique opportunity to use this environment for restoration of production and controlled experiments, but were the activities in this proposal the best use of this opportunity?
- *whether there is simply the need to conduct such a detailed investigation for another production objective.* The ISRP was not questioning the CTUIR decision to replace production but whether every restoration project necessitates a comprehensive evaluation. Each project involves choices and costs, and basically monitoring competes with restoration efforts for limited funding resources. In the Grande Ronde basin, the co-managers have apparently made their choices in the ongoing programs. Is a proposal to re-introduce chinook to this habitat of greater priority than an ongoing conservation program? We do not mean to imply an ISRP priority or choice by this comments, only that the Provincial reviews have

clearly demonstrated that ideas far exceed dollar resources. Local co-mangers must make difficult choices.

Given the continued uncertainty about the water issue for Lookingglass Hatchery and the uncertain scientific value of this proposal, the ISRP does not recommend funding of this proposal. The response offered confirms the ISRP's opinion that the project sponsors need to fundamentally rethink the project and prioritize actions so that varying levels of funding support would accomplish a hierarchical set of objectives. Any new proposal should include a detailed description of the problem, the specific goals and objectives for solving the problem, and detailed methods for meeting these objectives in a timely manner.

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