

**Independent Scientific Review Panel
for the Northwest Power Planning Council**

Final Review

of

**Fiscal Year 2001 Project Proposals
for the Columbia River Gorge
and Inter-Mountain Provinces**

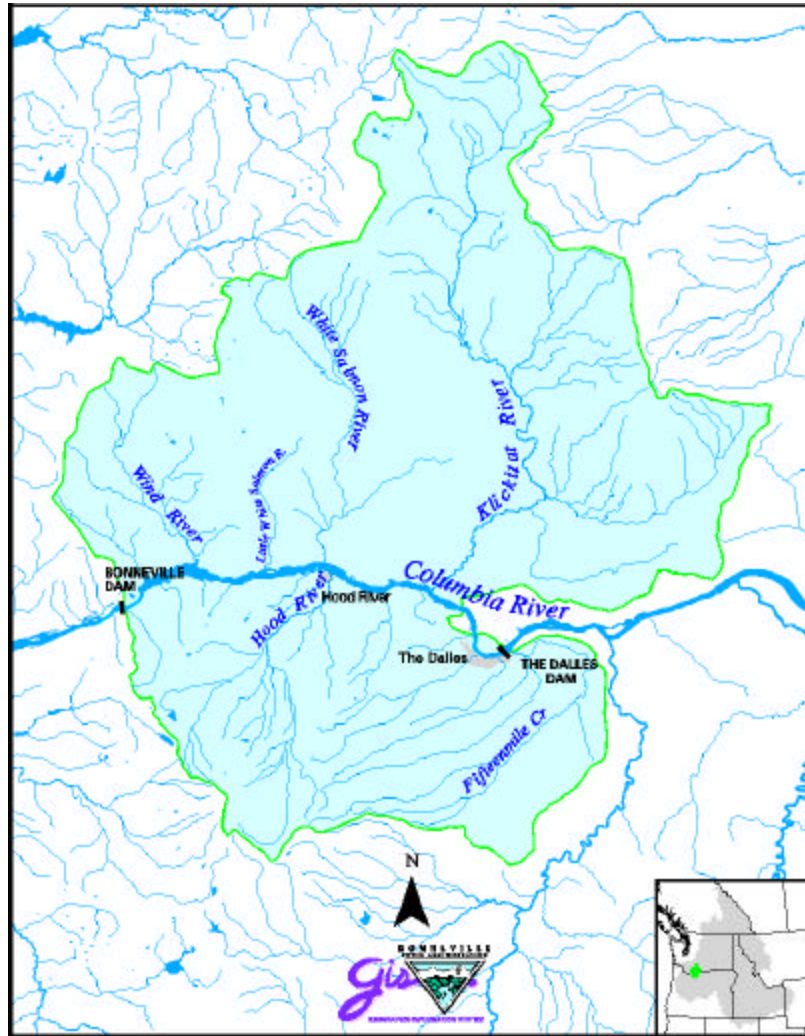
**ISRP 2000-9
December 1, 2000**

Inter-Mountain Reviewers

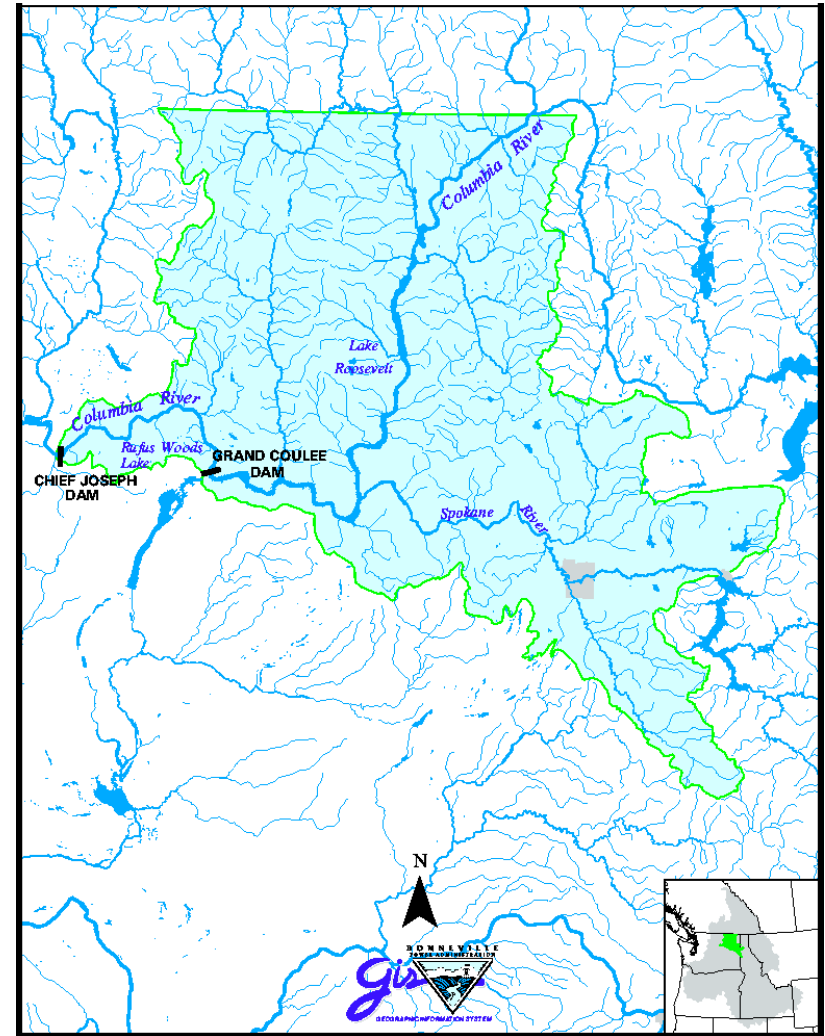
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Independent Scientific Review Panel

Review of Fiscal Year 2001 Project Proposals for the Columbia River Gorge and Inter-Mountain Provinces

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Introduction

This report is the Independent Scientific Review Panel's (ISRP) final review of proposals submitted for funding in the Columbia River Gorge and Inter-Mountain provinces. It contains identification of general issues, an overview of the evaluation process, and final recommendations and detailed comments for each proposal submitted. Each ISRP recommendation includes a comparison with CBFWA's prioritization and takes into account project sponsor responses to the ISRP's preliminary review.

This marks the end of the ISRP's duties in the first iteration of the provincial review process, and although the process can use some fine-tuning, the ISRP is enthusiastic about the new approach. The ISRP found the addition of subbasin summaries, site visits, project sponsor presentations, and a formal response loop to be a major improvement in the peer review process.

General Issues

During the review, several cross-cutting issues were identified. The issues are included here to initiate regional discussion and inform future provincial reviews.

Subbasin Summaries and Plans

Subbasin summaries are especially helpful to the ISRP review process. The following observations are intended to improve the next round of subbasin summary drafting and the development of subbasin plans, and inform the Council's upcoming program amendments regarding provincial goals and objectives.

Communication and Coordination. The connection between proposals and subbasin summaries needs to be communicated more effectively. Some proposals made explicit reference to the priorities contained in subbasin summaries, which was helpful to reviewers. This cross-referencing could be further used to the advantage of planning and reviewing. Subbasin plans should not simply list needs and objectives collected from existing projects, but should instead be the leading documents that establish subbasin goals and objectives to which projects can respond.

Quantitative Assessment. The most notable omission from subbasin summaries and proposals was a strong quantitative basis for biological and habitat assessments. Quantitative assessments should be the fundamental basis of any production and habitat restoration plan. Specifically, stock assessment and monitoring information to guide work in fisheries projects (time series on escapement, catch, fecundity, smolt yield, age structure, survival during freshwater and marine life stages, etc.) is lacking, as is a coordinated process of watershed assessment, prescription, rehabilitation, and monitoring and evaluation. In addition, hatchery operations for harvest management versus supplementation were confused, poorly justified or unsupported by available data. Even incidental harvest is unjustifiable if the stock is below replacement levels based on stock assessment.

Limiting Factors. Often the “limiting factors” mentioned in subbasin summaries were stated at the general level of human activities or human-generated processes, e.g., mining, logging, overgrazing, or agriculture. Subbasin summaries and proposals should identify detrimental human activities but need to go to a deeper level and describe how these activities limit fish or wildlife production through their effects on water quality, water quantity, sediment flow, streamside vegetation, etc. Specific biological or physical factors amenable to near term management actions should be described, as should actions that could address the ultimate causal factors.

Timely Opportunities. Subbasin summaries and proposals could benefit from further emphasis on timely opportunities as well as limiting factors. For example, wildlife habitat mitigation often depends on the market availability of specific properties. In other cases, there is an unusual opportunity to study a population or process of import or interest. Proposals to specifically capitalize on such opportunities should be encouraged. The Phase One Amendments to the Fish and Wildlife Program provide one mechanism to take advantage of timely opportunities. The amendment creates a trust fund for the purchase of land and water rights that will provide the flexibility needed to respond quickly to market availability of land or water rights. Acquisition proposals will be reviewed according to criteria developed by the Council and approved by the ISRP. In past reviews, many proposals lacked sufficient detail, a problem that could be remedied by including a description of the type of detail required in the call for acquisition proposals.

Monitoring and Evaluation. Proposals must indicate plans for monitoring and evaluation of project performance, and, for ongoing projects, include summaries of monitoring data, in figures and tables even if the monitoring is conducted by another project. The ISRP is not recommending major research level data collection for all projects. Rather, we envision use of cost-effective procedures that can be easily replicated by new personnel. Potential savings may be realized by monitoring and evaluating at the basin, province, or subbasin scale. Proponents of related projects should collectively design monitoring and evaluation activities. For example, the Lake Roosevelt Fisheries Evaluation Program (Project #199404300) in the Inter-Mountain Province is a cooperative project whose objectives include monitoring and evaluation of the performance of hatchery fish in Lake Roosevelt. This project could provide monitoring and evaluation data for a number of other projects.

The ISRP envisions long term monitoring and evaluation with the following characteristics:

1. Data are unbiased.
2. Monitoring is cost-effective.
3. Responsibility for monitoring and evaluation is specifically assigned.
4. Data have long-term in addition to immediate management value.
5. Data are oriented toward detecting changes and trends rather than cause and effect.
6. Methods are not changed unless techniques overlap.
7. Reports and databases document methods, times, and location.
8. Reports are issued regularly and on time.

Adaptive Management: Proposals often list adaptive management as a monitoring and evaluation component. Despite the frequent use of the term, much project activity does not qualify as adaptive management because the effects of alternative management actions cannot be adequately compared. Most projects call for a single management action and an evaluation of its result, rather than the comparison of alternatives in an experimental setting with treatments and controls. Observational studies are unlikely to yield adequate information for adaptive management unless they are replicated over time and space. In some projects, the monitoring and evaluation components focus on detailed process models, which alone are unlikely to effectively deal with temporal and spatial variability and lead to useful information for adaptive management.

Provincial Planning: The NWPPC's proposal development and review process needs to consider development of provincial programs and the fit of subbasin plans and individual subbasin proposals into provincial programs. Provincial objectives should guide development of the program at the subbasin scale. Considering activities such as monitoring programs at the provincial scale could realize cost savings and facilitate coordination. The Council, BPA, and/or CBFWA could guide the planning process with the help of a technical team of subbasin representatives contributing the findings of activity-based workshops. Province-level planning will assist in the development of an activity-based program that is consensus-based, logical, and equitable. Within-province differences in proposal submission processes and resource management could be collectively resolved through such a planning process.

Examples of Province Level Planning: Province-level planning workshops should assist in the development of standard procedures for cross-cutting issues like stock assessment, supplementation, harvest management, vegetation sampling, and habitat restoration. Two hypothetical examples follow:

1. Test or Demonstration Site for Supplementation or Stock Assessment: The Hood River may be a good site for evaluating supplementation or for monitoring freshwater and marine survival. At this site, every immigrant fish has the potential to be monitored and the number of emigrating smolts can be estimated.

2. Test or Demonstration Site for Watershed Restoration: A detailed plan of watershed assessment, rehabilitation prescription, monitoring and evaluation was provided for the Wind River. Given the level of monitoring at this subbasin, other subbasins may require less detailed monitoring. Province-level Planning Workshops could assist in providing standard watershed restoration procedures for issues like stock assessment, supplementation, harvest management, habitat restoration, vegetation sampling, etc.

Planning Workshops. The ISRP recommends a series of planning workshops to assist with the development of subbasin goals, objectives, and strategies consistent with those of the province and basin. Subbasin plans must be consistent with the goals, objectives, and strategies for the province. The proposal planning and development process has evolved into a format that is now understood and reasonably easy to follow and evaluate. However the review of proposals made it clear that communication among subbasins and within subbasins could be improved. Directed workshops would enhance communication, helping the proposal development and review process by coordinating essential activities and avoiding duplicated effort.

An activity-based workshop approach could be of great benefit in improving understanding and communication, if not also in redirecting projects. At the provincial level, a workshop approach should also be used to coordinate subbasin efforts.

As an example, an activity-based workshop in fisheries might include:

- stock and habitat assessment
- habitat protection and rehabilitation
- harvest management
- hatchery production for recreational and commercial harvest
- supplementation to rebuild wild populations

Within each of the above categories, tasks might be defined as:

- operation and maintenance
- monitoring and evaluation
- research and development
- related tasks

Standard approaches, definitions, and criteria should be developed in the workshops and used within a subbasin and province, and perhaps over the entire basin. Standard operating procedures are particularly important for monitoring and evaluation at the subbasin, province, and basin levels. For example, a workshop on supplementation would define the goals, definitions, standardized methods, measurement variables, knowledge gaps, and areas for research and development, including a review of appropriate models to test assumptions and responses about supplementation, and sites where these might be testable. Another example would be to develop guidelines for the use of electrofishing in fish stock assessments.

Information Transfer

Data Repository. In principle, all data obtained through public funds should be available to the public. Projects should identify their plans making data and meta-data available for public use. If there are restrictions on data use (e.g., locations of sensitive species or a restricted-use time period for preparation of reports and manuscripts), then the restrictions should be specified and justified. StreamNet may be an acceptable database for electronic storage and retrieval of project data collected in the Province. However, the region appears to be moving to a distributed system where data and meta-data are made available through multiple sites on the World Wide Web.

Publication of results. In addition to publication of annual reports, project sponsors should publish results of their projects in the peer-reviewed scientific literature. Fish and Wildlife Program research results are of interest and use to the entire scientific community of the region.

Ecological Principles in Management

Buffering Wild Stocks With Hatchery Fish. Several proposals or HGMPs indicated that stocking hatchery trout will “buffer” (reduce) harvest of wild trout *in the same water body*—perhaps through some process of diluting fishing pressure. Nowhere was this idea substantiated with data from projects or outside studies. On the contrary, stocking-induced overharvest of wild fish in mixed-stock fisheries is well known. In absence of supporting evidence, the ISRP recommends that the buffering idea be dropped.

Density as a Limiting Factor. Density limits in the Bonneville Pool and lower Columbia River need to be addressed as a potential factor limiting salmon productivity. Without assessment of stocks including survival in the pool and lower river, and without consideration of density as a potential limiting factor, managers may inappropriately increase smolt releases to the detriment of future cohorts of native salmon. Project sponsors in several programs contemplate a marked increase of hatchery production as a method of supplementation without apparent consideration of the detrimental effect of this increased density of salmon smolts on the survival of native salmon.

Predator/Prey Relationships: Introduced non-native fishes, such as walleye, bass and catfish are at times and places significant predators on salmonids, as are the native northern pikeminnow. The first three species provide significant sport fisheries that are in some cases encouraged by management agencies through stocking, while measures to reduce northern pikeminnow populations are in place throughout the mainstem. These species and their management should be taken into account in province and subbasin summaries. One proposal estimated that 10-20% of hatchery planted kokanee were consumed by walleye within a few days. Obviously, the success of resident fish projects can be seriously affected by such predation.

Grazing/Fencing Strategies: New strategies are needed to deal with livestock grazing effects. Fencing appears to be the only grazing control method in Intermountain projects. “Stream-parallel” fencing can be effective but costly, and as revealed in at least one project narrative, requires ongoing maintenance. Managers should avail themselves of the information on the various grazing and fencing schemes that have been developed over the last 20 years in the interior West. Perhaps this could be facilitated by a BPA-sponsored basinwide workshop on the topic.

ISRP Review Process

Project evaluation and selection occurs in several steps. The ISRP review steps are described below.

Proposal Review

By August 18th, proposals for the Columbia Gorge and Inter-Mountain provinces were distributed to the ISRP and CBFWA review teams. To ensure the most consistent and fair evaluation of proposals, standard formats and criteria were applied to all proposals. At least three ISRP/Peer Review Group members reviewed each proposal in detail based on the ISRP review criteria and generated comments and scores prior to the proposal review workshop. These scores and comments were not made available to the project sponsors at the workshop, but were used by the ISRP to scope questions for the site visits and workshop presentations.

Project Review Workshop

The project review workshop for the Columbia Gorge province was held from September 11th - 15th; the Inter-Mountain from September 18th - 22nd. The workshops were split into three stages: a) Site Visits (two days), b) Project Presentations (two days), and c) ISRP Evaluation (ISRP only; one day).

a) Site Visits

The first two days of the workshops were dedicated to province tours by the ISRP and CBFWA review teams. The purpose of the tours was to give the reviewers a basic understanding of the ecological conditions and limiting factors in the province so that the projects were placed in their geographic and ecological context. In addition, the review teams visited a cross section of ongoing wildlife, habitat restoration, and artificial production projects in each province. The ISRP teams greatly appreciated the lively, informal exchanges and the chance to see the landscape and many project sites first-hand. These and the oral presentations were invaluable in making clear the nature of the projects.

b) Project Presentations

The third and fourth day of the workshops were dedicated to project presentations. Each set of subbasin presentations began with a presentation of the subbasin summaries. Each project proponent was given the opportunity to provide a concise presentation of their proposal. Presentations were expected to address the proposal review criteria including the relation of the proposed project to the subbasin summary. Following each presentation, there was an opportunity for a question and answer session between the reviewers and the project proponents.

The presentations and question and answer sessions were useful in clarifying matters left unclear in the written proposals. However, the quality of the presentations varied. For future province site visits, the ISRP will work with CBFWA and Council staff to develop guidelines that outline the elements of an effective project presentation and that emphasize the continuing importance of well-written proposals.

c) Review Team Evaluation Meeting

On the last day of the workshop, the ISRP review team met by itself to share impressions of the review, compare results with standard evaluation criteria, and reach consensus on project scores and comments.

ISRP Final Report: Response Review and Comparison with CBFWA Prioritization

On October 6, the ISRP issued a preliminary report based on findings from the proposal review and workshop (ISRP 2000-8; www.nwppc.org/isrp/isrp_2000-8.pdf). In that report, the ISRP found that 16 proposals were scientifically sound, offered benefits to fish and wildlife and did not require any further ISRP review. Thirty-six proposals were recommended as fundable only if the project sponsor adequately responded to the ISRP's concerns, and 9 projects were recommended as "do not fund; a response is not warranted." One project was not amenable to scientific review. Project sponsors were provided several weeks to respond to the ISRP's comments.

The ISRP received responses to the 36 projects for which a response was requested and to several projects for which a response was not requested. At a minimum, the three ISRP reviewers who reviewed the original proposal reviewed the response related to that proposal. The ISRP met and discussed the responses and CBFWA's priority recommendation and related comments for each proposal (see CBFWA's Draft Fiscal Year 2001-2003 Columbia Gorge and Inter-Mountain Province Work Plans, November 15, 2000; www.cbfff.org/province.htm).

Review Results

Taking into account the original proposals, the workshop, the response, and CBFWA prioritization, the ISRP review teams reached consensus recommendations and developed comments on each of the 62 proposals submitted. The ISRP's final and preliminary recommendations and a brief description of each proposal are provided below. In cases where the ISRP and CBFWA recommendations differ, CBFWA comments from its FY01-03 draft annual implementation work plans are also provided.¹ The Gorge province is presented first followed by the Inter-Mountain. Within each province, the proposals are arranged by level of ISRP agreement with the CBFWA prioritization.² This format was chosen to aid the Council in identifying potential issues.

¹ CBFWA's comments include those made by CBFWA reviewers of the proposal and managers on the budget, and were not drafted for inclusion in the ISRP's report. These comments are included because they are what the ISRP reviewed as it compared its recommendations with CBFWA's.

² The following definitions were used for the CBFWF subbasin prioritization:

- Urgent - These projects or tasks within a project are of urgent need. They will either have a direct impact on survival or protection of a key species or will protect investments made in this subbasin. These projects should be able to demonstrate an immediate cost if not funded (loss of habitat, impact on a population, etc.). An example might also include ongoing O+M costs.
- High Priority - These projects or tasks within a project are high priority within the subbasin. The project addresses a specific need within the subbasin summaries.
- Recommended Actions - These are good projects that cannot demonstrate a significant loss by not funding this year. These projects should be funded, but under a limited budget could be delayed temporarily without significant loss.
- Do not fund - These projects are either technically inadequate or do not address a need within the subbasin summaries. These projects may be inappropriate for BPA funding.

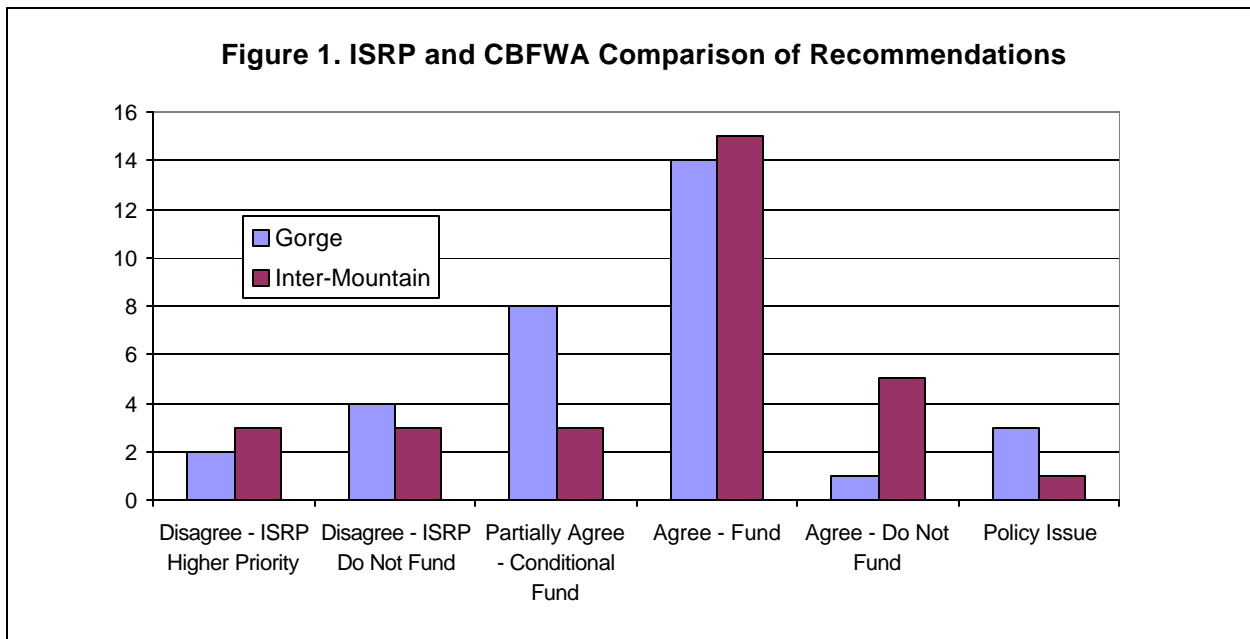
The ISRP recommendations that differ with CBFWA’s are presented first. These disagreements come in two forms:

- 1) the ISRP recommends that a proposal is fundable and of higher priority than the CBFWA prioritization (2 in Gorge and 3 Inter-Mountain); and
- 2) the ISRP recommends that a proposal is not fundable but is recommended as high priority or a recommended action by CBFWA (4 in Gorge and 3 Inter-Mountain).

Following the disagreements, the ISRP recommendations that agree or partially agree with CBFWA’s are provided. These fall into three categories:

- 1) the ISRP conditionally agrees with CBFWA that a proposal is fundable and either is high priority or a recommended action (8 in Gorge and 3 Inter-Mountain)
- 2) the ISRP agrees with CBFWA that a proposal is fundable and either is high priority or a recommended action (14 Gorge and 15 Inter-Mountain) ; and
- 3) the ISRP agrees with CBFWA that a proposal is not scientifically sound or does not offer benefits to fish and wildlife, and is not fundable (1 Gorge and 5 Inter-Mountain).

In addition, several proposals or comparisons with CBFWA’s prioritization raised policy issues that were beyond the ISRP’s purview (3 Gorge and 1 Inter-Mountain). These are presented before the “Do Not Funds.”



Columbia River Gorge Proposals

ISRP Disagrees with CBFWA: ISRP Fundable and CBFWA Lower Priority or Do Not Fund

ProjectID: 21004

Determination of difficult passage areas by examining swimming activity of upriver migrating salmon implanted with EMG transmitters

Sponsor: PNNL

Province: Gorge

Subbasin: Klickitat

Short Description: Examine the swimming activity and energy use of salmon and steelhead as they ascend areas of poor fish passage (Lyle and Castile Falls) to identify areas that provide special difficulty.

Sponsor Request FY01: \$212,929

Sponsor Request FY01-03: \$632,929

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: Disagree with CBFWA priority. This is a high priority project that deserves funding.

ISRP Final Recommendation and Comments:

Fundable, the response is adequate although minimal. The ISRP comments were briefly addressed and a revised proposal was submitted, which included the additional tasks (Castille Falls, distribution in the subbasin) that the ISRP suggested. The ISRP believes the project is a high priority project for the Klickitat subbasin and will provide useful information for the design and management of fishways at Lyle and Castille Falls. The project is logical and should precede the decisions on the fishway work on Lyle and Castille falls. The project should do more than fine tune the Lyle Falls fishway proposal. It should provide information on whether the fishway improvements are indeed required and at what times of year (i.e., what flow conditions). Additionally the technique will provide valuable information on the upstream movement of migrating salmonids and important refuge habitats. The approach could have basinwide applicability on assessing fish passage at different sites.

CBFWA Comments from DAIWP: Although this project provides a very interesting line of research, the co-managers are not convinced that the results will lend themselves to assist decision making on the river. The fish passage areas identified in the proposal are dynamic according to flow levels and results may be difficult to interpret. This would be an interesting project, but management and other activities on the Klickitat River cannot wait on the results from this project, particularly since it is unknown if the results will be useful. This proposal has not been fully developed to permit an adequate review.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. The reviewers strongly support a 1 to 3 year program. This project is innovative. The proposal would be appropriate for submittal in the innovative process, as is, because of the proposed sequencing of actions it is not well integrated with the subbasin effort.

While this is a very brief proposal, it is innovative and provides an opportunity to critically examine the fish passage problems identified in the Klickitat River. The stated objectives are actually tasks, rather than target achievements for the work; and are very limited relative to the potential information to be gained from these tagged salmon (probably because the proposal is submitted for only one year). The review panel supports the one-year examination, but would strongly recommend re-submission of the proposal to include funds for tracking the fish up-river. Such a program would identify rate of movement, holding areas, and ultimately spawning locations.

In a logical progression of project development, however, there is an obvious concern about the submission of this project and the KFP request for \$3.2 million to build a fishway. If there is concern about the degree of fish passage problems in the Klickitat, then this work should be undertaken before KFP proceeds with major expenditures on fish passage, etc. However, if at Lyle Falls, the decision has been made to proceed with construction of the fishway and broodstock capture site, then this investigation could be moved up-river to Castile Falls. From our discussions, we concluded that there was a definite need for this project to be more integrated with the KFP projects. For example, if the results of this study show that passage is not a problem at this site, will the construction projects at the falls be altered?

ProjectID: 21016

Accelerate the Application of Integrated Fruit Management to Reduce the Risk of Pesticide Pollution in Fifteenmile Sub-basin Orchards

Sponsor: Wy'East RC&D

Province: Gorge

Subbasin: Fifteenmile

Short Description: Accelerate the implementation of Integrated Fruit Management in orchards that use new generation pesticides and sprayer technology to reduce the risk of pollution to land and aquatic resources from pesticides affecting salmon and steelhead.

Sponsor Request FY01: \$308,772

Sponsor Request FY01-03: \$738,457

CBFWA Recommendation: Do Not Fund

ISRP Recommendation Compared with CBFWA's: Disagree, this proposal is fundable.

ISRP Final Recommendation and Comments:

Fundable, the response was adequate. If fish and wildlife managers are truly concerned about water quality and the application of broad-spectrum pesticides, this kind of project could be a very important experiment and applicable to many watersheds in the Basin, specifically in the Yakima and Hood subbasin where orchards are prevalent. A pilot project of this nature, especially if it included more specific ties to water quality and fish, could provide useful management information in the basin. Considering the results of recent studies and literature, the ISRP expects that concerns over the detrimental effects of pesticides will become a greater issue in the Basin. We agree with CBFWA that this proposal should include a more detailed monitoring and evaluation plan to measure benefits to fish and wildlife.

Whether an agriculture project of this kind should be funded through BPA is a policy issue beyond the purview of the ISRP. However, the proposal solicitation should provide guidance on the spectrum of funding available or not available for such projects.

***CBFWA Comments from DAIWP:** This project proposes to develop a data management system that would assist farmers in applying pesticides on orchards in the Fifteenmile and Threemile subbasins. This project would purchase several weather stations on selected orchards throughout the subbasin and fund the development of centralized processing software to coordinate the data collection and analysis. The data would then be available to all farmers in the area via the Internet to assist in managing the application of pesticides. The fish and wildlife managers did not see the direct link to fish and wildlife benefits in this subbasin. Most of the orchards are not located in the riparian areas in the Fifteenmile Subbasin and the sponsors showed no tie to providing data and information to local fish and wildlife managers. Pesticides were not identified in the Fifteenmile Creek and Oregon tributaries to the Columbia River between Hood River and The Dalles Dam Summary as a major limiting factor. No monitoring and evaluation was proposed to measure benefits to fish and wildlife.*

ISRP Preliminary Recommendation and Comments:

Fundable only if the proposers make a convincing case of benefits to fish and wildlife and a closer tie to the Fish and Wildlife Program (FWP). The presentation made a better case than the proposal and the proposers were forward thinking. The agriculture experiment station should be a source of assistance for these proposers.

This proposal describes an approach to reducing non-point source pollution resulting from the application of orchard pesticides. It is a problem relevant to the water quality aspects of fish habitat. The proposal does a good job laying out objectives and comprehensive tasks, and takes care to include criteria for success and timelines in the methods. Adaptive management is included through explicit plans for modifications of procedures. The proposal establishes connections to other non-FWP projects, but does not tie the proposed work into other projects within the FWP.

The proposal places an emphasis on collaboration with growers, outreach and education. This is a real strength of the proposal. The main question has to do not with the relevance of this work, but with who should pay for it. This might be more appropriate as part of a more collaborative project that would include specific assessment of a potential problem for resident and anadromous fish.

ISRP Disagrees with CFWA: ISRP Do Not Fund and CFWA High Priority or Recommended Action

ProjectID: 199304001

15-Mile Creek Steelhead Smolt Production

Sponsor: ODFW

Province: Gorge

Subbasin: Fifteenmile

Short Description: Estimate subbasin smolt production for the wild population of winter steelhead in Fifteenmile Creek and collect information on selected life history and biological characteristics of downstream migrant fishes endemic to Fifteenmile Creek.

Sponsor Request FY01: \$33,704

Sponsor Request FY01-03: \$92,204

CFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CFWA's: Disagree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. The proposers did not respond to the ISRP concern about adequacy of mark/recapture design. Methods entailing a single trap and upstream release of transported marked fish are biased and imprecise. The ISRP is concerned that the assessment information the proposers are collecting will not be adequate in estimation of smolt yield, and of limited value without the addition of data on adult escapement, and that continuing the current program may give misleading or highly uncertain data. The ISRP recognizes the need for some of the intended information for a useful stock status assessment, but the current plan is not sound.

CFWA Comments from DAIWP: Demographic information is being collected through this program on the steelhead smolts. Due to the limited number of outmigrants, PIT tags are not being used due to low probability of recovery. The ISRP recommends modifying the scope of this project, which would exceed the needs for the Fifteenmile subbasin at this time. The project provides the foundation of all fish monitoring in the Fifteenmile subbasin for all activities and therefore is considered urgent at this time. If this data were lost, the ability to measure the success of any project in this subbasin would be lost.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. The anticipated improvements from the fencing and water acquisition projects suggest that the productivity of the system for winter steelhead may improve for the future. The proposed budget for a screw trap may be necessary for stock assessment; but reviewers are concerned about the adequacy of the proposed stock assessment. Proposers do not seem to consider gathering information about survival outside the basin (PIT tags), nor do they consider the value of demographic sampling (scales for aging) or of size and condition information. It may be that steelhead fry and parr may not rear only in Fifteenmile Creek but also may use the Columbia mainstem for rearing, historically; this project could provide information about this life history. A review of the methods and effectiveness of

rotary screw traps in providing reliable smolt yield estimates may be required. Recapture rates may be low, but methods of improving the technique may be available (such as separate marking and recapture sites). A province-wide agreement on monitoring protocol and sites would assist (see comments on subbasin planning workshops under Programmatic Issues).

ProjectID: 21011

Assess the Current Status and Biotic Integrity of the Resident Fish Assemblage in Bonneville Reservoir

Sponsor: USGS/CRRL

Province: Gorge

Subbasin: Bonneville Reservoir

Short Description: Resident fish in Bonneville Reservoir will be sampled to provide baseline information on the population characteristics and status of resident fish species and the biotic integrity of the resident fish assemblage.

Sponsor Request FY01: \$351,700

Sponsor Request FY01-03: \$1,099,700

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: Disagree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. The unsolicited response falls short of what would be required to reverse our decision. It fails to address the material issues. We regret that the ISRP comments on this proposal in previous cycles were not as clear and helpful to the sponsors as they ought to have been. We provide the following comments on certain points to clarify our current analysis of this proposal. This is not to imply that point-by-point addressing of these issues in a subsequent proposal would necessarily lead to reversal of our recommendation.

The stated goal of the proposed study is to “assess the status of resident fish species and the biotic integrity of the resident fish assemblage in Bonneville Reservoir”, which is a stated information need in the Subbasin Summary. The application intended for this information is to “...produce data that will establish a baseline from which the effects of hydroelectric operations and watershed activities that influence mainstem river conditions on the resident fish assemblage in Bonneville Reservoir can be evaluated.” At the heart of the ISRP comments on this proposal is our doubt that it would be possible to relate shifts in the species composition of the resident fish assemblage to changes in operation of the hydroelectric system or watershed activities in the river basin. One of the reasons for skepticism is that there have been so many human-induced changes in the fish assemblage, brought about, for one thing, by introduction of non-native species. How would a “shift toward normative conditions” in the fish assemblage be identified in light of the drastic changes induced by the presence of non-native species? How would one define “biotic integrity” within a system altered by introduced species? The proposal fails to discuss basic issues of that kind, and instead focuses on sampling protocols and routines for developing data. The proposal does not convince the reviewers that it can develop information useful for measuring changes that might be due to the factors of

interest. Prior to moving to data collection and routines it would be necessary to give thought to what the possible outcomes of the study might be and what interpretations might be possible. Such a thought process would necessitate review and interpretation of data obtained in the past. Availability of data might lead to selection of parts of the river other than Bonneville Reservoir as appropriate study areas. On the other hand, while the goal of attaining some level of “biotic integrity” might be a worthy one, it might prove to be impossible to agree on an appropriate measure.

***CBFWA Comments from DAIWP:** The managers have some concern that this project is only looking at one measure of biotic integrity (resident fish) within the reservoir. This is good basic research but the contribution to management decisions is unclear.*

ISRP Preliminary Recommendation and Comments:

Do not fund. A response is not warranted. The proposal is generally well written and addresses some concerns (i.e., reference to data sources for other large river/reservoir settings) identified by last years review (project 20066). Other sampling concerns (i.e., possible utilization of more quantifiable sampling techniques) were not addressed. In the reviewers minds, the proposal continued to contain only vague allusions to a general need for more data, without indicating why it is priority work or identifying substantive problems that need to be solved. The major task proposed - assessing efficacy of various sampling gear - could have been done in preliminary fashion as part of proposal preparation, allowing the proposers to focus on critical questions as significant objectives. The database the project could generate would be very useful if a major change in the hydrosystem or its operation was being planned, as baseline data from which to assess changes. Alternatively (or additionally) there is a need for biological investigation of the reservoir to help understand its carrying capacity for salmonids and to assess whether that capacity is currently exceeded. As written, the proposal was not pointed in that direction.

Reviewers are concerned that the biologic integrity portion of the proposal likely will not provide a product that will be of substantial use in the context of the Fish and Wildlife Program. IBI was developed for detecting disruptions in stable communities, but was not developed for use in highly perturbed systems. The most likely result of the analysis would be to describe the system as high variable and highly perturbed - which we already know. Collaboration with others is not identified. Specifically, the project is not tied to northern pikeminnow work.

ProjectID: 21024

Evaluate Hatchery Reform Principles

Sponsor: NMFS**Province:** Gorge**Subbasin:** Wind

Short Description: Investigate implementation potential of conservation hatchery principles at production hatchery scale using NATURES raceway habitat rearing, anti-predator conditioning, and growth modulation in a statistical design allowing partitioning of effects.

Sponsor Request FY01: \$1,063,200**Sponsor Request FY01-03:** \$3,351,307**CBFWA Recommendation:** Recommended Action**ISRP Recommendation Compared with CBFWA's:** Disagree, Do Not Fund**ISRP Final Recommendation and Comments:**

Do not fund until an experimental design is adequately presented. The reviewers current understanding is that the revised design (point number 2 in the response) replaces the design described in point 1. The proposal appears to still be evolving as the response contains errors. The original proposal, the presentation, and the response each offer a somewhat different approach to the project and its research objectives. The reviewers found the iteration in the response to be promising. The project would provide useful information, albeit in the long-term, on hatchery reform with basinwide applicability. The experimental design is carelessly presented, although it contains many of the basic elements of a sound experimental design. The proposed new experimental design involves more treatment types; thus the power analysis as presented needs to be modified to reflect the new design.

***CBFWA Comments from DAIWP:** More definitive results from NATUREs studies should be available prior to initiating a large-scale production investigation. Fund after a rigorous summary of all applied NATUREs studies has been presented to CBFWA AFC to provide a better justification for work. This project potentially meets a RPA of the 2000 Draft Biological Opinion (9.6.4.3 Actions to Implement Recommendations in the NWPPC's Artificial Production Review).*

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. Clarify and resubmit in response review.

The uncertainty about the project design and the power analysis precludes us from currently recommending funds for this proposal. The basin should consider what evaluation standard should be applied to these comparative studies. For example, past studies have examined survival for a short period or migration distance downstream. However, the ultimate measure of success must be the return rate of adults. Modest increases in juvenile survival won't be a major gain in the Basin unless they lead to substantially greater increases in SARs ... (e.g., a 25% increase in a 1% SAR is still only

1.25%; not enough to resolve our problems). Before any major changes in procedures are endorsed, we need to be realistic about our expectations from these tools.

The design of the intended 'experiment' needs to be clarified, as the presentation of the experimental design during the site visit was quite different than that described in the proposal. Interactions were dropped (a mistake we think) and the power analysis was not completely explained. The proposal (but not the presentation!) described a 2X2 treatment experimental design that seems appropriate to examine the treatment effects of bottom substrate and predator avoidance. The approach is also used to examine the effects of controlled temperatures and water source (spring water) versus ambient temperatures and river water. In many cases preliminary data support survival advantages by smolts reared under one of the NATUREs environmental conditions. It will be most interesting to see if those trends continue with a larger scale study and to try to quantify any survival advantage of multiple factors and their interactions. There is a lot of interest in the region to determine if NATUREs is a viable tool. The methods do not describe where detections are to occur.

A long history of this project is described. Why has there been so little peer review of primary results? Most publications seem to be reviews of the good ideas of NATUREs, not publications of results. Why isn't this group involved with Beckman and his colleagues who have published pertinent results on growth patterns and SARs? Why aren't they part of this study's design team? Elements of NATUREs haven't been studied in designs that isolate effects and interactions. To date, NATUREs has been a potpourri of gravel bottom, christmas trees, arbitrarily chosen culture densities, diets, etc. Apparently, the only benefit has been darker coloration's protection immediately (hours) after release in clear streams where birds are present. None of the rest of it has been tested in isolation or interaction with other elements. So the design here is to test the potpourri. We still won't know which element is significant.

Despite the concerns expressed above, this research proposal addresses timely and important questions central to hatchery reform in the Columbia River Basin. The project sponsors collectively have an impressive research and publication background – and have been diligent about publishing results from many of their previous studies. The efficacy of hatchery reform and the potential for reform that exists in many older production facilities are critical questions in the basin. The sponsor's commitment to rigorous research and their willingness to seek peer-review scrutiny of this work is commendable. One of the reviewers questioned whether Carson Hatchery is the best situation to test the NATUREs theory; perhaps the new Nez Perce tribal hatchery, under construction, will be a more appropriate facility.

ProjectID: 21026

Inventory and Restore Beaver and Beaver Habitats

Sponsor: YN

Province: Gorge

Subbasin: Klickitat

Short Description: Inventory and restore beaver populations and habitats to the upper portion of the subbasin to restore the array of functions that beaver provide for the watershed.

Sponsor Request FY01: \$205,440

Sponsor Request FY01-03: \$675,440

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: Disagree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund, the project design was not provided in adequate detail. The reviewers were concerned that there was not more information on the source and size of the proposed beaver population. With a better project design, this project would be fundable as a small pilot project (with a reduced budget) in an area where the likelihood of success is reasonable in the upper watershed, and where the response benefits can be monitored. A point-by-point response to the ISRP comments was provided that the reviewers reacted positively to even though they had major reservations about the original proposal. The limitations of the project were recognized, including the need to integrate this work into an overall watershed assessment and prescription plan. The past and potential role of beavers should be considered as part of the watershed assessment. The anticipated benefits to steelhead are questionable since they do not prefer slow pond-like habitat and are generally found in the mainstem of third-order streams or larger.

Although the potential for brook trout expansion is addressed through selection criteria for sites, reviewers were troubled by the comment on brook trout indicating that stream gradient would likely preclude brook trout immigration. The proposers should refer to recent work in Montana (Adams et al., Transactions of the American Fisheries Society, May 2000) indicating that channel slopes of up to 13% do not ensure against upstream dispersal of brook trout. They should also consider the extensive literature on beaver management and problems that may evolve.

The ISRP comment on rolling the project into the rehabilitation proposal was directed at the need for a watershed assessment to show that this kind of activity is a priority.

***CBFWA Comments from DAIWP:** If more than one of the three new Yakama Nation wildlife projects are funded (21026, 21027 and 21028), the projects should be combined to maximize efficiencies in implementation and ensure cost effectiveness.*

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP concerns. This proposal should not be funded as an individual project. This should be one of the tools among the

suite of tools used for watershed rehabilitation in the subbasin. Consider integrating this proposal with #199705600 Riparian and In-Channel Habitat Enhancement Project.

From the perspective of ecosystem function and as a means to restore riparian wetland function along streams, this is an interesting proposal. This proposal does a reasonable job outlining why the restoration of beaver habitat would be beneficial to watershed function, but its approach is less clear. The primary uncertainty is how it builds on previous beaver restoration work (earlier projects listed), what it will do to complement existing work, and why beaver have not re-colonized naturally. The objectives and methods need to be presented in more detail. For example, how will the historical database be used, and what are the limits on the relevance of historical data under current conditions? How will the prioritization of habitat restoration be done? How will the results of these introductions be assessed and against what comparative basis?

The review panel questioned the reason for introduction since the salmonid most likely to benefit from these habitats are coho salmon ... which do not use the upper Klickitat drainage. Further, it is very possible that beaver ponds and the associated habitat would encourage brook trout expansion which is likely not desirable.

Finally, why is beaver restoration related to “fully mitigating for wildlife losses from hydropower”? The loss of beaver is not likely to be closely associated with the hydrosystem, is this proposal then appropriate to this funding source? If the re-introduction is proposed as an ecosystem restoration study or technique, then we can accept that argument. However, if beavers are a means to restore riparian wetlands and store water, then the cost of such programs are appropriately included in the KFP habitat restoration projects. The two proposals will be linked already since mapping and habitat assessment are needed to determine sites for introduction.

ISRP Conditional Fundable Recommendation - CBFWA High Priority or Recommended Action

Klickitat Fisheries Program Recommendation

Projects: 198811525, 199701725, 198812025, 199506325

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Fundable on an interim basis.

ISRP Final Recommendation and Comments:

Fundable on an interim basis. The KFP provided adequate responses to most of the ISRP review comments, but differences remain on three substantive issues: supplementation, structure of the program proposals, and sequencing of project implementation. In order for the ISRP to evaluate whether a “sound scientific basis” exists to these KFP projects, we will require a further response to these issues. To proceed in the interim, the ISRP recommends that the KFP develop comprehensive assessment plans and documents (including completion of the HGMPs) and that these be submitted for review before future budget approvals. Hatchery and fishway construction will be handled through the

3-Step process and implementation of the APR as specified by the Council's amended program.

Supplementation: Respondents for the KFP stated their objective of using hatchery production to rebuild natural production and provide significant harvest. The harvest objectives were derived from the Tribal Restoration Plan and U.S. vs Oregon. It is clearly not the role or intention of the ISRP to comment on such policy-based objectives. Our task is to advise on the scientific basis of programs to achieve the stated objectives. Given the information provided on natural populations in the Klickitat basin (provided for the original submissions), the stated size of current hatchery releases, and these harvest objectives; this committee remains concerned that the restoration of endemic natural populations will be at risk. Consequently, the committee strongly recommends that quantitative stock assessment programs (including monitoring and research) be implemented on these natural populations, and that the KFP phase-in the desired levels of hatchery production. The establishment of healthy natural populations and the determination of sustainable total exploitation rates would provide a "base" harvest within the Klickitat basin that could then be augmented through hatchery production. However, unless selective harvest is feasible on the hatchery production, fisheries should be limited to the harvest rate sustainable by the natural populations. Hatchery production should be scaled to the allowable harvest level and the hatchery escapement necessary. The committee believes that such a rebuilding/assessment process and integration of hatchery production is the best biological means over time for accomplishing the KFP objectives. The time required to achieve these will be a function of exploitation pressures, habitat productivity, environmental conditions (eg. marine survivals), and interactions between hatchery and natural fish.

In our initial review, the limited information on natural populations and the scale of hatchery production, left this committee with a concern that harvest, not restoration, was the principle objective of the KFP supplementation program. However, in the KFP reply the objectives of restoration of natural populations and harvest seemed more balanced. It is our unanimous advice that to achieve this balance, the status and productivity of the natural populations must be well-described and paramount in designing a sustainable fishery program, and that hatchery production can augment harvest but can not compromise restoration of natural production. Restoration of diverse natural populations will be the long-term resource basis within the Klickitat basin and needs to be closely monitored and restored. Furthermore, if substantial harvest rates are expected in terminal areas (i.e., within the Klickitat River or Bonneville pool), then a quantitative in-season management program is also necessary to reduce the risk of over-fishing on an unexpectedly poor return and to meet allocation agreements where appropriate.

Organization of proposals: The KFP clearly disagreed with the ISRP's suggested re-organization of proposals along major program activity types. The ISRP also recognizes the difficulty in identifying individual activity costs if the proposals were "unbundled" as described in the KFP response. Our suggestion, however, was more to "re-bundle" or re-organize proposals along the principal program objectives (eg. stock assessment, habitat assessment and restoration, administration and data management, and major project

construction). At this time, however, we see little need to prolong this issue since it involves re-organization of activities not whether specific activities merit support.

The objective of our suggestion was to collate activities for evaluation of a comprehensive program. For example, all programs within the basin required a sound technical basis of stock assessment ... involving estimation of numbers of spawners (by stock, location, age and sex), catch by stock/age (and/or exploitation rates), and environmental monitoring. These types of activities are referred to but were components of various proposals and did not specify how these activities would be conducted. Monitoring of spawning escapement was an objective associated with construction of the Lyle Falls fishway; but these falls are apparently not a complete barrier to migration so these counts will be incomplete. How will the total spawning escapements and their distribution be determined? The critical issue for our review is that we understand how the technical assessment or research will be conducted and to what quantitative standards. If the KFP prefers to maintain this organization of proposals, then the onus remains to submit more detailed and explicit descriptions (such as begun in Table 5 of their reply) of methods and programs so that credible peer review can be conducted.

In the absence of these comprehensive work plans, including data requirements and analysis;

- the KFP cannot assure itself of a sufficient information basis for resource development or that it can be conducted in a cost effective manner, and
- the ISRP cannot assess whether a “sound scientific basis” exists to the proposals soliciting funds, as required under the 1996 amendment to the Power Act.

Sequence of Project Implementation: The ISRP was impressed with the related EMG proposal (21004), which promises to provide critical information on fish passage at Lyle and Castile Falls. In a logical progression of project development, the EMG proposal would be funded prior to implementation of the KFP passage improvements at both Lyle and Castile Falls. Information gathered in the EMG proposal could provide critically important information about the degree of passage barrier at the two falls, as well as the energetic costs associated with transiting them. If there is concern about the degree of fish passage problems in the Klickitat, then this work should be undertaken before the KFP proceeds with major expenditures on fish passage, etc. However, if at Lyle Falls, the decision has been made to proceed with construction of the fishway and broodstock capture site, then this investigation could be moved up-river to Castile Falls. Nevertheless, from our discussions, we concluded that there was a definite need for project 21004 to be more integrated with the KFP projects.

ISRP Preliminary Review Comments on the Klickitat Subbasin and the Klickitat Production Project (KFP)

The Klickitat River is one of the longest undammed rivers (95mile long) remaining in the Pacific northwest and is the largest drainage basin (1,350 square miles) within the Gorge Province. The mainstem Klickitat contains two passage impediments for salmon and steelhead. One in the lower river at Lyle Falls (river mile RM 2.2) and the second up-river at Castile Falls (RM 64), but neither of these are blockages to fish passage. Using

Mitchell Act funds, the Klickitat Hatchery (RM 42.5) and fishways at Lyle Falls (RM 2.2) were constructed in 1952. The lower couple of miles in the mainstem pass through a narrow rock cut and provide one of the few remaining dipnet fishing opportunities for Tribal fishers in the Columbia Basin. “It holds special significance as the one remaining site where Yakama fishers have the opportunity to fish year around using traditional dipnet and jumpnet gears.”

The watershed supports a diversity of fish and wildlife. Spring chinook, summer and winter steelhead are endemic to the system. Summer chinook have been detected via electrophoretic surveys (Marshall 2000, in review) but status uncertain. Fall chinook were not know in the basin but lower Columbia River “Tule” stock were introduced in 1946. Fall chinook production was switched to upper river Brights in 1986. Similarly, coho salmon were not present until the early 1950s when lower Columbia River hatchery fish were released. Resident trouts in the Basin include rainbow, resident and adfluvial bull trout in upper basin, brook trout and resident and coastal cutthroat. However, resident cutthroat may not exist in the Basin and the present status of the coastal cutthroat is unknown. Brook trout were introduced in the late 1970s and now naturally reproduce in the upper river tributaries. Pacific lamprey are known to utilize the river up to RM57.

The Subbasin summary identified several threatened or endangered wildlife species within the Klickitat watershed, including Sandhill crane, Western Pond turtle, Oregon spotted frog, Western Grey squirrel, Bald eagle, Northern spotted owl, Canada Lynx, Peregrine falcon, Mardon skipper (small butterfly).

Hatchery production in the Klickitat only involves the one hatchery, but production of fall chinook and coho salmon are brought in from outside facilities. Hatchery HGMPs were provided for spring chinook, fall chinook, and coho salmon but not for steelhead. These plans were incomplete and the steelhead plan needs to be provided given the importance the proponents placed on supplementing production of this endemic species. Levels of production identified in the plans were:

- 1) spring chinook release target 500,000 to 600,000 yearlings from an endemic stock to be used to supplement natural production,
- 2) ”Bright” fall chinook releases of about 4 million smolts intended for mitigation of Tribal and non-tribal harvest; no escapement goal was stated for the return of these fish to natural spawning areas,
- 3) coho salmon release of 1.35 million smolts from Lewis R hatchery and to be acclimated in ponds along the Klickitat systems, production is intend for harvest mitigation and no escapement goal was provided.

Although no HGMP was provided, our understanding is that hatchery production of summer steelhead will be intended to supplement natural production of these fish. Further, although comments were made about the value placed on summer chinook, no reference was made about enhancement of this race.

While the subbasin summary was important as background material for this review, the review committee did identify several topics that would have strengthened the

presentation. For example, the season hydrograph, run timing of the races, basic data for stock assessments (catch, escapements, age structure), the basis of management goals, and a basis for prioritizing habitat issues. In the absence of quantitative stock assessments, the proposals fail to justify technically the need for the projects presented. For example, what is the basis for the numbers of hatchery fish to be released?

There was not evidence of a Watershed Council presence in the subbasin and a watershed assessment plan was not incorporated in the summary. As a comparison, we note that the Hood River basin had a strong and capable watershed council presence.

In reviewing these proposals and during interviews, the review committee was concerned about the use of the term “supplementation” which was important in justifying several proposals. The understanding by the Yakama Nation of “supplementation” seems at variance with the orthodox definition, i.e. ‘jump starting natural reproduction of a native stock by temporary hatchery reproduction.’ Our understanding of ‘supplementation’ in the Klickitat proposals seems to be the use hatchery production to support harvests while encouraging natural spawning in an aggregate population of hatchery- and wild-spawners. Again this interpretation is strengthened due to a lack of management goals for the natural population. This leads to the paradoxical tactic of increasing spring chinook smolt releases — the apparent rationale being that ‘in order to maintain present harvest and have natural spawning too we’ll have to increase smolt releases and rely on a predictable SAR consistent with those of recent history”. Such a tactic fails to consider density dependence between salmonid smolts (in the river, Bonneville pool, or lower Columbia River) as a limiting factor on the productivity of natural populations. The review panel would encourage the proponents to establish their management goals, phase in hatchery production, and evaluate how to achieve their apparent goals of sustaining catch in the river (established at a sustainable terminal harvest rate), and to develop the monitoring programs necessary to learn from their efforts.

One specific point of confusion during our discussions was the genetic relatedness of hatchery and natural populations of spring chinook and steelhead presently in the Klickitat. Following review of material from A. Marshall and C. Busack (WDFW, Olympia, WA) our understanding of these relationships are:

- Klickitat spring chinook are genetically different from summer chinook and fall chinook sampled from the Klickitat river;
- Klickitat spring chinook sampled from the hatchery are different from those sampled from the natural spawners. As a comparison, hatchery springs versus natural springs were as different as summer chinook versus fall chinook;
- Naturally spawning Klickitat summer steelhead consistently differed from Skamania Hatchery steelhead sampled. Klickitat summer steelhead originally contributed to the development of the Skamania steelhead broodstock, but differences exist between them; and
- Sampling of Klickitat winter steelhead has been inadequate for conclusions.

Point (2) differs from a statement in the subbasin summary (page 7) but that statement was based on a 1990 report.

Preliminary recommendation on the four YKFP Artificial Production projects - 198811525, 199701725, 198812025, 199506325: Fundable only if response adequately address the ISRP's concerns. Resubmit proposals on KFP see comments.

The review panel is fully aware that the KFP is being isolated from the YKFP to accommodate the provincial review process and that the proposal organization used is consistent with the four budgetary items included in the proposal template (Part 1). However, from the perspective of a scientific review, it would more informative if the Klickitat Fisheries Program was structured by major program activity rather than budget item. In the present structure, the four interrelated proposals don't allow for assessment of individual project activities and progress, since aspects of major technical programs or activities are included in more than one proposal and can not be reviewed as one comprehensive activity. For example, the M&E proposal includes activities for fish production or habitat programs, but the association of M&E costs associated with one technical activity may not be evident.

As examples of core scientific programs, the KFP may be grouped into Stock Assessment and Production, Habitat Assessment and Restoration, and a core administrative program that included administrative support, data management and GIS staff, watershed assessments, and policy development. Within each of the programs, the costs for each budget component in Part 1 could be specified and objectives, hypotheses, methods, results, and future proposal requests combined for a comprehensive and informative proposal.

Sub-programs within each major program may facilitate administration but the activities within any sub-program would have to be consistent with the objectives of the parent program. For example, the Klickitat Hatchery could be included under a Salmon Assessment and Production program but the production goals of the hatchery program and data for monitoring would be consistent with an overall goal of sustained natural production, achieving spawning goals, and meeting catch objectives established by the managers. Frequently in the present proposals, the rationale for activities was that some other planning document, etc required them. The scientific interest, however, is how a proponent proposes to meet an obligation in a technically sound manner, how to monitor and assess, and what progress has been evident.

In the absence of a set of technically coherent proposals, the review panel is required to interpret the intention or value of major program cost. This is obviously not a desirable situation or basis for allocation of funding over three years. Consequently, this panel recommends that the YFP restructure these proposals and clarify actual project activities are associated with funds requested.

It is notable that in the ISRP's June 15, 1999 report, they recommended that the entire set of proposals included in the umbrella program (20510) should be reorganized so that the scientific approach to achieving the stated objectives could be evaluated. This recommendation applied to all proposals in the Umbrella (including projects 8811525,

8812025, 9506325, and 9701325, which are in this response review). In addition, the ISRP listed specific questions or concerns for each project. The funding recommendation at that time was to fund at an appropriate base level until a programmatic review can be completed.

ProjectID: 198811525

Yakima/Klickitat Fisheries Project Design and Construction

Sponsor: YN

Province: Gorge

Subbasin: Klickitat

Short Description: Design/Construction:

1. Klickitat: O & M facility and Lyle Trap

Sponsor Request FY01: \$3,683,000

Sponsor Request FY01-03: \$5,867,000

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Fundable on interim basis.

ISRP Final Recommendation and Comments:

See recommendation on the set of KFP projects.

ISRP Preliminary Recommendation and Comments for the set of KFP proposals:

Fundable only if the response adequately addresses the ISRP's concerns. Resubmit proposals on KFP see comments.

The decision has apparently been made earlier on the Lyle Falls fishway construction, this proposal completes the planning stage towards construction, but also includes construction cost. The possible long-term benefits appear to justify the high cost, but further investigation on feasibility is justified (see project 21004). From a scientific perspective, it is necessary to conduct the research on fish passage (as in #21004) before investing these funds in construction. If you build it, they may not come.

ProjectID: 198812025

Yakima/Klickitat Fisheries Project (YKFP) Management, Data and Habitat (Klickitat Only)

Sponsor: YN

Province: Gorge

Subbasin: Klickitat

Short Description: This proposal provides support for Yakama Nation policy, management and administrative activities related to all YKFP operations in the Klickitat River Basin, including all M & E, O & M and Design and Construction activities.

Sponsor Request FY01: \$363,510

Sponsor Request FY01-03: \$1,170,964

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Fundable on interim basis.

ISRP Final Recommendation and Comments:

See recommendation on the set of KFP projects.

ISRP Preliminary Recommendation and Comments for the set of KFP proposals:

Fundable only if the response adequately addresses the ISRP's concerns. Resubmit proposals on KFP see comments.

This proposal is basically for program management and facilitation and costs were estimated as 30% of past funds in the YKFP. This proposal contains some very strong statements about program objectives. For example, the technical background states that

“The YKFP is a supplementation project designed to use artificial propagation in an attempt to maintain or increase natural production while maintaining long-term fitness of the target population and keeping ecological and genetic impacts to non-target species within specified limits.” The paper then cites RASP (1991).

Under Management Philosophy, it states:

“The YN employs an adaptive management policy in order to achieve YKFP goals and to protect the basin's fishery resources from unforeseen, adverse impacts. Adaptive management is the conscious decision in favor of action designed to increase understanding as opposed to inaction in the face of uncertainty.”

Technically, we fully support such statements but how are they implemented in the proposals presented? This situation may exemplify the base for the panels above recommendation to re-structure the program along lines of activities. In general, however, this proposal is not amenable to scientific review.

ProjectID: 199506325

Yakima/Klickitat Fisheries Project Monitoring And Evaluation (Klickitat Only)

Sponsor: YN

Province: Gorge

Subbasin: Klickitat

Short Description: Collect and integrate baseline information on habitat, demographics and life history to design comprehensive enhancement plans. Monitor production, harvest, genetic and ecological impacts of Klickitat programs to guide adaptive management.

Sponsor Request FY01: \$447,723

Sponsor Request FY01-03: \$1,468,082

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Fundable on interim basis.

ISRP Final Recommendation and Comments:

See recommendation on the set of KFP projects.

ISRP Preliminary Recommendation and Comments for the set of KFP proposals:

Fundable only if the response adequately addresses the ISRP's concerns. Resubmit proposals on KFP see comments.

Among the four projects within the YFP this proposal provided the best description of the project need and technical background. Task and objective descriptions were good, but it

was not clear whether the assumptions were assumptions that were being tested by the project or assumptions that will not be tested but are necessary to infer from the project's results. The proposal encompasses a large number of objectives, but it is not always clear how they fit together, or were chosen. The proposal lists but does not develop an overarching strategy to explain why these particular activities were chosen or how all of these results are to be integrated to make an assessment of overall success/failure. The Panel again suggests that these limitations reflect the structure of the four proposals.

There is, however, greater need to consider uncertainties and risks associated with current low survivals (are populations viable?). The monitoring costs are very high, for a long period, and do not include a control/treatment experimental approach. How is this consistent with the commitment to adaptive management?

ProjectID: 199701725

Yakima Klickitat Fisheries Project Operation and Maintenance (Klickitat Only)

Sponsor: YN

Province: Gorge

Subbasin: Klickitat

Short Description: Operation and maintenance of YKFP facilities in the Klickitat subbasin.

Sponsor Request FY01: \$0

Sponsor Request FY01-03: \$2,530,000

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Fundable on interim basis.

ISRP Final Recommendation and Comments:

See recommendation on the set of KFP projects.

ISRP Preliminary Recommendation and Comments for the set of KFP proposals:

Fundable only if the response adequately addresses the ISRP's concerns. Resubmit proposals on KFP see comments.

The need for O & M funds is clearly an essential part of the overall program but this proposal provided only minimal background or technical detail. Substantial increases in program cost can be expected if the Lyle Falls facility proceeds, the Castile Falls passage is undertaken, and KFP assumes management of the Klickitat hatchery. We noted that out-year costs for operation do not yet include additional cost for FTE's.

This proposal is again not amenable to scientific review. The budget can not be assessed by activity since costs were not attributed to objectives in section 6/10. Note that costs for this proposal begin in 2002.

Other Gorge Proposals with ISRP Conditional Fundable Recommendations

ProjectID: 21012

Evaluate Status of Coastal Cutthroat Trout in the Columbia River Basin above Bonneville Dam

Sponsor: USGS-CRRL

Province: Gorge

Subbasin: Columbia Gorge

Short Description: Survey Columbia River tributaries above Bonneville Dam for coastal cutthroat trout to determine population status, to identify limiting factors, and to understand the role of current and past human and natural disturbances affecting status.

Sponsor Request FY01: \$39,770 (CBFWA Recommendation, actual request \$227,658)

Sponsor Request FY01-03: \$533,734

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Partially agree that objective 1 is fundable, funding of any other objective of this proposal should require further review per the comments below.

ISRP Final Recommendation and Comments:

Partially agree, objective 1 is fundable, but funding of any other objective of this proposal should require further review per the comments below.

ISRP Preliminary Recommendation and Comments:

Do not fund. A response is not warranted. The proposal was generally well written and the PI has superior qualifications and a strong publication record, and the proposed work is needed. However, this project appears likely to duplicate other subbasin efforts that already should have collected (or are collecting) some data on coastal cutthroat populations. While it is important and timely to complete a comprehensive status assessment of coastal cutthroat trout, it would make more sense to expand this type of assessment work beyond individual species and include all varieties of resident salmonids and amphibians. For example, bull trout surveys will likely cover much of the same ground and observe cutthroat trout, if present. It would be much more cost-efficient if this cutthroat survey work could be combined with the bull trout survey, project 199405400. From a sampling standpoint, a single survey for all salmonid fishes (and nongame fishes) and amphibians would yield superior data and pose less risk of physical injury from repeated electrofishing.

The current proposal only vaguely addressed the approach that would be used to characterize limiting factors. There is a need to better review the existing literature and existing population data on coastal cutthroat trout and to utilize that information to develop a stronger proposal that more specifically targets limiting factors. The study methods in general seemed appropriate. However, the proposed study would include data collection only under summer low-flow conditions, but there is no longer any reason to only sample at that time. Fall/winter sampling is technically feasible and often enables better assessment of limiting factors. Would that not be the case in this situation? Also, a just-published test of stream sampling methods (Roni and Fayram (2000) North Amer. J. Fisheries Mgt. 20:683) should be helpful.

We suggest that if at all possible, the principal investigator from this project could act as a coordinator for coastal cutthroat trout status assessment work in the province.

***CBFWA Comments from DAIWP:** Funding for Objective 1 should be considered a high priority. The other objectives should be considered high priority in FY 02 and 03 if warranted based on the results from FY 01. We recommend funding only Objective 1 during FY 2001. Many projects within the basin are finding cutthroat information. An organized accumulation of this information is needed. This project should first accumulate all available information from all fish and wildlife agencies and tribes in the basin. Fieldwork should then focus on subbasins and areas where data is missing.*

ProjectID: 199304000

Fifteenmile Creek Habitat Restoration Project (Request For Multi-Year Funding)

Sponsor: ODFW

Province: Gorge

Subbasin: Fifteenmile

Short Description: Provide for continued operation and maintenance of all completed habitat restoration measures within the Fifteenmile Subbasin. Continue photo documentation of habitat recovery and the collection of stream temperature data.

Sponsor Request FY01: \$220,040

Sponsor Request FY01-03: \$670,113

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable to bring closure to this multi-year task. Issues on watershed assessment and monitoring may be addressed in the Council review and BPA contracting process as deliverables, including a delivery date for the watershed assessment and prescription. Despite the completion of fencing, a watershed condition assessment is required. Maintenance activities from past improvements require support, yet should form part of an overall watershed restoration plan that has evolved from a completed watershed assessment, which they suggest is in process. Detailed M&E as proposed in 199801900 (Wind River Watershed Restoration) may not be necessary, but routine monitoring (physical and biological response in relative terms such as streambank vegetative re-growth or juvenile steelhead presence/absence) should be included, at least, to confirm fish utilization and relative response. If you fence off almost an entire river, are there measurable fish and wildlife benefits? The work has likely provided fish and wildlife benefits, but some confirmation is required. These benefits were not quantified despite the monitoring of stream temperature and canopy closure since 1987. The response to the questions about 15 year leases is adequate. See comments in 21001, below, which also apply to this and other Fifteenmile habitat works. Comments by ISRP under General Issues also apply (e.g., monitoring, priorities in habitat rehabilitation).

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP concerns. Roll the proposal up into an overall watershed restoration plan that includes all related activities tied to

watershed assessment, prescriptions listed by importance of implementation, rehabilitation plans, and a monitoring and evaluation stage that is coordinated within the province. The monitoring plan needs to go beyond the photopoint approach, and expanded to monitor key water quality, vegetation, and fish community responses. Comments from the FY2000 still apply. Using solar pumping stations to replace watergaps is a valuable improvement; thus, they should emphasize the solar pump work. They should also look into options of other mechanisms than 15-year leases.

This proposal provides a good description of the project since its inception, and actions taken to restore riparian habitat. After an implementation phase of the project, which involved the acquisition of 15-year leases as well as direct actions taken to restore riparian habitat, the project is now in an operations and maintenance phase.

Despite the clear and detailed description of the project's history and of subbasin limiting factors, the proposal provides much less detail on monitoring progress toward meeting objectives. For example, the six initial objectives include unimpeded passage, reduced sedimentation, increased flows, reduced temperatures, etc. But these specific measures are not all addressed in the discussion of photopoint monitoring. Moreover, despite O&M work since 1986, the proposal gave no indication of water temperature improvement to date and no indication of increase in fish population.

The proposal also should include a more detailed assessment of what is likely to happen in 2012 when the last lease expires. Are the incentives facing landowners sufficient to ensure that riparian protection will be maintained? Will the cost of fence repair, etc. be considered affordable? How would maintaining the existing riparian improvements benefit landowners?

To assess whether objectives of the project are being met, the tasks should be directly tied to objectives in a measurable way. Objective 1, to "protect, enhance and restore" is too vague to be directly measured. Objective 2, to monitor the success of recovery efforts, is limited to stream temperature and canopy closure. What about the other factors listed as original objectives? Objective 3 could use more specifics as to how the transfer of information will take place, and what is expected for outcomes.

This work (and others) could benefit from a comparative approach (treated /untreated). It seems population viability may remain at question, but this work addresses the only current means of increasing survivals overall by increasing it in the freshwater life stage.

ProjectID: 21001

Fifteenmile Creek Riparian Fencing / Physical stream Survey Project

Sponsor: ODFW

Province: Gorge

Subbasin: Fifteenmile

Short Description: Construct approximately 30 miles of riparian protection fence over a three year period along Fifteenmile Creek and its tributaries. Conduct a physical stream of 90 miles of privately owned stream in the Fifteenmile Subbasin.

Sponsor Request FY01: \$151,685

Sponsor Request FY01-03: \$471,843

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. Points of concern can likely be addressed in the Council review and BPA contract process. The contract process should note that rehabilitation efforts should be led by watershed assessment, including fish habitat assessment. The proponents responded to the concerns raised by ISRP and acknowledged that a watershed assessment, a listing of watershed rehabilitation tasks by priority of prescription, and improved monitoring and evaluation in Fifteen Mile Creek that is integrated within the Province is required. They added that these tasks are, nevertheless, beyond the scope of the proposal, but recognized that these tasks should proceed or compliment the rehabilitation work, and suggested that assessment is in progress. The lack of evidence of steelhead rearing in lower reaches and little presentation of information on steelhead life history remains a concern. Juvenile fish migration throughout the year is not evidence of rearing, and perhaps more of an indication of inadequate rearing space or conditions upstream (that get no better downstream) and a density dependent response, or migration to the Colombia.

The fencing work and physical stream surveys proposed complete several years of similar effort, but there is little to suggest that this addresses key limiting factors. Cooperative agreements with landowners should reduce the costs of 15-year leases. They respond that natural re-generation is adequate and that tree-planting is not required. While the lower reaches appear as poor rearing habitat currently, recovery of the riparian zone to a mature canopy might provide more suitable habitat, in time, if not limited by some other factor. Without further indication from some index site or routine monitoring and evaluation, there is little to suggest that the fencing work to date was successful in providing rearing habitat and towards recovery of this population. While a treatment/control approach or before/after comparison is not available, evidence of relative utilization may be helpful.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP concerns. This project should be rolled into the habitat restoration proposal 199304000 and they should explore cost saving by seeking alternatives to 15 year leases. The fencing work to date is an impressive record, and the proposed work finishes the task (maintenance will need to continue). They might also consider tree planting to accelerate the recovery process. However, the proposal and presentation did not indicate that steelhead rear in the lower

sections – the majority of the spawning and rearing occurs in the upper part of the watershed, thus rehabilitation needs to focus to this area. The lower area has low flow and temperature problems and may partly be improved over time by the actions proposed, although the lower reaches are primarily a migration corridor. Nevertheless, other fish and wildlife may benefit from this fence work during summer rearing. The area fenced should be a function of the riparian area requirement and the local landscape and not a fixed width. An overall watershed restoration plan with tasks listed by order of importance is required. Evaluation and monitoring should be integrated within the province, and should be approached on a watershed scale where the treatment is restoration (all aspects) compared to no treatment, and where the response variables may be smolt yield or smolts per spawner at some point on the recruitment curve (max recruitment, MSY, or capacity production).

ProjectID: 199705600

Lower Klickitat Riparian and In-Channel Habitat Enhancement Project

Sponsor: YN

Province: Gorge

Subbasin: Klickitat

Short Description:

Sponsor Request FY01: \$313,318

Sponsor Request FY01-03: \$1,090,459

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Fundable on an interim basis if funding is based on achievement of milestones.

ISRP Final Recommendation and Comments:

Fundable on an interim basis if the funding is based on achievement of milestones. The response was barely adequate, although the response did provide limited information that describes how restoration activities were selected and partially quantifies their habitat restoration targets. The site visit showed some riparian areas that needed work but those are not described in enough detail in the proposal or response. Funding for this project should be set up with milestones. 1) they should complete the assessment and prescription plan. 2) they should set up a watershed council; 3) If they are going to use EDT, they should recognize the need to verify the preliminary results. There are several high priority on the ground activities identified that may be justified, e.g. Snyder Creek passage, but little information is given on what will be accomplished. The contract deliverables should be clearly defined in terms of what activities will be completed, i.e., area, amount, and cost of in-channel habitat structures, bank stabilization, fencing, etc., based on the delivery of a watershed assessment and prescription plan that has the habitat rehabilitation work listed by order of priority.

ISRP Preliminary Recommendation and Comments:

Fundable only if response adequately address the ISRP's concerns; e.g. activities and costs are specified and expected benefits associated with these actions are projected. The panel recognizes that a lower level of funding may be necessary to conduct this initial work.

This proposal provided useful background information about the general problems affecting fish in the Klickitat watershed and a good general description of the need for the different project elements. But while it provides the technical background, rationale, and past history of activities, it provides little information on what will be done with the requested funds (for example, the major cost is for sub-contracts, but for what?). The objectives stated are very general and there was not indication about how priority activities would be determined. Beyond the general descriptions, the proposal does not offer a rationale for how the particular restoration activities were identified. At present, this proposal appears to be a placeholder (for \$\$) for projects that were not justified in the proposal. What is the budget based on and how do these M&E costs relate to those in project #199506325?

The absence of a Watershed Assessment Plan, as identified in our general comments, may have contributed to this very general presentation. Further, there is no information presented on the current stage of progression of existing programs.

It is difficult to reconcile support for ongoing restoration work (for which no rationale is given) in the absence of a comprehensive watershed assessment. If watershed assessment still needs to be completed then how can specific restoration measures be identified and a budget developed? If results of prior assessment work are available, then they should be presented to provide a rationale for the ongoing habitat work. It is not clear what level of watershed assessment has been done in the basin and how the results have been incorporated in proposal. Watershed inventory and monitoring are referred to in the objectives but a completed assessment was not identified.

The monitoring design and performance measures are not clear. How will success be determined? The adequacy of the budget cannot be evaluated because the limiting factors and priority restoration needs (and therefore reasonable costs) are not defined. The use of land acquisition is potentially very important but was not described in any detail.

ISRP and CBFWA Agree: ISRP Fundable and CBFWA High Priority or Recommended Action

ProjectID: 21013

Western Pond Turtle Recovery - Columbia River Gorge

Sponsor: WDFW

Province: Gorge

Subbasin: Columbia Gorge

Short Description: Protect existing WPT population through habitat improvements, expand WPT population through "head start " program and continue reintroductions at USFWS Pierce National Wildlife Refuge.

Sponsor Request FY01: \$167,025

Sponsor Request FY01-03: \$361,225

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate. We raised only a few, mainly administrative, issues such as the proposal's lack of reference to Fish & Wildlife Program. The response addresses all those items satisfactorily and makes the case for the proposal's tie to the Columbia Basin Fish and Wildlife Program. CVs of researchers are provided.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response makes a better case for the proposal's tie to the Columbia Basin Fish and Wildlife Program. Although this project relates to a Washington State Recovery Plan, it does not make any reference to the Fish and Wildlife Program. It was unclear if this was a species of concern across the region, e.g. in Oregon.

Otherwise, the project was well described, with clear objectives, a competent research and implementation team, and offers what appears to be a high likelihood of success. It was a bit difficult to assess PI credentials – no CVs provided.

This proposal addresses a recovery problem that already involves a number of agencies and NGOs. There were no explicit plans for information transfer from the project's results, however. The presentation was good and addressed several questions generated from the proposal review such as the results of the "head start" effort.

Hood River Production Program

ISRP Response Review for the HRPP Set of Proposals - 198805303, 198805304, 198805307, 198902900, 199500700

The ODFW and CTWSRO response to the ISRP review comments on the HRPP projects addressed most of the ISRP concerns adequately. However, many of the ISRP's concerns should be kept in mind during the proposed 2002 comprehensive program review. There may be a role for the ISRP in the 2002 comprehensive program review, and the ISRP should be kept informed of progress towards formalizing that review. By 2002, several important datasets should have sufficient detail to provide input on some of the ISRP's concerns such as juvenile loss through Powerdale Dam.

Specifically, the responses adequately addressed the ISRP's concerns on juvenile loss through the Powerdale Facility, the potential use of PIT tags (perhaps to be revisited during the 2002 conference), smolt releases below Powerdale Dam, straying of recycled adult steelhead, and the impact of smolt numbers in the Bonneville Pool (a valid concern, but likely outside the purview of the Hood River Production Program). With respect to the justification of HRPP production levels, the final paragraph of the response gets to the main point of the ISRP's concern, somewhat unsatisfactorily (although what is said is no doubt true). Detail and references were lacking for this section.

A major concern of the ISRP is the need for an overall monitoring and evaluation plan. The PI's acknowledge that more coordination and summarization would be beneficial. We hope they are able to move forward on this issue.

Finally, the ISRP noted that both proposal and verbal presentation contained little specific data presentation. The response indicates that the PI's felt that an undue emphasis was placed on brevity for both proposals and presentations (this year and previous years) that precluded presentation of past results. While there is probably some truth in this viewpoint, the ISRP has been clear and consistent in articulating its expectations to the region that proposals for continuing projects must contain results-oriented summaries of past work in order to justify continued support for the project. Within the proposal, it is appropriate to cite past annual reports and publications that resulted from the work, but merely citing the reports without summarizing the results and learning that occurred is not an adequate response. The ISRP has been very clear on this expectation.

ISRP Preliminary Recommendation and Comments on the Hood River Subbasin and Hood River Production Program (HRPP)

The Hood River Subbasin Summary was well written and thorough. The Hood River group is on the right track with their watershed assessments and rehabilitation plans listed by priority of action. Concerns are with the hatchery program and the issue of passage at the dam.

Summer and winter steelhead stocks have been in decline during the 1990s, and are now down to less than 200 and 300 fish, respectively, and far below the escapement goal of 2,400 fish. A crude recruitment analysis, assuming these fish were, on average, 4 years-old at return, suggested both stocks are below replacement. The abundance of each seemed correlated, suggesting factors in the decline are affecting both stocks, now down to less than 1 or 2 fish/km. It is not possible to separate the freshwater from the marine factors in the decline since no data on wild smolt yield is given. However, the decline is likely related to marine conditions, as found elsewhere. Data on smolt yield exists (five rotary screw traps in the watershed) so an analysis of overall smolt yield and return may be possible. Survivals on hatchery steelhead seemed peculiar in that winter-run hatchery releases fared worse, at less than 1% from 60,000 releases, than summer-runs, which apparently had survivals near 3%. Something is odd about this difference - either the release numbers have varied, summer and winter runs are misidentified, or summer runs are doing something different (migration pathways?). A more thorough treatment of the stock assessment information available is required.

The use of wild brood stock for hatchery purposes, while commendable and correct at the best of times (i.e., when survivals warrant it), is likely depleting the limited wild stock without increased return, given these poor survival rates. Furthermore, supplementation is focusing on the wrong life stage if the current limitation is in the smolt-to-adult stage. It is difficult to separate the "supplementation" from the fish released for harvest. All fish for harvest should be released below the dam. A review and justification of the supplementation program is required.

The comparisons and conclusions on acclimation (Figs. 11 and 12 in the summary) suffer from having no within-year control, and were not in agreement with the presentation on this issue which indicated there was no benefit to acclimation. Fish released from these facilities will compete with wild parr and smolts, particularly if a large portion residualize. Half of the males (perhaps as many as 15,000 of 60,000 releases in this watershed) may fail to migrate, and compete for food and space with wild fish. They plan to study residualism, but some information should already be available, and presented.

A review of the harvest-fish release and returns and consequences to the wild population is needed. What are the consequences within the Bonneville Pool and elsewhere when hatchery smolts out-number wild by several fold? Even catch-and-release fishing has an impact, particularly where effort is high, and this wild population can withstand no harvest impact. This form of supplementation may be doing more harm than good to the wild population; likewise for the harvest program.

They should proceed with their watershed rehabilitation plans and hope that these attempts will improve productivity and capability in freshwater to offset the dramatic declines in smolt-to-adult survival. Meanwhile, there is a need to do more work on the latter, including mortality in the downstream migration within the Hood, within the Bonneville Pool, down the Columbia, at the river mouth, and during the coastal

migration. Comments above on hatchery harvest and supplementation will apply to several watersheds, thus an overall review may be required.

Preliminary Recommendation for the set of HRPP proposals: Fundable only if the response adequately addresses the ISRP's concerns.

Issues to address:

1. The proposals contained little specific data presentation.
2. Quantify the juvenile loss through the Powerdale hydro facility.
3. Consider using PIT tags or acoustic tags in the smolt evaluations.
4. Release all smolts below the dam where the goal is to increase the available harvest but consider/address the indirect impacts to wild fish from C&R.
5. The turn-back of hatchery steelhead at the ladder has increased straying, and may have led to increased angling effort within the lower river (thus further C&R of wild). Alternatives to turnback should be provided (cull?).
6. What are the consequences of increased hatchery smolt presence within the Bonneville Reservoir, the lower Columbia River, and at the mouth, and given the aggregate hatchery releases in the Province and elsewhere?
7. Justify hatchery production levels. In the absence of quantitative stock assessments, the proposals fail to justify technically the need for the projects presented. For example, what is the basis for the numbers of hatchery fish to be released?
8. Develop a monitoring and evaluation plan for the separate tasks of harvest development, supplementation, and habitat rehabilitation.

As with our FY2000 comments, these six projects are inextricably linked together to form the Hood River Production Program. It was difficult to evaluate each project singly, particularly with respect to the methods and M&E criteria. The proposals contained little specific data presentation, in spite of monitoring at some level for up to 6 or seven years. Presentations were similarly lacking in data presentation and reinforced these observations.

The Hood River Production Program has many things going for it, including its dedicated staff, high quality facilities (Powerdale collection site and Parkdale), links between the habitat restoration efforts and the production program, etc. Nevertheless, the M&E portion of the program fails to adequately address monitoring and evaluation questions that are critical to the program's success. These include quantifying the juvenile loss through the Powerdale hydro facility, lack of consideration of using PIT tag technology to gather additional juvenile migration and adult return data, and deeper integration of the wild and hatchery production components for winter steelhead goals.

Acclimation as a supplementation strategy, as a means to enhance the survivability of artificially produced smolts released into the watershed, seems not to have been demonstrated, at least by the data presented in the proposals. Reviewers perceive that a better strategy for enhancing winter steelhead fisheries would be to release all smolts below the dam.

Recycling as a fishery-enhancement tactic, returning marked steelhead to the mouth of the tributary to make them available to harvest again, seems to have been responsible for enhanced straying into other watersheds; if so the practice is detrimental to the maintenance of biodiversity in the subbasin and should be curtailed.

Finally, density limits in the Bonneville Pool and lower Columbia River need to be addressed in this Subbasin Summary and others as a potential factor limiting salmon productivity. Without appropriate assessment of stocks including survival in the pool and lower river, and without consideration of density as a potential limiting factor, managers may inappropriately increase smolt releases to the detriment of future cohorts of native salmon. Reviewers note with concern that proposers in the Hood River program contemplate doubling of hatchery production as a method of supplementation; the detrimental effect of this increased density of salmon smolts on the survival of native salmon has apparently not been considered.

ProjectID: 198805303

Hood River Production Program - CTWSRO M&E

Sponsor: CTWSRO

Province: Gorge

Subbasin: Hood

Short Description: Implement, monitor, and evaluate actions outlined in the Hood River and Pelton Ladder Master Plans pertaining to smolt production, acclimation, and habitat. Coordinate Pelton Ladder production.

Sponsor Request FY01: \$509,959

Sponsor Request FY01-03: \$1,609,959

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate.

ISRP Preliminary Recommendation for the set of HRPP proposals: Fundable only if the response adequately addresses the ISRP's concerns. See subbasin comments, above.

The ISRP's FY2000 review comments remain germane to this project. Past progress (in general terms, but not data results) is described; feasibility and value of continuation seems very high. While the program is still in its early implementation phase, this proposal (and others in the groups) would have benefited by the inclusion of more results of previous studies by ODFW and CTWSRO.

The progressive nature of this project warrants publication in peer-reviewed journals. As project evaluations occur from 2000 through 2007 (based on the four-year minimum datasets described on pp. 5-6 of the narrative in proposal 1988-053-04), the region and the fisheries community at large will have great interest in the program's results. We encourage project planning that facilitates dissemination of the program's results through publication in peer-reviewed journals beyond the required annual reports to BPA.

ProjectID: 198805304

Hood River Production Program - ODFW M&E

Sponsor: ODFW

Province: Gorge

Subbasin: Hood

Short Description: Monitor and evaluate actions taken to re-establish spring chinook salmon, and improve wild production of summer and winter steelhead, in the Hood River subbasin. Data will be used to develop, and refine, management objectives for the HRPP.

Sponsor Request FY01: \$431,331

Sponsor Request FY01-03: \$1,321,331

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate.

ISRP Preliminary Recommendation for the set of HRPP proposals: Fundable only if the response adequately addresses the ISRP's concerns. See subbasin comments, above.

The lack of peer-reviewed publications at present is understandable, due to the incomplete evaluation datasets. Additional years will be required (out to 2007 for some stocks) to collect the necessary data for evaluation. Nevertheless, the study is likely to generate results that will be of great interest throughout the basin.

According to the related proposal 1989-029-00, the average spring chinook smolt-to-adult return from the 1993, 1994, and 1995 brood years have been ~0.15%. This is far below the 0.68% SAR target, which suggests that there may be opportunities to improve survival of hatchery smolts. Perhaps taking 50% of the returning adults for broodstock is a bit risky until the performance of hatchery releases can be demonstrably improved. There doesn't seem to be a mechanism in the set of proposals to evaluate the relative benefits and risks of bringing 50% of the run into the hatchery versus passing them above Powerdale Dam for natural reproduction, where SARs may be better (or worse) than for the hatchery cohort. Provide this evaluation.

ProjectID: 198805307

Hood River Production Program: Powerdale, Parkdale, Oak Springs O&M (88-053-07 & 88-053-08)

Sponsor: CTWS and ODFW

Province: Gorge

Subbasin: Hood

Short Description: Restore depressed populations of StS & StW and re-establish a self-sustaining ChS population in the Hood River subbasin. Broodstock will be collected at the Powerdale Facility. Broodstock will be held and spawned at the Parkdale Fish Facility.

Sponsor Request FY01: \$1,082,983

Sponsor Request FY01-03: \$4,796,653

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate.

ISRP Preliminary Recommendation for the set of HRPP proposals: Fundable only if the response adequately addresses the ISRP's concerns. See subbasin comments, above.

The reviewers were concerned by the proposed goal to double hatchery production as a method of supplementation. This goal seems inconsistent with our understanding of supplementation (e.g., RASP 1992; SRT Report 1999).

Using data from the proposers own presentation during the site visit, acclimation does not increase survival, yet they are proposing construction of more acclimation sites. Instead, we suggest releasing all hatchery winter steelhead smolts below Powerdale Dam, because of mortality associated with passage at the dam and increased interaction with wild fish in the river above the dam. Therefore, the need for the acclimation sites is questionable.

The M&E portion of the program (nearly one million dollars between projects 198805304 and 198805303) fails to adequately address questions that are critical to the program's success. See comments above on the set of proposals.

With current return levels and the indication of SARs of ~6% for wild steelhead, compared to SARs of 1% or less for hatchery winter steelhead, why is there a winter steelhead hatchery program at all? If the preliminary SAR data are indicative of fitness differences between wild and hatchery produced fish, then continuing the hatchery program could undermine the fitness of the wild stock. Decisions on when to proceed with hatchery programs for harvest generation or supplementation for population re-building need to be based on demographic information and life-stage survival rates.

In spite of these shortcomings, this was a fairly complete and often detailed proposal. The project proposal is well crafted and went into some detail about the rationale for the Hood River Production Program, but contained insufficient detail about performance to date,

specifically, with respect to escapement and SARs. This was not covered more fully in the HRPP M&E proposal; thus, the omission from both proposals was surprising since specific escapement and SAR goals were mentioned for chinook and both races of steelhead.

ProjectID: 198902900

Hood River Production Program - Pelton Ladder - Hatchery

Sponsor: ODFW

Province: Gorge

Subbasin: Hood

Short Description: Re-establish a self-sustaining spring chinook salmon population in the Hood River subbasin. Broodstock will be collected from Hood River. Broodstock will be held at the Parkdale Facility. Incubation and rearing will be completed at Round Butte Hatchery

Sponsor Request FY01: \$139534

Sponsor Request FY01-03: \$254545

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate.

ISRP Preliminary Recommendation for the set of HRPP proposals: Fundable only if the response adequately addresses the ISRP's concerns. See subbasin comments, above.

The ISRP comments from the FY2000 review of the project proposal remain relevant. This project is integrally linked to a number of the other key ongoing projects within the Hood River subbasin. The fish production described in this proposal is critical to the Hood River Production Program, as it stands defined.

Objectives are well delineated, although the technical details of methodology are not always so detailed. If procedures are not changing, the details may not be all that necessary. The methods could better line up with the objectives.

ProjectID: 199500700

Hood River Production - PGE: O&M

Sponsor: PGE

Province: Gorge

Subbasin: Hood

Short Description: This contract funds the Facilities O&M at the PGE Pelton Ladder - Round Butte Hatchery Complex

Sponsor Request FY01: \$46300

Sponsor Request FY01-03: \$96300

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate.

ISRP Preliminary Recommendation and Comments:

Recommendation for the set of HRPP proposals: Fundable only if the response adequately addresses the ISRP's concerns. See subbasin comments, above.

This is integrally linked to a number of the other key ongoing projects. The fish production herein is critical to the HRPP as it stands defined. It appears that the original concerns of using non-native fish have been addressed - unless there are some difficulties that are not apparent from the narrative. The objectives are listed only in tabular form and aren't really objectives, and measurable biological objectives are not really biological objectives, either (they at least are not clearly stated). This proposal does not follow the standard write-up. No completion date is given, though the budget goes out through at least FY 2004. This proposal was not as well justified as the other HRPP proposals.

ProjectID: 199802100

Hood River Fish Habitat Project

Sponsor: CTWSRO

Province: Gorge

Subbasin: Hood

Short Description: Implement habitat improvement actions that will support wild fish and supplementation efforts within the Hood River subbasin as approved by the NPPC and supported by the BPA Environmental Impact Statement for the Hood River Production Program (HRPP).

Sponsor Request FY01: \$299,953

Sponsor Request FY01-03: \$1,699,953

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. Further ISRP response review was not needed, but the sponsors' unsolicited response complimented the original proposal. This watershed effort is a good example of a well run Watershed Council process. With the addition of the document delivered at the

meeting, Hood River Fish Habitat Protection, Restoration, and Monitoring Plan, the ISRP's concerns were addressed.

Many of the ISRP's FY2000 review comments remain pertinent to our present review of this project. This is a complex project involving substantial funding from a large number of sources. It is linked to a number of other projects within the subbasin. The cost share looks attractive; the rationale looks appropriate. The proposal would have benefited from more presentation of biological gains, even at this relatively early juncture in the project's proposed tenure. We recognize that the project is relatively new and that benefits to fish and wildlife from habitat improvement projects take time to accrue and measure. Nevertheless, the project sponsors generally tended to describe past accomplishments in terms of actions completed without discussing the biological benefits gained from the action (some of which could have been measured even at this early stage).

The weakest part of the proposal is the lack of a clear evaluation methodology for assessing long-term success of the alterations. How will success/failure be defined? For example, "spawning ground surveys will be completed annually to assess the upstream passage/spawning benefits." What level of adult returns will be used to define success? How will variability be addressed? Time lags? At this cost, the project sponsors need to assure that the work is providing measurable benefits to fish and wildlife. They need to better document the interaction of this project with 1988-053-03, the monitoring and evaluation component of the HRPP. See General Issues and comments on the need for an integrated approach to M&E in the Province across all subbasins. Given smolt yield as a possible response variable to watershed rehabilitation, is the Hood River a candidate for detailed monitoring or routine monitoring, and compared to what?

ProjectID: 21014

Mitigate Streambank Sediment Sources in Fifteenmile Watershed using Bioengineering Techniques

Sponsor: Wasco SWCD

Province: Gorge

Subbasin: Fifteenmile

Short Description: Treat seven sites of active streambank erosion using bioengineering techniques that promote revegetation of banks, dissipates hydrologic energy and create instream habitat.

Sponsor Request FY01: \$159,355

Sponsor Request FY01-03: \$202,934

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. Roll up into an overall watershed restoration plan. Past success with this approach in the watershed was evident from the site visit. This is costly work thus there is a need to ensure the habitat is protected from future bank erosion. Do salmonids use these areas for spawning and rearing? Areas visited did not appear to be prime rearing habitat. Proponents have been active at this and other tasks in the watershed (fencing,

etc.). Some indication that major sediment sources are being addressed is required – has there been a sediment source analysis and is this the key source? The bank erosion work in this watershed could provide demonstration of the techniques and benefits for other subbasins in the area with similar plans.

ProjectID: 21019

Fifteenmile Subbasin Water Right Acquisition Program

Sponsor: OWT

Province: Gorge

Subbasin: Fifteenmile

Short Description: Acquire 2 cfs of existing Fifteenmile Creek Subbasin water rights on a voluntary basis and transfer to instream water rights under Oregon state law; target acquisitions to maximize fulfillment of habitat objectives for instream flows.

Sponsor Request FY01: \$32,000

Sponsor Request FY01-03: \$128,000

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response is adequate. OWT demonstrates communication and interaction with Oregon Department of Fish & Wildlife, and Oregon Water Resources. OWT describes indicators of ecological benefits and their approach to quantification of the effects of enhanced streamflow. OWT describes their approach to stewardship, including documented relationships with OWRD and their own direct efforts on site. The ISRP encourages OWT to integrate water rights acquisitions into plans for subbasin rehabilitation, including monitoring and evaluation (stream gages).

ISRP Preliminary Recommendation and Comments:

Fundable only if a response is provided that describes how monitoring and evaluation will be provided that accesses the benefits to fish and wildlife from the water acquisition. This proposal was highly supported by the reviewers. It complements the other work in the subbasin. The Oregon Water Trust has a track record in these acquisitions, and the proposal demonstrates appropriate coordination with other agencies to ensure that the rights acquired are beneficial to fish. As stated above, the monitoring and evaluation, especially ecological aspects, needs to be strengthened and better explained and part of the overall monitoring in this watershed. It may be that other agencies will accomplish aspects of monitoring and evaluation, but the programs should be explicitly identified in the proposal and endorsements from the agencies should be provided.

ProjectID: 199801900

Wind River Watershed Restoration

Sponsor: UCD,USFS,USGS-CRRL,WDFW

Province: Gorge

Subbasin: Wind

Short Description: Restore habitat within the Wind River subbasin to support healthy populations of wild steelhead

Sponsor Request FY01: \$658,532

Sponsor Request FY01-03: \$2,770,221

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. A thorough and refreshing response was provided that more clearly described a logical, cost-effective approach than did the original proposal. This appears to be a well-planned program of restoration based on thorough watershed assessment and prescription, with an excellent schedule for monitoring and evaluation, that has been explained well in their response. Their annual reports should be circulated, and they should be encouraged to publish their results, once obtained, in fisheries journals. If they proceed as planned, this could be a key demonstration site for the effectiveness of habitat rehabilitation in the province. A detailed level of evaluation here may eliminate or reduce the need elsewhere, where only routine monitoring may suffice. They provide cost justification for their proposed monitoring program.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. The project anticipates Hemlock Dam removal and the restoration of considerable habitat to the access of anadromous salmon. It is a large, ambitious, well-coordinated restoration project, but the proposed project is deficient in evaluation and monitoring. Despite progress in habitat restoration there is no evidence that fish numbers are increasing.

Interannual variability will mask underlying change in the proposed monitoring approach more than it would in an approach entailing comparison studies of treated and untreated watersheds. In this subbasin (and elsewhere) the major limitation on salmon productivity has been demonstrated to be in the smolt-adult life stage, and not the egg-smolt stage, so it is necessary to incorporate life stage monitoring into the plans. Such monitoring may not be necessary everywhere, but an index management system should be included in a Basin-wide evaluation plan, i.e., collectively select monitoring sites (watersheds) for comparison of rehabilitation treatment/no treatment and consider their response variables for intensive monitoring (e.g., smolts) versus routine monitoring (e.g., snorkle counts of juveniles in representative sections). See comments under General Issues. Nonetheless, it is wise to increase freshwater capability and survivals. Can production from sections treated be compared to untreated sections, including a before-and-after comparison?

The proposed costs for monitoring juvenile fish and smolts need to be further justified by providing detail of the approach.

ProjectID: 21009

Assess current and potential salmonid production in Rattlesnake Creek associated with restoration efforts

Sponsor: UCD, YN, USGS

Province: Gorge

Subbasin: White Salmon

Short Description: Address a unique opportunity to document habitat conditions and fish population status within the Rattlesnake Creek watershed prior to major habitat restoration activities and before Condit Dam removal and the reintroduction of anadromous salmonids.

Sponsor Request FY01: \$227,951

Sponsor Request FY01-03: \$736,756

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate to address most of the ISRP concerns. The likely removal of the Condit dam does provide a unique opportunity and timely need for better data. However, costs of proposed actions are relatively high. We suggest that the contract provide a list of deliverables with costs justified adequately.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. This appears to be a good opportunity for proposers to take full advantage of the opportunity to study the anadromous – resident fish interactions with the removal of the dam. This is a very well written proposal that presents good justification for the documentation of pre-restoration work and the benefit of that work in guiding the direction of restoration. The proposal is comprehensive, including a wide range of tasks. The discussion of limiting factors was, however, weak and generic and did not demonstrate a strong understanding of the system.

Potential information transfer needs to be better described. Costs for assessment and prescription appear very high, compared to other areas, and need fuller justification. The proposed cutthroat trout survey work seemed redundant with that proposed by proposal #21012.

Also, what are the risks to the cutthroat trout population and other resident salmonids following dam removal, and how will those risks be dealt with?

ProjectID: 21033

White Salmon River Watershed Enhancement Project

Sponsor: UCD

Province: Gorge

Subbasin: White Salmon

Short Description: A comprehensive, five year plan aimed to improve fish habitat, riparian and upslope watershed conditions, and land stewardship through direct restorative actions, cooperative work with stakeholders, and promoting education and citizen involvement.

Sponsor Request FY01: \$242,221

Sponsor Request FY01-03: \$801,748

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. They addressed the ISRP concerns from the FY2000 proposal review. This proposal presents a convincing case for the benefits of restoring habitat in the White Salmon watershed, and for the long-term benefits of the education and outreach accomplished through the formation of a watershed council and technical committee. The proposal describes good community involvement with a range of activities – watershed council meetings, trash cleanup, symposium.

Proposers should carefully plan evaluate their M&E (and be prepared to defend its value in future reviews). Specifically, they should improve their monitoring, especially of water quality, so that it will not continue to be done "automatically" but will be designed to be problem-oriented.

ProjectID: 199405400

Bull trout population assessment in the Columbia River Gorge, WA.

Sponsor: WDFW

Province: Gorge

Subbasin: Klickitat

Short Description: Determining the status of bull trout populations and developing and implementing protection and recovery plans will be critical for their continued survival. This proposal provides the basic data to develop these plans.

Sponsor Request FY01: \$155,938

Sponsor Request FY01-03: \$500,938

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. This project applies an agreed sampling protocol and is an integral part of a broader inventory of Bull trout. Given the listing of this species and the difficulty in assessing their status, this project must be considered a high priority.

Contrary to the project number, this is a new program begun with BPA funds in March 2000. Columbia River populations of Bull trout were listed as “threatened” under the

ESA in 1998, and bull trout in the White Salmon and Klickitat as distinct sub-populations within the Columbia population segment. Obviously there is an understandable requirement to conduct surveys such as these and this proposal is part of a larger inventory, the data from which is all be collated via the Rocky Mountain Research Station. Sampling methods apply an agreed AFS protocol developed to assess Bull trout due to their fragmented and small populations. Objectives of the program were portrayed in a logical clear sequence and each has a stated task and method. Within the Basin, the proposal provides good evidence of interaction with agencies.

While we support this investigation and the application of a sampling protocol, the nature of bull trout populations and the apparent difficulties in locating populations lead us to discuss two additional suggestions. If the populations are fragmented and small, encountering them during a snorkel survey (protocol method) is likely to be a rare event. However, the investigators could experiment with low-light videography at fixed locations/habitats where bull trout were known to exist or are suspected. Such a fixed station could greatly increase the numbers of hours sampled as opposed to the distance covered during a snorkel survey. Secondly, the review panel heard of two bull trout recoveries in cool water refuges along the north shore of the Bonneville Pool. These observations were from sport fishermen who by chance encountered these fish. If these investigators need to locate spawning and rearing populations of bull trout, could a targeted program to net or sport fish for adfluvial bull trout in these cool refuges provide a means to capture pre-adults for radio-tagging? Shore-based fixed monitors could detect entrance of the tagged fish and portable monitors could subsequently be used to monitor distribution within rivers. Given the difficulty in detecting this species, we recommend that the investigators examine several means to assess their status.

A significant concern identified by the review panel was the presence of brook trout in the Klickitat River and the possible competition and/or introgression with bull trout. We strongly recommend this aspect of investigation be incorporated in the genetic analyses and habitat surveys.

ProjectID: 21027

Inventory and Assess Amphibian Populations in the Klickitat Subbasin

Sponsor: YN

Province: Gorge

Subbasin: Klickitat

Short Description: Conduct an initial assessment of amphibian populations primarily within the previously unsurveyed Yakama Reservation. Use data to identify critical habitat areas and establish baseline for effectiveness monitoring of restoration efforts.

Sponsor Request FY01: \$135,797

Sponsor Request FY01-03: \$401,391

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate. The proponents were agreeable to reducing the plan to three years from five. The detail on probable collection methodology was

generally satisfactory, but reviewers would like to see a little more confidence about appropriate sampling methods.

ISRP Preliminary Recommendation and Comments:

Fundable for 3 years, instead of the five years proposed, but only if the response adequately addresses the ISRP's concerns. They need to define the sampling procedure in more detail and use established protocols.

This is an innovative proposal that outlines a logical sequence of tasks to achieve the population assessments and develop ecological (riparian) indicator species. Objectives are presented in a logical sequence and involve the establishment of sampling protocols to establish repeatable surveys. Some reviewers felt these protocols were established but during the stated consultations with "experts" these sampling processes will be resolved. There is a laudable amount of scientific consultation and review throughout. The plan to send annual reports out for scientific review is excellent but we also suggest a definite plan to present results at meetings and through journal articles, rather than "may be."

To develop amphibians as ecological indicators, consideration must also be given as to what "ecosystem" they are indicative of? If the interest is in indicators of quality riparian wetlands, then what are the amphibians being measured against and how will standards for the indicators be developed? If amphibians are to be used as indicators of some higher order ecosystem, for example, spring chinook in the upper Klickitat, then the investigator must establish that the amphibian species are truly indicators of the environment important to spring chinook. We can not simply presume that a species is an indicator for the habitat needs or status of another species, demonstrating these linkages are essential in establishing the use of indicator species.

**ISRP Fundable or Not Reviewed and No Comparison with CBFWA
Recommendations: Policy Issues**

ProjectID: 21005

Characterize and Assess Wildlife-Habitat Types and Structural Conditions for Sub-Basins within the Columbia Gorge Ecoprovince

Sponsor: NHI

Province: Gorge

Subbasin: Columbia Gorge

Short Description: Fine-scale wildlife habitat assessment for the Inter-Mountain Ecoprovince will produce critical baseline data for planning and monitoring efforts that is consistent within the NWPPC Framework wildlife-habitat relationships process.

Sponsor Request FY01: \$58,521

Sponsor Request FY01-03: \$58,521

CBFWA Recommendation: Do Not Fund

ISRP Recommendation Compared with CBFWA's: Technically sound. Fundable if needed in subbasin assessment by EDT.

ISRP Final Recommendation and Comments:

Fundable as amended. The technical difficulties were adequately resolved in the response. If funded, we would recommend that the field validation be conducted in a 'blind' study and that they report the percent of the original target of, say 75, random points in each habitat type that was not accessed during field validation of the map.

The response did not contain a direct expression of a need by the fish and wildlife managers at a regional level. For example, there were no letters of support from the fish and wildlife project managers, although participants at the subbasin meetings were supportive and expressed that they would use the maps. The ISRP agrees with CBFWA that if habitat mapping at the proposed scale is primarily to be used for the EDT component of the NWPPC habitat assessment process, then the project should be endorsed by those using EDT and perhaps funded through the EDT development process.

CBFWA Comments from DAIWP: This project is currently being funded under the Ecosystem Diagnosis and Treatment project by the NWPPC. The need for expansion of this project to produce finer resolution within each province should be determined through the EDT assessment process. If that process determines that finer resolution is necessary for regional planning, then funding for expansion should be provided through the NWPPC subbasin assessment effort.

ISRP Preliminary Recommendation and Comments:

Fundable if three conditions are met 1) a regional need by resource managers is demonstrated and 2) the ground truth methods are presented in more detail, and 3) the maps to be generated are specified as a deliverable to the funding agency rather than a product that NHI may own and sell. Further, the ISRP questions whether objective 2 should be included. This might better be left to local resource managers to evaluate with

direct, primary local data. A response is needed that provides sufficient information before the project could be recommended for funding.

Overall evaluation. The proposers appear competent for completion of the project. Except for field testing, the proposal appears to provide adequate technical background and justification, however it's not written for reviewers who are not expert in GIS. The proposal does not refer to any sub basin plan objective, only asserts that "planning requires a finer resolution of mapping than what [sic] currently exists", the objectives are not measurable with respect to wildlife restoration. The proposal indicates that it would build on previous work and emphasizes information transfer. However, the direct benefits to fish and wildlife and relationship to other projects are not explained. The usefulness of resulting maps to resource managers is not demonstrated, and resource managers in the Province have not been asked to support the project. Proposed methods for monitoring and evaluation of the utility of the classification maps are lacking.

Specific comments and questions.

1. The field-based ground truth task is not presented in sufficient detail. Procedures for defining strata, selection of random points within strata, and methods for dealing with access problems should be presented. For example, will the number of random points which could not be accessed in the field be reported? Will all 32 classes be ground truthed in the field? What is the procedure for determining the number of random field points to be visited in each class? What is the criterion and sample size to have an accuracy of 75% on each class? Will the lower limit of a 95% confidence interval be required to be above 0.75? It was stated during the oral presentation that if the criteria are failed for some class, then a completely new random sample of points from that class would be visited in the field? We would like to see this commitment more clearly expressed in the proposal. Will the field-testing be conducted blind, i.e., will field personnel not know the "office classification" before they visit a random point in the field? What are the criteria for identification of each of the 32 classes when the biologist is standing at a random point in the field?

2. Are this proposal and its sister proposal in the Inter-Mountain Province the initial proposals to map the entire Columbia Basin at this scale? Is there a Columbia Basin wide need for vegetation maps at this scale? Will there be any cost savings to other Provinces if this proposal is funded? Perhaps a pilot project should be funded to demonstrate the utility of the project.

3. The maps and resulting classifications should not be viewed as primary data. The mapping project uses primary data from the current Landsat Thematic Mapper, but classifications are derived and are subject to change in the future based on a different procedure.

These comments and recommendations mirror those for the Inter-Mountain proposal, #21006.

ProjectID: 21015

Riparian Buffers

Sponsor: Wasco SWCD

Province: Gorge

Subbasin: Fifteenmile

Short Description: Implements riparian buffer program using cost share provided by USDA, state of Oregon, and private landowners

Sponsor Request FY01: \$73,414

Sponsor Request FY01-03: \$226,914

CBFWA Recommendation: Do Not Fund

ISRP Recommendation Compared with CBFWA's: The position looks valid and offers potential benefit. However, funding the position is a policy decision and raises programmatic issues.

ISRP Final Recommendation and Comments:

Fundable. This one FTE should also be part of the watershed assessment and restoration team. This application should be considered in the other watersheds under an integrated plan.

This proposal is to take advantage of federal incentive programs to implement riparian buffer contracts with private landowners. It convincingly describes the potential benefits that could be added to previous riparian protection efforts by using existing federal programs. Good detail on cost-sharing and coordination with other agencies is provided. The project's objective – to implement at least 36 riparian buffer agreements - is specific and measurable. CREP plans and FSA requirements will provide monitoring of buffer strip outcomes. This proposal will monitor the progress of implementing agreements.

***CBFWA Comments from DAIWP:** This is a proposal to fund one full time equivalent employee at the Wasco Soil and Water Conservation District strictly to process and implement 36 new Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP) riparian buffer system agreements. The US Department of Agriculture funds these programs. There are currently 13 participants in the program signed up and at least 36 additional landowners in the Fifteenmile Subbasin that have expressed interest in entering into long term riparian buffer agreements through these programs. The fish and wildlife managers strongly support this project, however, funding through BPA would raise legitimate in-lieu funding issues. Therefore the fish and wildlife managers believe this project should be funded through another program (ie. US Department of Agriculture).*

ProjectID: 21028

Klickitat Watershed and Habitat Enhancement Project

Sponsor: YN

Province: Gorge

Subbasin: Klickitat

Short Description: This project will compliment ongoing habitat enhancement projects throughout the Klickitat basin by protecting parcels of high-quality habitat and restoring degraded upland and riparian habitat via acquisition, conservation easements and long-term lease.

Sponsor Request FY01: \$2,741,360

Sponsor Request FY01-03: \$9,001,360

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: NA

ISRP Final Recommendation and Comments:

No decision, this project is not amenable to scientific review. This could have significant fish and wildlife benefits but without knowing the potential purchases it is impossible to know if the potential will be realized. Further, the presenter noted that the project was not integrated with the watershed assessment and habitat rehabilitation efforts in the basin. Support for this type of proposal for land acquisition is more a policy decision than science, but given that:

- a) the proposal has not been integrated with other Klickitat proposals (as noted above),
- b) it lacks specific actions to evaluate, and
- c) if this panel needs to be consistent in providing recommendations across proposals; we would advise NOT to fund this proposal on the basis of this ISRP review process.

The proponents need to reference a watershed assessment and described a fully developed plan with subbasin level goals and objectives that justify the purchases.

If this trust fund principle was applied across all the basins it would use up all the BPA funds. A notable benefit to this process appears to be that in the Yakima this approach has drawn in cost-sharing contributions. This is not science but land management; nevertheless, likely an important aspect of the rehabilitation work required. There is clearly merit in having funds available to opportunistically purchase land when it becomes available, but should this advantage be provided to only one watershed?

ISRP and CBFWA Agree: Do Not Fund

ProjectID: 21010

Feeding, growth, and smoltification of juvenile steelhead infested with the ciliated protozoan, *Heteropolaria lwoffii*

Sponsor: USGS-CRRL, USFWS

Province: Gorge

Subbasin: Wind

Short Description: Infestations of *Heteropolaria lwoffii* on the body, eyes, and gills of wild juvenile steelhead may interfere with feeding success, growth, and smoltification, lowering parr to smolt and smolt to adult survival of fish in the Wind River subbasin.

Sponsor Request FY01: \$106,988

Sponsor Request FY01-03: \$467,132

CBFWA Recommendation: Do Not Fund

ISRP Recommendation Compared with CBFWA's: Agree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. A response was not warranted. Compelling evidence that the infestations are limiting salmon production is lacking in that smolt production has increased over the years that the infestation has been documented. There is no indication of the extent of the infestation in salmon populations. There is no indication of lethality or of a proposed study of lethality. There is no indication of the actions that might be taken if infestations are limiting salmon productivity. This project would be better focused on the natural populations rather than on laboratory studies (Why has there been infestation on parr, but not on smolt?) An appropriate study would probably be accomplished in less than four years, would be incorporated into regional fish pathology programs, and would be pertinent to subbasin limiting factors. If in fact this is a significant health problem, a different project should be proposed that focuses on the natural populations.

Inter-Mountain Proposals

ISRP Disagrees with CBFWA: ISRP Fundable and CBFWA Recommended Action or Do Not Fund

ProjectID: 21025

Intermountain Province Resident Fish Symposium

Sponsor: LRF

Province: Inter-Mountain

Subbasin: Inter-Mountain

Short Description: The Lake Roosevelt Forum will develop, coordinate, promote and convene an annual three-day symposium dealing with resident fish programs and related research within the Intermountain Province, with particular emphasis on the Lake Roosevelt Subbasin.

Sponsor Request FY01: \$41,000

Sponsor Request FY01-03: \$129,297

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: Disagree with CBFWA priority. This is a high priority project that deserves funding. It would help remedy some of the problems pervading the suite of fisheries projects in the Inter-Mountain province. The ISRP agrees with CBFWA that wildlife issues should be included in this or a parallel symposium.

ISRP Final Recommendation and Comments:

Fundable. This well-written proposal deserves strong support. It presents a compelling argument for the benefits of an annual symposium to provide evaluation and information exchange on resident fish research. The proposal makes clear linkages to the FWP. The annual symposium would be a valuable contribution to the fisheries program in the Inter-Mountain Province and would produce lasting benefits for a relatively low budget. Based on the ISRP's site visit, fisheries management and research in the Inter-Mountain Province appear to lag behind the standard of quality exhibited in the province's wildlife management and research program. The resident fish symposium proposed by the Lake Roosevelt Forum could be an important organizing and energizing event for the province's fisheries program.

The symposium in itself provides one means to monitor research progress and connectedness in the Subbasin; in addition the Lake Roosevelt Forum will monitor and evaluate the effectiveness of its own approach. Plans to bring in outside experts as keynote speakers and plans to produce symposium proceedings (hopefully peer-reviewed) are particularly commendable. The annual symposium may be most effective by inviting presentations and other participation by outside experts with regard to such pertinent overarching subjects as restoration ecology and management, and relationships of fish and wildlife restoration to human activities and attitudes. If funded, CBFWA should strongly encourage attendance and active participation (presentation or taking part in discussions) by all professional personnel involved in the Inter-Mountain program.

Finally, we suggest that a one or two day ‘continuing education’ short course be a part of the annual symposium. For example, a short course on statistical sampling procedures with emphasis on vegetation sampling would be valuable in all of the terrestrial projects. Capture/recapture methods for estimation of population size would be valuable for both the aquatic and terrestrial projects.

The proposal itself, and the previous accomplishments of the Lake Roosevelt Forum, reflect the competence and vision of the Forum’s staff. Mr. Dunau and Ms. Squier have extensive experience developing educational events that include public outreach, thus ensuring the success of this project.

***CBFWA Comments from DAIWP:** The symposium must also include wildlife issues in the Inter-Mountain Province. Emphasis must be placed on attracting the general public, and agencies outside CBFWA. Most of the criteria developed for this review are not applicable to this type of project (i.e. information exchange). This project should be supported, funded and implemented through the NWPPC's subbasin planning effort.*

ProjectID: 21002

Early life history and survival of adfluvial rainbow trout in the San Poil River Basin

Sponsor: PNNL

Province: Inter-Mountain

Subbasin: San Poil

Short Description: Investigate overwintering behavior and survival of juvenile adfluvial rainbow trout in the San Poil River drainage and examine relationships between habitat parameters and survival.

Sponsor Request FY01: \$155,092

Sponsor Request FY01-03: \$495,092

CBFWA Recommendation: Recommended Action

ISRP Recommendation Compared with CBFWA's: Disagree with CBFWA priority.

This is a high priority project that deserves funding. This proposal has generic application across the province. What is learned here could eliminate a significant bottleneck for resident salmonids and anadromous salmonids (if introduced).

ISRP Final Recommendation and Comments:

Fundable. This was viewed as an excellent proposal in all respects. It examines a time period (winter) when mortality of juvenile salmonid fishes is high but causes of death are poorly understood. During the field tour there was ample evidence that habitat in streams throughout the subbasin was impacted by land use practices enough that winter fish habitat was probably far below optimal, and in some cases almost non-existent. Results of the proposed study should assess that possibility and identify critical habitat needs. It will be especially important for the PIs to actively involve biologists from the Colville Consolidated Tribe and Colville National Forest and for them to be proactive in communicating results to other land managers in the province.

The proposal's PIs have strong publication records and substantial winter research experience. They are very well qualified to perform outstanding work on a key topic

here. Videography under ice is largely an untested technique, but probably worth a try here.

***CBFWA Comments from DAIWP:** The [rainbow trout] population has persisted for years under the stated conditions*

Mule Deer Projects:

ProjectID: 21023

Determine causes of mule deer population declines in the IM Columbia Basin: a test of the "apparent competition " hypothesis

Sponsor: WSU

Province: Inter-Mountain

Subbasin: Inter-Mountain

Short Description: Determine if increasing white-tailed deer and resulting increased cougar predation are responsible for mule deer population declines in the IM Columbia basin.

Sponsor Request FY01: \$205,532

Sponsor Request FY01-03: \$531,625

CBFWA Recommendation: DNF

ISRP Recommendation Compared with CBFWA's: Disagree. This research proposal is fundable and should be of equal or higher priority than project 21029, because it clearly establishes that predators may be a limiting factor and is more scientifically sound. The ISRP can not eliminate either "food" or "fang" as potential limiting factors in deer populations. Further, it would be inappropriate to strip tasks from this proposal and add them to 21029 without agreement of the project sponsors and the offer to include Washington State University in the budget as a subcontractor to complete those tasks.

ISRP Final Recommendation and Comments:

Fundable. The response addressed major concerns and the project as now cast should be a valuable contribution and sound science. The ISRP supports large field experiments of this type, and accepts that large-scale field studies should not be held to the same design standards as are laboratory studies. However, the ISRP notes that individual animals are not independent replications of the treatments in this study, as in other similar large-scale field studies. Large-scale field studies are a mixture of experimental and observational study that can lead to trustworthy inferences if replicated in time and space, as in this study. The use of individual deer (or individual lions) as the sample size is not justified by the design, but by assumption, and these assumptions may be incorrect. Study areas receive the treatment or control designation, not individual deer. All deer in one area may simply be more (or less) susceptible to predation because of habitat or other unmeasured factors.

The bottom line from a design point of view is that there are repeated measurements over years on two blocks (pairs) with no replication within the blocks, i.e, a repeated measures randomized block design with 2 blocks that requires the assumption of no block by treatment interaction. The data can be analyzed with the replicate study areas (N=2) because of the random assignment of treatment to units as recognized by the author in the

first paragraph of the section ‘Cougar Aggregative Response.’ The design is adequate as given, but the authors need to revisit the issue of statistical analysis and the assumption of independence of actions among animals. Any analysis that treats individual deer or lions as replicates should be acknowledged as pseudoreplicated and the outcome compared with analysis as described above. We disagree with CBFWA’s recommendation to fund project 21029 but not this project. Of the two, which together could make a nice multi-factor study of mule deer ecology, 21023 is the better proposal, having both stronger and more compelling technical background and more clear and adequate experimental design and sampling methods.

***CBFWA Comments from DAIWP:** This is a proposal to test the apparent competition hypothesis by conducting a controlled, replicated “press” experiment in two treatment and two control areas of the Inter-Mountain subbasins by reducing densities of white-tailed deer and observing any changes in cougar predation on mule deer. Due to the fact that this proposed work is evaluating a predation issue, the fish and wildlife managers judged that this proposal was inappropriate for Direct Program funding. However, the managers believe that some of the tasks should be funded under Project Number 21029.*

ISRP Preliminary Recommendation and Comments:

Fundable only if methods are better described and the regional support for this study in relation to other mule deer studies, e.g. 21029, is better documented. A response is needed.

This project proposes to add FWP funding to ongoing research on declines in mule deer populations. The project would complement existing research by testing a specific hypothesis on the causes of mule deer decline, which are of regional interest and importance. The proposed study has the potential to be important in addressing a reasonable but rarely considered hypothesis (that the population interaction between two apparent competitors, in this case mule deer and white-tailed deer, is in fact caused by a common predator, in this case cougars) and the proposal presents background data that strongly suggest that apparent competition is occurring. However, the study design and experimental methods are not clear in the proposal and should be better developed in a revised proposal or addendum. The proposal specifies two study areas, and that each area will contain a control and a treated site. The treated sites will have reduced white-tailed deer densities but we do not know what the changes will be, or when these will be made. Also, nothing is said about the effects (if any) of movement between the control and treated sites which could remove the treatment over time. There are potential statistical difficulties in the apparent design. For instance, the proposal implies that individuals will be used as samples (replicates) and the assumption of their independence needs to be justified, especially since the individuals to be studied will be drawn from what are described as 2 sample areas of each experimental treatment. There will be differences between control and treated areas irrespective of any treatment effects, so that the simple t-test types of analysis that are mentioned may not be sufficient for testing for treatment effects. Some sort of paired comparison analysis may be appropriate, but it is difficult to know without being sure of what the experimental design entails. If animals are to be considered independent samples, then the proposal should acknowledge that this involves

pseudo-replication and requires some justification. Also, they should randomly select the two sites for 'treatment', i.e. white tail removal. It is stated that 50 adults and 50 fawns in each of the four control and treated areas is a more than adequate number to test for ecologically significant effects, with no justification for this statement and no indication of what ecologically significant means. For survival differences it seems that these sample sizes might be insufficient to get good power to detect important changes. With cougars the sample size will be 10 in each of the four control and treated areas. This sample size is said to be more than sufficient, and an unpublished report is referenced (Katnik and Wielgus, 2000). Again, more details are needed to know whether a study with these sample sizes has good power to detect the types of effects that are likely to occur. Many other details of sample design and justification also need to be supplied: What is the size of the treatment and control areas? How are they located relative to one another? How will areas be assigned to treatments? What type of movement of predator and prey occurs between adjacent treatment and control areas, and how will differences in these rates of movement be tested for significance after the treatment is completed? Is five years sufficient to test for predator and prey responses? Are habitat differences controlled? Will the number of observations be sufficient to test the hypotheses? Also, the details of how cougars are to be tracked until two kills are not clear: how are individuals chosen for tracking? How are they followed? How successful is the technique, on average? Are the procedures free of sampling bias?

The proposal should include assurance that animal care and use guidelines will be followed.

ProjectID: 21029

A cooperative approach to identifying the role of forage quality in affecting physical condition...of mule deer in north central Washington.

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Inter-Mountain

Short Description: We are proposing a cooperative, five-year research investigation involving the WDFW, the lead agency, and Washington State University (WSU), a collaborating agency, to assess the role of habitat in maintaining mule deer numbers.

Sponsor Request FY01: \$133,650

Sponsor Request FY01-03: \$325,250

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, fundable only if clear and adequate design specifications are established for the field component during the Council review or BPA contracting process. However, it would be inappropriate to strip tasks from proposal 21023 and add them to 21029 without agreement of the project sponsors and the offer to include Washington State University in the budget as a subcontractor to complete those tasks.

ISRP Final Recommendation and Comments:

Fund, but only if clear and adequate design specifications are established for the field component during the Council review or BPA contracting process. The field portion of this proposal suffers from the same problem of pseudoreplication as does Project #21023.

The ISRP supports large field experiments of this type, and accepts that large-scale field studies should not be held to the same design standards as are laboratory studies. However, the ISRP notes that individual animals are not independent replications of the treatments in this study. Large-scale field studies are a mixture of experimental and observational study that can lead to trustworthy inferences if replicated in time and space, as in #21023. The use of individual deer as the sample size is not justified by the design, but by assumption, and these assumptions may be incorrect. Deer are themselves not the subject of treatment. For instance, all deer in one area may simply be more (or less) susceptible to limited forage because of isolated snowstorms or other unmeasured factors. The bottom line from a design point of view is that there are repeated measurements over years on apparently two study areas (control and treatment), i.e., a repeated measures observational study with no replication. The authors need to revisit the issue of statistical analysis and the assumption of independence of actions among animals. Any analysis that treats individual deer as replicates should be acknowledged as pseudoreplicated. Also, the author did not adequately ensure unbiased field sampling procedures for collection of fecal pellet sample and forage samples, and the spatial arrangement of locations for radio tagging or collection of animals was not adequately addressed. Some of the responses concerning statistical analysis are naïve, but would be easily fixed with a senior level biometrician as a team member.

We disagree with CBFWA's suggestion that tasks be transferred from 21023 to 21029 unless the project sponsor of 21029 agrees fully with this and is included as a subcontractor in the budget. The transfer of parts of a project without free consent of the project's director would be a major violation of intellectual property rights and such practice of idea-stripping could have severe negative long-term effects on the quality of science produced under BPA funding. Further, the technical background in both proposals suggests that this project should not proceed without 21023, because project 21023 provides strong, though indirect, evidence that a predator is a key factor in the decline of mule deer.

CBFWA Comments from DAIWP: Some tasks from Project 21023 should be incorporated into this project.

ISRP Preliminary Recommendation and Comments:

Fundable, but only if the response provides more details on field methods and sources and uses of other funding. These should be clearly specified or summarized and references cited.

This proposal presents good scientific background and justification for the work, relating it well to the sub-basin plans and the FWP. The project should have good long-term benefits for mule deer. The project has good information transfer plans, in particular the synthesis of project findings into prescriptions for mule deer management plans, and the two PIs doing the lab work have produced many widely-cited and widely-applied publications. The work is likely to be done well as evidenced by the investigators' previous work. This project complements an ongoing cooperative project being

conducted outside FWP funding, though the proposal is short on detail about the cooperative project.

The response should clearly identify the distinctions and complementarity between it and 21023. There are apparent overlaps in both project scope and some tasks. For instance, Task 3 of Objective 4 apparently includes project 21023. Will the sample areas be the same? Are there possibilities for the two projects to produce synergistic results?

More information on sample design should be presented, in particular the spatial sampling scheme (e.g., where are sample sites located and how are they chosen for study?) and statistical justification for the sample size. There is no justification for any sample sizes such as would normally be required on a study involving human patients. In some cases sample sizes are not even mentioned (e.g., for estimating the survival rates of radio-marked deer. What evidence is there that the sample sizes are sufficient to meet the objectives of the study? A sampling plan for collecting fecal pellets and forage samples should be presented and justified.

More detail on statistical analysis should be presented for each task. Additionally, it is stated that analysis of variance and analysis of covariance will be used for analyzing the feeding trials. Growth data may need some special treatment here rather than what is in the standard statistical packages.

The proposal should include assurance that animal care and use guidelines will be followed.

ISRP Disagrees with CBFWA: ISRP Do Not Fund and CBFWA High Priority or Recommended Action

ProjectID: 21020

Monitor and Enhance the Lakes and Streams of the Spokane Indian Reservation

Sponsor: STOI

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Monitor current and future hatchery stocking of 4 interior lakes. Monitor natural and hatchery fish stocks in streams within the Spokane Indian Reservation. Enhance lakes and streams to maximize mitigation benefits to tribal members.

Sponsor Request FY01: \$92,177

Sponsor Request FY01-03: \$281,177

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Disagree, Do Not Fund.

ISRP Final Recommendation and Comments:

Do not fund. This proposal appears to be in the developmental stage. It may be appropriate to fund this proposal on a pilot level for development of a scientifically sound plan. The sponsor addressed most but not all ISRP comments adequately, then went on to

rewrite the proposal. Instead of devising a strong, well constructed revision, the proposal remains confusing. For example, it contains the comment that the new plan would likely require one year of biological evaluation followed by some undescribed engineering evaluation and a monitoring program reduced to oxygen and temperature profiling. Risk is high that this project as described will show little benefit after several years of funding.

Sampling designs were not specified. In the revised text, the sponsor references literature sources on sampling design, which could be used, although those sources do not appear in the reference list. It cannot be assumed that proper design will be developed in terms of assuring that the sampling sites are large enough, numerous enough, and selected well enough to adequately represent the streams and fish stocks involved.

The use of single-pass electrofishing is questionable, even in “small” streams because single-pass electrofishing cannot be relied upon to capture 100% of the fish, so abundance cannot be assessed unless at least two passes are made, using an appropriate mark-recapture or multiple-removal method. Also, the response about types of electrofishing current (pulsed and unpulsed DC) demonstrates uncertainty about what is involved. In unpulsed DC electrofishing, fish do swim to the anode. Conductivity of the water is more likely the key to whether unpulsed or pulsed DC is appropriate. Unpulsed DC is well established and in widespread use. In the proposal, the advantages of unpulsed DC are not recognized, resulting in the potential for wasted sampling effort and damage to fish populations.

The list of “Known General Limiting Factors” on p. 6 is a very good idea but contains some odd items. Fecal coliform are a human health matter. References to effects on fish should be given. “Farming/grazing” is an area of human or human-generated activity that can damage fish habitat but to state it as a “limiting factor” is not very helpful. It would be more useful to say what the farming/grazing is actually doing to the fish habitat. For example, “overstory removal” may cause adverse thermal effect that is a limiting factor.

On revision p. 11, in 2nd paragraph of the methods for task c, the proposal should indicate what is being sampled within the lakes.

The proposal’s management plan 1 (p. 8) and response Objective 2 (p. 9) involves stocking (native?) salmonids in tributaries. The proposal includes measures to reduce competing non-native species, but this task is not included in the response. The response indicates that monitoring angling removals of planted (or wild) fish by creel survey is not feasible, and lays out an electrofishing plan to monitor effects of planting the trout and effects of measures to reduce competing non-native fishes (p. 9). Presumably, there will be an attempt to relate the fish indices obtained by electrofishing to the planting of trout and possibly to removal of other species. Without information on angling removals, difficult as that information may be to obtain, it seems unlikely that valid conclusions about the effectiveness of management measures can result. Thought should be given to obtaining at least some “index” of relative angling effort among the tributaries. Perhaps one could assume that fishing removes similar portions of the planted trout and the non-native species. Further thought needs to be given to this point.

CBFWA Comments from DAIWP: *CBFWA technical review of original proposal: methods do not exist for stock assessment, habitat, etc. Identification of methods and the sampling design/application of such methods needs to be strengthened. The time frame identified in Objective 3 is troublesome. Rewrite Objective 3 so that it has realistic accomplishments and time periods. Objective 3, task c is not tied to M&E as well as c in obj2 and d in obj1. In the rewrite, clearly identify long-term benefit potential. A total of \$10,000 will be contributed from various sources. This information must be identified in the revised proposal.*

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. The proposal needs to be re-written. The proposal is sketchy and sometimes unclear. It does not reference any pertinent fundamental scientific literature, only gray literature on the local situation. Therefore, the technical and scientific background is deficient.

This should be an important M&E project for hatcheries (e.g., Spokane Tribal Hatchery) that are stocking the reservation waters and for native populations in streams, but the proposal does not convince us that the project is being properly conducted. Much of the background material is helpful. The map was appreciated. The general rationale and relationship to other projects are good. The objectives are good, but the methods are weak (it is stated what would be done, but not how). There should be much value to fish from this project if it is reworked. It meets consistency criteria.

The scientific/technical background provides much detail on conditions of tributaries and creeks but doesn't lay out the central problem in a clear way. For how long have hatchery fish been stocked, and what is known about the effects? Given that healthy tributaries are needed, why do the researchers need to determine the limiting factors when they state (p.6) that limiting factors are levels of dissolved oxygen combined with temperatures? Later on that page it states that this project will produce carrying capacity objectives for each water body. This is different from identifying limiting factors.

The sampling design needs detail. If it hasn't yet been developed, then at least the likely literature sources for it should be shown. If the sampling methods and designs are not yet set, then how can facilities, equipment and staffing be thought adequate?

Data would be gathered upon which to manage four "lakes" that total 75 acres and apparently provide little angling. This appears to be a low-priority situation. Even if the priority is adequate warrant keeping this as part of the project, we are not convinced that it is necessary to monitor all the physical and chemical characteristics of these lakes. The limiting factors seem to have already been identified as anoxia and high temperatures. The proposal mentions possible evaluation of measures to destratify the lakes. Such an engineering evaluation may be more to the point than further studies to refine details of the problem. The stated objectives are rather general and vague. The proposal states that it is designed to "monitor (fish) stocking of 4 interior lakes", yet there is no mention of conducting a creel survey either by this project or another one. The catch

of stocked fish probably ought to be the first focus of a monitoring program. Estimates of carrying capacity in the lakes that are mentioned are unlikely to be useful if they are derived from the plan described.

One proposal objective is to monitor trout populations in the tributaries. Obviously, such populations and “assemblages” can be strongly affected by fishing. Again, where is the creel census and sampling design?

Also, tributaries to Lake Roosevelt will be sampled to secure 5 spawning populations of wild kokanee. This task has higher potential value for Lake Roosevelt fishery.

Before improvements in culverts or diversions (p. 9) are made to enable fish passage, the risks of damage to upstream native fish stocks by new stocks that move in should be considered.

On narrative p. 8, paragraph 2, “instream structures” are mentioned. What kind were they? What was their exact purpose? Similarly, in the next paragraph, reference to “habitat restoration and connectivity efforts” is vague.

P. 9, last paragraph: What does “direct and indirect habitat improvement” mean?

The intentions regarding information transfer are unclear. This project should result in reports containing analyses and interpretation, not just in the data base that is indicated on p. 2 of the proposal’s part 1.

“Electroshocking index sites” are mentioned (p. 9, paragraph 3). The type of electrofishing gear to be used may well be the backpack units mentioned later in the same paragraph for removing non-native fish. If so, this probably involves pulsed direct current, and its drawbacks in terms of high rates of fish injury and death should be acknowledged. The advantages of using far less destructive unpulsed DC (non-backpack units) should be considered. The Montana Department of Fish Wildlife & Parks has banned use of pulsed DC for sampling fish in that state.

Question: When restoration of anadromous fish populations above Grand Coulee is mentioned, it is not clear that you really mean anadromous fish. The emphasis is on habitat improvement. Please clarify.

ProjectID: 199502800

Restore Moses Lake Recreational Fishery

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Restore/enhance the failed recreational fishery for resident species in Moses Lake, once the premier fishery for resident game fish in the Columbia Basin, in lieu of lost recreational anadromous fisheries.

Sponsor Request FY01: \$213,72

Sponsor Request FY01-03: \$653,676

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Disagree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund, the response and the original proposal do not demonstrate a scientifically sound project. The project is not adequate to address the tremendously complex situation in Moses Lake. The proposal does not adequately address alternative reasons why the fishery has declined to the current low level. The project sponsors should consult with the Banks Lake project sponsors for approaches to a lake-wide study.

Problems with the scope and conceptual basis for this project remain. That said, the response did show good effort and good progress. It was disconcerting that the researchers requested additional advice as to which tasks should have been deleted, modified, or added. We are concerned that the proposal did not contain evidence of logic and understanding of the situation. There is risk that the project as proposed will gather several years of data that may not help in managing the panfish of Moses Lake.

The proposal and the responses to ISRP comments focus on investigational techniques and clear up details concerning them and various facts about Moses Lake. However, relationships among limnologic, fish community, and fishery processes (at least embodied in the literature concerning appropriate past studies) have not been brought to bear on the problem. Measurement techniques regarding fish populations, fish diet, and limnology that are important for analyzing the perceived problem of decline in Moses Lake's recreational fishery have been described. However, investigational methods are not the only important part of the proposal. The project should build upon the history of the results of previous individual and comprehensive studies of lake and reservoir fishery problems.

Overall guidance from an independent senior investigator may be warranted. Specifically, in response (unnumbered p 5) to our comment that the project would benefit from consultation with a senior scientist specializing in limnology, the sponsor states that a Washington Dept of Ecology limnologist, has been sub-contracted to perform certain measurements. This response speaks only to technical matters (sampling). Project guidance on overall limnological processes and on relationships to conditions for reproduction, growth, and survival of the fishes (and other, associated organisms) would be even more important.

The original proposal and many of the responses were poorly presented. For example, although tables of statistics provided in the responses help clarify some of the ISRP comments, certain inadequacies in them, such as units of measurement not being shown and the vague dates of measurement, make the information difficult to understand. In response Attachment A, Hypothesis 3 is “Recruitment of panfish is limited by primary productivity.” Immediately following this, the supposedly applicable Task 1.3 reads as follows: “Conduct zooplankton density and species composition study,” and the methods described under that deal with zooplankton. Primary productivity refers to tissue produced in the form of phytoplankton and other plants, not zooplankton

During the Spokane discussion, panel members pointed to the proposal’s lack of reference to past studies concerning effects of carp on lakes and results from reducing carp populations. The response did not followed up on this comment.

The sampling scheme for the creel survey identifies 16 weekdays and 4 weekend days per month for sampling, resulting in a higher sampling rate on week days than weekend days. This may be less efficient than a stratified sampling scheme that would sample in proportion to the expected total catch (which is the parameter of interest). If the sponsors have some estimates of expected fishing rates that support the recommended sampling scheme, those data should be presented.

It would be helpful for the sponsor to discuss the Lake Moses situation in terms of the life history requirements of each fish species involved. It also would be useful to examine the present study of Banks Lake, which the reviewers found better formulated.

The Panel concluded that work on this project should halt until the conceptual approach is improved. Moses Lake and its fishery obviously represent a huge complex of problems. Any attempt to analyze them will require better direction and insight than is evidenced in the proposal and responses.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP’s concerns. In the response, sponsors should incorporate material presented at the meeting and revisions should be better focused on the causes of fish species shifts and their potential management, e.g. those actions that have more potential for pay off. The proposal was inadequate, but the presentation cleared up some of the ISRP concerns. There is need for thinning the tasks.

This is a project for conducting research, evaluation, and mitigation to restore a once-productive warm-water panfish fishery in Moses Lake. It is included in the Intermountain subbasin because it receives water from the Columbia River via diversion from Lake Roosevelt through Banks Lake. Management of Moses Lake is considered substitution/mitigation for loss of anadromous salmonids above Chief Joseph Dam. Although listed as a 1995 project, it has been funded for one year.

The project seems to be off to a good start by compiling past records and monitoring the system. Presentation of this information was informative and interesting. Species composition in terms of numbers does not fully support the suggested trends, although biomass does it better.

However, this is a poorly developed proposal that has problems, although the oral presentation was much better and alleviated many concerns. The proposal seems not founded on a basic understanding of lake processes, thus not directed toward investigating why the ecosystem fails to support the desired fishery—or a suitable substitute for it. It is not clear why the fishery declined. It is imperative to know what the problem is before solutions can be found. The project proposal is concentrated on superficial fishery matters and doesn't get at the underlying habitat system. Some of the deficiencies were identified in last year's review.

The project would benefit from consultation with a senior scientist specializing in limnology. The history of change in the lake's drainage basin (vegetation, soils, land use, other human activities, hydrology, etc.) should be examined, as well as basic change in basic lake characteristics (limnology). Several basic questions need study. What are the lake's depth and wetted basin shape? Thermal stratification? Seasonal dissolved oxygen profiles? Macrophyte types and extent? Ice cover? Do Dissolved Oxygen levels ever become critical? What are the concentrations of toxic chemicals in the lake water? What is the status of reproductive habitat for the various species of fish? What is their reproductive success in different habitats? Where do the trout come from? Were they stocked? Were other fish stocked? The proposal, despite its various tables of data, does not touch adequately on any of these questions.

Various graphs in the proposal are labeled as growth of fish, whereas they are really just length-at-age plots, from which growth rates are difficult even to infer. They were not drawn in such a way as to show growth. Sample sizes and variances are not indicated.

Specific comments relate to certain objectives. The objective for a fish diet study seems too large in scope (includes too many non-critical species). Also, gillnetting is not an effective tool for a feeding study because of regurgitation. The objective to conduct a population estimate (p 21) does not adequately demonstrate how this will be accomplished. The objective of obtaining more age data is not critical to rational management – a good idea of age and growth is already available. The same may be said regarding GIS maps, except as incidental to other tasks. On the whole, this study plan needs modification, largely to trim tasks to a critical few, and re-review.

The population trends look very much like those seen when common carp take over a lake in the eastern United States. This observation is strengthened by the proposal's comment that commercial carp harvest had been curtailed for lack of a market. Fishery management in such cases has been to stimulate carp harvest, either commercial or through angler incentives (e.g., carp derbies which can be fun for all ages, youth carp fishing days, spearing carp along shore during spawning). Once carp numbers are

reduced, other species such as the panfishes may bounce back on their own. An outside advisor familiar with managing such carp lakes could be a benefit to the project.

On further revision of the study plan, the project should have a good benefit for fish, and it meets the consistency criteria.

CBFWA Comments from DAIWP: Very little CBFWA comment was provided.

ProjectID: 21035

Phalon Lake Native Redband Rainbow trout Trap Construction and O & M

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Construct and operate a pumped water trapping facility to capture and spawn a locally adapted, indigenous stock of redband rainbow trout for subsequent use in the subbasin.

Sponsor Request FY01: \$126,000

Sponsor Request FY01-03: \$199,671

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Disagree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. The reworked proposal, provided as an unsolicited response, does not adequately address the ISRP concerns. A project objective is stocking of redband trout in the Kettle River, but no biological justification for this is shown. Various aspects of the project concept are laudable, especially the attempt to replace the stocking of non-native rainbow trout with native redband trout and intent to reduce entrainment loss (see further comment below), but severe deficiencies of the proposal and response do not inspire confidence that the project will be successful

The response text continued to be poorly presented. Problems include unnumbered pages, poor logic, incompleteness (thoughts not fully developed, literature referenced in text but not shown in the references section), inaccuracy (“locally adapted kokanee stock” from Kootenai Lake, B.C.), and needless repetition. For future proposals, we suggest using independent biological and editorial help.

The proposal should show better coordination with the Lake Roosevelt Fisheries Evaluation Program to ensure that a monitoring and evaluation protocol will be in place to measure its merits. In this situation, scientific evaluation should be mainly concerned with measuring “entrainment” of the new fish stock, compared with the present stock, and with evaluating effects of emigrants on genetic integrity of downstream stocks. The present proposal deals with trap construction and relies on the Lake Roosevelt Fishery Evaluation Project for this measurement, but review of that proposal reveals no reference to the Phalon Lake Fish Trap. It appears that the fish trap evaluation is to depend on information collected on upstream and downstream movement of planted fish without any planned formal study design or statistical analysis related to the primary question raised in the Phalon Lake Project; i.e., are there any demonstrable advantages to using

this particular stock of fish? Problems with monitoring and evaluation are apparently partly the responsibility of the Lake Roosevelt Fishery Evaluation Project, but this proposal should present evidence that adequate monitoring and evaluation will be conducted.

ISRP Preliminary Recommendation and Comments:

Do not fund, based on present proposal. Further ISRP response review is not warranted. Good and fundable idea; poor and non-fundable proposal. The proposal fails to provide a scientifically sound concept.

The proposal and oral presentation were poor. They were disorganized and created confusion about what is asked for. The writing was careless. However, the panel believes the trap construction is important for the use of native stocks and that the broodstock in Phalon Lake represent a good start toward developing appropriate hatchery products.

This project's immediate objective is a purely technical activity. The broader, underlying reasons for it are properly expressed in the abstract's second paragraph. The overall procedure should be clearly and concisely spelled out, however—the capture of native fish from their home waters, holding them in Phalon Lake, keeping them separate (or identifiable as to origin), trapping them, spawning them, rearing them, stocking them, and so on. In other words, the relationship to other projects is poorly described both in the front-end listing and in the narrative, especially for a set of projects that is supposed to be so intricately linked. The flow of fish among projects is not well described.

The proposal background was short and weak. The stated objectives are really tasks, though they are understandable. The proposal does not provide evidence that this type of trap works under exactly the same conditions (pumped flow). When questioned after his presentation, the PI mentioned examples, but they differed from the planned trap. In later solicitations, a revised proposal with clear and focused justification, objectives, work to be done, etc. with review by WDFW would be welcome.

The underlying objective of this proposal, which is to replace hatchery rainbow trout released into Lake Roosevelt subbasin waters with native redband trout stocks, is commendable and supported strongly in the resident fish portion of the FWP. The ISRP also supports this goal. Replacing coastal rainbow trout hatchery stock with hatchery stocks derived from native redbands—if properly done—would alleviate our concerns about stocking non-native trout in the province. Those concerns are rooted in the insidious effects of hybridization on indigenous stocks.

The proposal suggests that the major reason to use the native stock is that it is less likely to entrain through Grand Coulee Dam than the present hatchery stock. This objective should be testable and is relevant to the difficult fisheries management situation in the hyper-dynamic Lake Roosevelt. Nevertheless, the more relevant longer-term reason to do the proposed work is to replace the non-native stock presently used in the hatchery program(s) with native stocks. There is a significant and rich literature that addresses the

effects of hybridization on native stocks that should be described and referenced in the proposal more thoroughly. The proposal would benefit from significant development of the objectives, tasks, and methods sections, with particular emphasis on a monitoring and evaluation component in order to assess the success of the project.

With regard to the problem assumed in the proposal that genetic contamination of downstream stocks of rainbow trout might result from entrainment of the present hatchery strain now used as the main source of net pen-reared rainbows for Lake Roosevelt, we question whether this approach would really solve the supposed problem. Two elements are of significance: the propensity for downstream movement of native-derived stocks and the genetic implications, if any. Regarding downstream movement, the proposal states the Phalon Lake stock “may be less likely” to migrate downstream. In other words, it is unknown whether their tendency toward downstream movement is any less than in the present hatchery strain. And with respect to genetic implications, the proposal does not discuss what, if any genetic implications there might be if the “Phalon Lake stock” were to contaminate downstream stocks—which some of them are certain to do via entrainment. The proposal does not convince that a real problem exists, or that if it does, the method proposed will deal with it effectively.

With respect to trap design (item g), what alternatives were considered? Why was this the most advantageous type? How many cubic feet per second of water will be pumped, and what is the evidence that this amount will attract fish sufficiently and be economically justifiable?

The proposal contains unsubstantiated statements, for example (*italics added*):

(1) In item a: “Current and future augmentation of redbands in this subbasin will ensure their persistence.” The sponsor could balance this thought with consideration of genetic corruption via artificial propagation such that the target population dwindles or, when stocking eventually ends, perhaps even cannot persist.

(2) In item c: “use of hatcheries will be critical to the success of providing subsistence and recreational resources and conservation of native species.” Just saying so doesn’t make it so. And again, what of the potential harm to native species through use of hatcheries?

(3) In item e: “Broodstock replacements were and continue to be taken from the wild each year so that the genetic make-up is not compromised.” It would be naïve to believe that this absolutely ensures that genetic make-up will not be compromised, and such should not be implied. Exactly what is the genetics-based plan for replenishing the Phalon Lake broodstock(s)?

(4) Also in item e: “Forty-one [sic] percent of fish caught were hatchery produced wild fish.” How was 41% determined, and by whom? A reference seems to be missing. And if the fish were produced in a hatchery, then they couldn’t have been wild. Hatchery-reared fish from a native strain or words to that effect would be more accurate.

(5) In item f, under objectives: “The ultimate goal of this proposal is to produce a facility...” This expresses the immediate goal. The ultimate goal was stated in the abstract.

(6) At end of the next paragraph: “Tributary use of these fish will be dependent on the progress of inventory and enhancement efforts.” What is meant by “enhancement”? If stream habitat restoration is meant, then part of the sentence makes sense, but why would the fish care whether an inventory has been conducted before they decide to use a tributary?

Apparently to try to support the broad objective and such statements as 1, 2, and 3 (above), the sponsor provides a reference list (item h) of just two articles, neither of which, however, is referenced in the text. The first of these (Anders 1998) pertains to conservation hatcheries, not to the proposed operation’s purpose of using the target stock for “recreational and subsistence fisheries,” which makes it a harvest augmentation project (of the “supplementation” sort?) rather than a conservation project. The sponsor draws on nothing from the major book on the subject by Ryman and Utter (1987) and fails to include consideration of the large literature pertaining to reduced fitness caused by artificial propagation of fish, even when that propagation is intended to augment wild populations, e.g., Reisenbichler and Rubin (1999), Peery and Bjornn (1993), and Fleming et al. (1996).

In the questioning after his oral presentation, the PI revealed that some of the hatchery fish produced from Phalon Lake broodstock, originally collected from the Kettle River, are being stocked back into the Kettle River. He indicated that this is done to bolster the Kettle River native redband population which is severely diminished because WDFW angling regulations until recently led to overharvest. However, if the changed angling regulations are properly protecting the trout, and the river’s habitat is suitable for the fish (as it appeared to be during our bus tour, and we weren’t told otherwise), then the natural trout population should recover on its own. Augmentation stocking should not be needed—and indeed could be harmful. Besides the probable needlessness of the stocking, the possibilities should be considered that stocking will stimulate continued excessive harvest, and that stocking fish reared even for just one generation in the hatchery will decrease the reproductive fitness of the wild population into which they are mixed, hence actually depress trout abundance. See Reisenbichler and Rubin (1999) concerning the latter process.

References:

Anders, P. J. 1998. Conservation aquaculture and endangered species: can objective science prevail over risk anxiety? *Fisheries* 23 (11):28-31.

Fleming, I. A., B. Jonsson, M. R. Gross, and A. Lemberg. 1996. An experimental study of the reproductive behavior and success of farmed and wild Atlantic salmon. *Journal of*

Applied Ecology 33. (“The results of this study agree with other evidence that suggests captive breeding and artificial culture reduce natural productive ability of fish.”)

Peery, C. A., and T. C. Bjornn. 1993. Ecological effects of spring-reared spring chinook salmon on naturally produced chinook salmon. Idaho Supplementation Studies Annual Report, 1991-1992. Bonneville Power Administration, Portland, Ore. (“Thus, it is possible that a hatchery supplementation program may inadvertently replace the target natural population with a population having a lower survival and reproductive potential.”)

Reisenbichler, R. R., and S. P. Rubin. 1999. Genetic changes from artificial propagation of Pacific salmon affect the productivity and viability of supplemented populations. ICES Journal of Marine Science 56:459-466. (“When the published studies and three studies in progress are considered collectively. . .they provide strong evidence that the fitness for natural spawning and rearing can be rapidly and substantially reduced by artificial propagation.”)

Ryman, N., and F. Utter. 1987. Population genetics and fishery management. University of Washington Press, Seattle.

***CBFWA Comments from DAIWP:** Managers from agencies and tribes throughout the province identified this project proposal as essential for continued progress towards replacing non-native hatchery rainbow trout strains currently used in numerous hatchery programs in this province with native populations. Other CBFWA reviewer comments on the original proposal: Technical criterion 1 was technically deficient. Current objectives and task section consists of objectives and tasks that lack focus. At times, the stated objectives are actually tasks. Sponsors should restructure the objectives and tasks so that they are clearly defined. Could be stocking redband in areas that support redband populations that are not genetically similar.*

ISRP Conditional Fundable Recommendation - CBFWA High Priority or Recommended Action

ProjectID: 199502700

Develop and Implement Recovery Plan for Depressed Lake Roosevelt White Sturgeon Populations.

Sponsor: STOI

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Current population of a few hundred mature fish are unable to recruit YOY into reservoir. Recruitment is limited by hydropower development, and possible predation of eggs and larvae, and pollution. Investigate limitations and develop mitigative actions.

Sponsor Request FY01: \$152,000

Sponsor Request FY01-03: \$537,000

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response adequately addressed the ISRP's concerns, but design of an adequate monitoring and evaluation procedure should be required during the Council's review or BPA's contracting process. The initial ISRP review concluded that the plan for monitoring and evaluation was not clear. Although somewhat agreeing with ISRP comments suggesting the need for better planning before fieldwork begins, the authors make the case for getting egg/larvae sampling started quickly. They feel that this much fieldwork must be done soon, regardless of whether they have a better formulated research plan or not. They also state that having data from the egg/larval sampling will allow them to develop a better long-range research plan. The new information provided in the response reassured the Panel that there probably is a viable sturgeon population in the upper Lake Roosevelt system (presumably at the upper extent of the flow line of Lake Roosevelt). The Panel agreed that some immediate fieldwork as outlined in the response is appropriate, rather than waiting for completion of the study plan proper.

Regarding the ISRP's comment about the staff's ability to do so much work, the authors state that much would be subcontracted and that temporary staff are available from the co-managers. The sponsors intend to have the contractor develop the study and research plan, including the statistical experimental design with respect to measuring abundance and distribution of invertebrate and vertebrate forage species that are the food of sturgeon. With no description of the study and research plan, the ISRP is still left with little to review for its scientific merits on that subject. A better procedure would be for the contractor to be involved in preparation of the proposal. In this way, there would be assurance that an appropriate sampling design would be included in the project planning, and a full description of the monitoring and evaluation plan would be included in the proposal for evaluation by the ISRP.

The sponsors plan close coordination with other sturgeon studies. It appears that they will have one of the contractors already working with sturgeon do this study. What they propose to do is very similar to what the ISRP team saw Vaughn Paragamian doing on the Kootenai River. We concur with this approach, which has been fruitful.

The sponsors make the point that it seems unrealistic to expect completion of their project (a Recovery Plan) within 3 years. However, it should be possible to identify time periods required to accomplish some of the tasks. Specifically it should now be possible to develop a reasonable estimate of the time required to develop a full study plan – with the understanding that modifications will be made as experience is gained. Similarly, the time required for data collection ought to be estimated, accompanied by a time for assessment. It will then become clear that it would not be reasonable to expect development of a full recovery plan within three years, given the lack of data on certain critical points. However, it should be possible to make some kind of estimate of the total time required.

All-in-all, the proposers answered the ISRP's questions satisfactorily. The result seems to be a more rigorous approach. Design of an adequate monitoring and evaluation procedure should be required during the Council's review and the BPA contracting period.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. This generally persuasive project is a mix of recovery plan preparation and data collection, but is weak on methods for data collection. Delay the fieldwork until the research plan is fully developed and reviewed by an independent review group familiar with sturgeon biology in the Columbia River basin (not necessarily the ISRP).

Overall Comments:

This is a project for assessment of lake sturgeon populations in Lake Roosevelt, developing a plan for improving recruitment of juveniles to the population (which is dwindling), and initial sampling primarily to identify spawning and presumed nursery sites. Other relevant sampling is also proposed broadly. The goal is to develop a mitigation recovery plan. This project was approved but not funded since 1995, although funding was initiated in August 2000.

The proposal demonstrates a clear problem with sturgeon in the reservoir. The once-broad-ranging species has a population isolated in Lake Roosevelt, there are no signs of successful recruitment in the past several decades in spite of some indications of successful spawning in Canada, and remaining sturgeon adults are underfed. The proposal adequately describes the technical background and significance of this situation, although more specific results from Canadian researchers and those on the Kootenai River would have been helpful. The relationship of this project to others is clear. The proposal relates the work to the FWP and the Upper Columbia Blocked Area Mgmt. Plan. The work is linked to other Lake Roosevelt work (especially the monitoring program), and to other white sturgeon work in the Basin. The objectives and tasks are clear, and

there are apparently good facilities and equipment for doing the work. Personnel may, however, be stretched thin with other monitoring activities. Overall costs are shared by collaboration with the British Columbia Ministry of Environment. All consistency criteria were met.

A strong case is made for conservation of this white sturgeon stock. Continued viability of the white sturgeon population above Grand Coulee Dam and below Canadian Treaty dams is tenuous. Presently, we have no or very little knowledge of the biological and physical factors affecting white sturgeon abundance, population dynamics of the white sturgeon, and when and where they may spawn. All of this information is essential for formulating a biologically sound restoration program. This project proposes to obtain the above information in a scientifically sound manner. The project is tied to restoration and recovery and not strictly enhancement of a native species.

It is not clear that recruitment is the only weak link, as there is not good feeding by remaining fish in the reservoir (as shown by low condition factor). Successful recovery of the population with mitigation aimed at improving juvenile recruitment is questionable without attention to the full life cycle. At a broader level, the managers should evaluate the relative merits of saving this isolated stock and its alternative, species substitution (active program).

A critical element missing from this proposal, however, is detail on sampling plans to be included for most of the factors that relate directly to the life history of the sturgeon themselves. For example, under the objective "Identify and define potential for white sturgeon spawning between Grand Coulee Dam and the international border", on page 6 of the proposal, there is a statement indicating that numerous potentially suitable spawning sites have been identified. It then appears that the primary thrust of the proposal at hand is to confirm (or not) the use of these sites by sturgeon by placing artificial substrates downstream of those locations and examining them for eggs that may have drifted onto them. There is no indication of the reaches of the river that are free-flowing (during the tour it was not made clear whether the reservoir extends into Canada). There is no description of the size of substrate mats intended to be used nor of their number. The reviewer is left to assume that project leaders will design a sampling survey that will produce convincing results. Our previous experience in reviewing project proposals makes us unwilling to make that assumption. Surveys on the Kootenai River should provide useful guidance. On the other hand, the sampling methods proposed for evaluating physical attributes of the habitat are described in sufficient detail to satisfy review. A question arises with respect to the plan to assess available food for white sturgeon. The proposal states that benthic invertebrates are important for juvenile sturgeon, and that their density and distribution will be assessed. Again, the reviewer is left to assume that the investigators will design a sampling protocol that will convincingly describe local variations in abundance of food for sturgeon. With respect to sub-adult and adult sturgeon, the proposal emphasizes distribution of food items, without mention of density or other abundance measures, until late in the paragraph where it is stated that density and distribution of major food items will be plotted as an individual GIS layer on a bathymetric map of Lake Roosevelt. Are we to assume then that densities

of fish species that constitute the diet of larger sturgeon will be included? To accomplish this task will require a well-designed, statistically valid sampling survey. There is no description of such a survey. Abundance of food is very likely to prove to be a limiting factor to sturgeon populations, while distribution of food will be of secondary importance (sturgeon may move to abundant food supplies). Factors involved in limiting abundance are described in the Lake Roosevelt Subbasin Summary.

We recommend consideration of a three-part sequence for a three-year project. A revised proposal for the response review might simply provide more details on study methods. Alternatively, the revision could indicate that priority attention would be given to additional assessment (based on available knowledge in this subbasin and elsewhere, and from research conducted with the initial funding) and further development of a detailed research program to guide a recovery plan. Over the three-year duration of the project, more assessment could be accomplished, plans for the research could be further refined and be given detailed peer review by colleagues knowledgeable about sturgeon biology, and then field studies beyond those already part of the project and the Lake Roosevelt monitoring program could be conducted (probably in the second year). The recovery plan could be drafted at the end of the research period, depending on results. It is likely, however, that more than 3 years of study effort will be required. A response should demonstrate examples of more detailed study plans.

ProjectID: 21018

Implement Fisheries Enhancement on the Coeur d'Alene Indian Reservation: Hangman Creek

Sponsor: Cd'A

Province: Inter-Mountain

Subbasin: Spokane

Short Description: Determine the current distribution and enhancement opportunities for redband trout in Hangman Creek and its tributaries within the Coeur d'Alene Reservation.

Sponsor Request FY01: \$179,482

Sponsor Request FY01-03: \$775,061

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, if project addresses ISRP concerns in Council review or BPA contracting process.

ISRP Final Recommendation and Comments:

Fundable, the response provided information that clarified some of the ISRP's concerns in the original proposal. The habitat restoration activities are supportable. The response did provide evidence that some redband trout previously have been found in upper Hangman Creek, although it still appears that much of the effort on this project would be directed to stream rehabilitation well downstream from the areas currently occupied by redband trout.

The response provided several pages of proposed M&E details for everything from macroinvertebrates to channel classification, but little on fish population methodology except the use of the depletion method. In the BPA contracting process, the contract officer should ensure that methods are adequately described and provisions are made for

data storage and retrieval. Regarding the ISRP emphasis on peer-review: the investigators should understand that peer review is not only for the benefit of maintaining quality, but also provides a significant benefit by getting information about project methods and results out to a larger audience. This will benefit other investigators as well as project investigators.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. The proposers should be able to satisfy ISRP concerns in the response review. They made a good case on improving riparian health and wildlife benefits, but were weak on the fish population assessment component. The interaction with proposal 21017 is commendable for simultaneous improvement of riparian habitat for wildlife and instream conditions for fish. The two projects offer an exciting opportunity through a fortuitous set of land ownership circumstances that can lead to major land and habitat reform within the middle and upper Hangman Creek watershed.

Fish assessment methods were not adequately presented. The proposal needs additional detail in its methods (including documentation) and M&E. The project staff should ensure that they are familiar with fisheries methodologies and the relevant literature beyond the immediate intermountain province. For example, backpack electroshocker is listed as fish sampling gear. This probably means the current used will be pulsed DC. The potential for high rates of fish injury and death from pulsed DC should be addressed, and the advantages of using far less destructive unpulsed DC (non-backpack units) should be considered. No basic, refereed literature on stream ecology and fish habitat was referenced. If basic stream ecology and stream fish requirements are not followed, then the project is not likely to pay off.

Similarly, data on the upper reaches needs to be included in the response. Specifically, the watershed apparently was surveyed for westslope cutthroat trout and bull trout in 1998-99 – and weren't at least preliminary data gathered on redband trout? To what portions of the subbasin are redband trout likely to be restored, and are those the portions of the subbasin where riparian and instream improvements are planned?

Long term planning for this proposal should include and emphasize peer-reviewed publication of the results, as this is a novel and exciting approach.

ISRP and CBFWA Agree: ISRP Fundable and CBFWA High Priority

ProjectID: 21017

Implement Wildlife Habitat Protection and Restoration on the Coeur d'Alene Indian Reservation: Hangman Watershed.

Sponsor: Cd'A

Province: Inter-Mountain

Subbasin: Spokane

Short Description: Protect and/or restore riparian, wetland and priority upland wildlife habitats within the Hangman Watershed on the Coeur d'Alene Indian Reservation as part of implementation efforts in the Spokane River Subbasin.

Sponsor Request FY01: \$158,252

Sponsor Request FY01-03: \$3,738,752

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. The proposal is adequate as amended. This is an excellent project. However, plans for electronic storage of data and metadata and for release of data collected with public funds provided by BPA should be finalized with BPA before monies are made available. Better coordination with other wildlife monitoring efforts in the Province should be worked out during the Council's review or BPA contracting process.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. This is a well-prepared, highly persuasive proposal that deserves funding; however, additional detail is needed on monitoring and evaluation methods.

Overall evaluation.

This proposal offers an exciting opportunity through a fortuitous set of land ownership circumstances that will lead to major land and habitat reform within the upper Hangman Creek watershed. The interaction with proposal 21018 is commendable for simultaneous improvement of riparian habitat for wildlife and instream conditions for fish. The monitoring and evaluation section does not have sufficient detail.

Specific comments and questions.

1. Long term planning for this proposal should include and emphasize peer-reviewed publication of the results, as this is a novel and exciting approach.
2. Limiting factors are explicitly addressed. Objectives are specific and the establishment of a trust fund for flexibility in securing management rights is a good idea.
3. The proposal should contain designs and protocols with references for data collection in the monitoring and evaluation section. Plans should be included for electronic storage of data and metadata. Comparable methods are needed for monitoring and evaluation of

projects in the Inter Mountain Province and to evaluate progress toward meeting objectives of the subbasin summaries.

ProjectID: 21034

Colville Tribes Restore Habitat for Sharp-tailed Grouse

Sponsor: CCT-FWD

Province: Inter-Mountain

Subbasin: Lake Roosevelt, Lake Rufus Woods, San Poil

Short Description: Conduct a population viability analysis for a comprehensive, adaptive management plan to restore critical shrub-steppe and riparian deciduous habitat to secure a viable metapopulation of sharp-tailed grouse on the Intermountain Province region.

Sponsor Request FY01: \$169,400

Sponsor Request FY01-03: \$508,200

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. The response resolved the initial concerns of the ISRP. There are still questions about what exactly will be done in some areas, but that is to be expected at this stage of the project. The general approach is good, the response is thorough, and the expanded project team has the collective expertise to make this project work. This is an important project that should be done now.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP's concerns. Although the proposal ranks high on most counts, more detail should be provided on sampling design, on specific research methods, and on data analysis. The Panel was impressed with and enthusiastic about the opportunity of this project to significantly extend understanding of sharp-tailed grouse ecology and to provide direct benefit to both grouse and other species associated with its habitat. The Panel believes that the omissions of detail in methods that are in the original proposal can be addressed effectively in a proposal revision or addendum.

This proposal takes advantage of the presence of a stable local population of sharp-tailed grouse, a rarity and well worth protection and study in the interest of supporting other such populations. The proposal presents a reasonable case for restoring grouse habitat but fails to provide sufficient detail as to how the project will be conducted. The sampling and analytical methods are described in general terms, but without specific information on sample design, types of analysis to be done, or the rationale for choosing particular types of analysis. The analysis is given too little attention. The proposal is weak in explaining how the data are going to be used to obtain the objectives, and \$16k per year may not be enough for that. The proposal is vague about analyses to be used. Cluster analysis is mentioned, as are several computer programs, but it is not clear how these will provide a predictive management model, and no relevant references are provided. It may be that this project needs more funding for analysis, including the development of a

specific simulation model, and less money for data collection. The investigators may want to involve someone with more experience in development and analysis of population models as an advisor or subcontractor.

ProjectID: 198503800

Colville Tribal Fish Hatchery

Sponsor: CCT

Province: Inter-Mountain

Subbasin: Lake Roosevelt, Lake Rufus Woods

Short Description: Produce 22,679 kg (50,000 lbs) of resident salmonids for distribution to reservation waters in an effort to provide a successful subsistence/recreational fishery as partial mitigation for anadromous fish losses above Chief Joseph and Grand Coulee Dams.

Sponsor Request FY01: \$789,642

Sponsor Request FY01-03: \$2,489,346

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, this very good proposal reflects considerable effort and responds to past ISRP comments on the need for native stocks and M&E. Hatchery production is now less than half the budget. They need better records of return of creel to justify the economics. The project could use a review by economists to potentially improve the economic return. The broad picture of relationships among the basin's hatcheries, net pens and reservoir fish is not very clear.

The Colville Tribal Hatchery successfully produces resident salmonids to mitigate for anadromous fish losses from Grand Coulee and Chief Joseph dams by stocking reservation lakes and streams. The technical and scientific background for the mitigation is clearly defined. The scientific rationale for stocking coastal rainbow trout, eastern brook trout, and some Lahontan cutthroat trout is clearly defined as largely a put-grow-and-take fishery for tribal members and some non-members. It is active management for a consumptive fishery using non-natives where they fit the habitat. The project has responded well to previous ISRP reviews and has oriented less to production and more to native stocks, evaluation of ecosystems before planting, and compliance with the Council's artificial production guidelines. It reflects both conscientious hatchery production and a change in scope to hatchery/wild comparisons and native salmonids consistent with past ISRP reviews. The presentation of data was appreciated. There is an excellent reference list (despite some editorial glitches) and informative resumes. However, limnological data suggest poor summer conditions for salmonids in some lakes, which may limit successful stocking. We anticipate further adaptation of the program to match species stocked to the habitats of the lakes as these results are integrated.

This is largely a stand-alone project, but reflects interactions. It seems well developed and coordinated with the subbasin scheme. The proposal provided a good project history and relevant data. There are clearly defined and measurable objectives that relate directly

to the fisheries of the stocked waters. Methods are appropriate and well described. The project includes good monitoring and consistent evaluation. However, the HGMP looks incomplete. Monitoring ensures that the lakes are not overstocked, that the hatchery produces what people want to catch, and that the lakes and streams are appropriate for the fish species (but see above). Facilities seem adequate for the work. Information seems adequately transferred. Within the objective of perpetually providing consumptive fisheries that match the people's desires and the available aquatic systems, there is a persistent benefit to fisheries. There seem to be no adverse effects on other species. The project meets all consistency criteria.

The proposal enlarges upon the objective to specify a catch per unit of effort to be achieved in the fishery created by the fish that are planted. Further thought needs to be given to specification of this objective. It needs to be recognized that the catch per effort experienced in any fishery is a function of both the number of fish in the population and the total number of fishermen participating in the fishery (in this context or total effort in a general context). There is no suggestion in the proposal or elsewhere that the number of fishermen might be restricted in some way. It appears to be assumed that it will remain constant. However, it is well established that fishermen will regulate their effort to the expected catch per effort. Therefore, the fishery resulting from these planted fish will probably reach an equilibrium with a catch per effort value that satisfies the fishermen rather than one that satisfies the hatchery manager or planner. The end result might be that the planner is continually under pressure to provide more fish as the fishing effort mounts. The text should at least discuss this issue.

Economics warrants further evaluation by others beyond the ISRP (IEAB (Independent Economic Advisory Board)?). The budget doubled over forecast due to prior ISRP review such that the M&E budget is now greater than the O&M budget. By our calculations, \$395,000/yr is spent for 49,000 fish stocked, = \$8/lb. One might question whether this is good value and whether examination of some of the details of the project could make the return more beneficial economically.

ProjectID: 199104600

Spokane Tribal Hatchery (Galbraith Springs) Operation and Maintenance

Sponsor: STOI

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Operate and maintain the Spokane Tribal Hatchery to aid in the restoration and enhancement of the Lake Roosevelt and Banks Lake fisheries.

Sponsor Request FY01: \$549,856

Sponsor Request FY01-03: \$1,735,856

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. This is a well-written proposal in nearly every respect. It mentions an important Lake Roosevelt Hatcheries/Fisheries Coordination Team, which was not

emphasized in the subbasin summary or the verbal presentations. Background was excellent, and the map was much appreciated. The rationale is excellent. The collaborative aspect with other projects is well presented. Information transfer is specially noted. Objectives are more like tasks, but ok. The project is important for fish. It meets the consistency criteria.

This proposal provides a useful umbrella-like summary of the Lake Roosevelt Subbasin goals and objectives and how each of eight projects fits into the big picture, (a) Galbraith Springs (this proposal), the Sherman Creek Hatchery, and net pen rearing of fish in Lake Roosevelt, (b) Lake Roosevelt Evaluation, (c) Lake Roosevelt Habitat and passage improvement, (d) Chief Joseph Enhancement Project, (e) Phalon Lake Wild Rainbow, (f) Ford Hatchery, (g) Banks Lake Monitoring and Evaluation, and (h) Resident Fish Stock Status Above Chief Joseph and Grand Coulee Dams.

The project needs to integrate results from M&E project to evaluate its own success (as previously implied in the last one of the FY00 ISRP comments). The project seems to depend too much on M&E from the LRFEP; it should get data from LRFEP, apply it in adaptive management, and show how it is doing this. A summary of results, from an annual report, ought to be part of the proposal. Scientific soundness depends on the data produced. Cost-effectiveness of hatchery operation should be assessed via data on rate of return to the creel.

Some statements would be improved if supported by references, e.g., on p. 6, last paragraph last sentence: “This technique is used in British Columbia where naturally producing kokanee are supplements with artificial production.” Where can we read about that—and its results? Same problem at end of first paragraph on p. 8.

In kokanee and rainbow trout HGMPs’ sections 2.3, the claim is made that “Lake Roosevelt fisheries specifically benefits [sic] from this program by increased harvest and alleviation of fishing pressure on limited naturally producing populations” (emphasis added). Are there data to substantiate such “alleviation”? Might not the opposite be occurring via the effect that stocking can have in stimulating overharvest of less numerous natural stocks in mixed-stock situations?

Should kokanee HGMP section 2.5 cover the interactions of stocked kokanee with naturally-reproducing kokanee?

Rainbow trout HGMP section 2.4, paragraph 8 pertains only to kokanee, therefore does not belong in this HGMP. The paragraph is identical to one in the kokanee HGMP. Indeed, the whole section 2.4 are the same in both HGMPs—as are some other sections and paragraphs. Much of the boilerplating is probably unwarranted.

Question: Has the staff contemplated whether the hatchery will be needed forever, especially if the entrainment deterrent system works at the dam?

Question: Is it mostly shoreline spawning of kokanee that is affected by drawdowns or are the tributaries also affected? (see bottom of p. 3).

ProjectID: 199404300

Lake Roosevelt Fisheries Evaluation Program

Sponsor: STOI

Province: Inter-Mountain

Subbasin: Lake Roosevelt, Lake Rufus Woods

Short Description: Monitor and evaluate the performance of hatchery fish. Develop and maintain a model able to predict the effects of hydro-operations and management actions on the lake ecosystem and fishery. Use model results to refine a fisheries management plans.

Sponsor Request FY01: \$1,113,584

Sponsor Request FY01-03: \$3,112,168

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable, the response was adequate. The ISRP's greatest concern with this project proposal (and presentation) was the lack of documented results from 12 years of work. The sponsors took the ISRP comments seriously and applied considerable effort on their response. The new material significantly clarified results of the project to date and reinforced the feeling that a system like Lake Roosevelt is probably one of the hardest aquatic systems in the world to manage. The Panel was adequately convinced that reasonable pieces of work have been completed (an impression, which we did not get from the proposal). The authors provided data, along with good summaries. As the reviewers suspected, the project had data and other information available with which it could have better documented progress in the original proposal.

However, the Panel remains concerned that the project does not seem to focus on monitoring specific effects from other projects (other projects list this project as the M&E for their work), but rather just conduct a general fish population monitoring in the reservoir. For example, reviewers raised the question of seeking effects on fish populations from reduced entrainment through the dam (a big effort by another project). Their response was that they didn't do monitoring for specific project effects, only general fish sampling from which one might see effects over several years. We do not find this answer satisfying when a more explicit study design and more focussed sampling could better establish the effects (if any) of other projects and lead to better adaptive management.

Also, reviewers' recommendation for having a consultant was misinterpreted as obtaining consultants to do the work, when the Panel really meant having a senior advisor available to them for guidance, research planning and analysis of results. It is clear that project personnel do not have a clear concept for how to proceed with the overall project and could use such seasoned advice. Such a senior advisor could be of value to the STOI for selecting and evaluating the hired consultants. However, the sponsors accepted the Panel's request for a statistical consultant.

One important item was not clear to the Panel until reading this response. The issue is kokanee stocking. The Panel asked several times during the tour how hatchery kokanee were contributing to the fishery. We got the feeling that they were performing poorly but to an unknown extent. However, it is evident from the response that kokanee released as fry showed virtually no return to the creel. Moreover, more recent stockings of larger kokanee performed even worse in Lake Roosevelt. Therefore, besides providing some possible benefit downstream of Lake Roosevelt, this expensive hatchery and netpen rearing operation may be simply feeding walleyes. The Panel believes this likely is a major problem and the author of the response appears to feel likewise, but in a low profile manner. Had reviewers been afforded a better understanding of this problem during the tour and presentations, they would have had a different perspective when reviewing the kokanee hatchery projects and could have initiated discussion of the issue in relation to hatchery and netpen operations. This project should demonstrate a clear focus on providing information to other projects such that their future program modifications will be likely to solve this problem (i.e., modifying netpen release patterns of kokanee to obtain some sort of dispersal, elimination of netpen operations, etc.). All-in-all, the Panel believes that this project can be funded.

ISRP Preliminary Recommendation and Comments:

Fundable only if a response is provided that shows the results of past efforts and addresses the other ISRP concerns described below. The proposal is not scientifically sound without description of past efforts and their success or failure. What have the project leaders learned? They should show analyzed data in the project history section of the proposal to document their progress and competence. The ISRP has commented on the lack of data in the past and again data presentation was lacking in this proposal and the presentation. If the PIs cannot show and synthesize the results, a different contractor should do the evaluation. The project needs consultation and oversight. The PIs do make recommendations for management actions, but the basis of the their recommendations need to be better substantiated. A senior biometrician should supervise data collection design and data analysis. The project has gathered data for 12 years so they should at least be able to show stock status. Results from this project should be integrated with the other projects to be useful. Too much emphasis on models takes away from producing descriptive data analyses intermediate in the process, yet these data are critical to operation of the many projects for which monitoring and evaluation data are provided.

This project conducts the overall monitoring and evaluation of Lake Roosevelt limnology, aquatic ecosystem, fish, and fisheries, which is used as a basis for measuring success of several other projects, especially hatcheries. It is a core project of the subbasin with high regional significance.

The technical and scientific background is adequate but could benefit from more explicit use of the scientific literature on reservoirs as unique aquatic environments. Although the PI said in oral presentation that there is little conceptual literature on reservoirs, there actually is quite a lot (for example papers by Kimmell, Thornton and others, and management experiences with other storage reservoirs with deep drawdowns such as in

the TVA system, as well as many papers in the journal *Regulated Rivers*). The project could benefit from additional outside assistance from reservoir managers who have dealt with large reservoirs with deep drawdowns. Synthesis of information through use of a model for reservoir hydraulics and water quality is a good idea as a conceptual foundation, but its use could be improved with outside consultation. A description of the model would have been helpful. The relationship to other projects is clear, but might have been described in more detail. The project history is informative but lacks specific project results (as requested last year by the ISRP). The project has developed over the years, embodies a comprehensive and appropriately basic approach, and has resulted in improved management. The project personnel obviously continue to work toward improving the work plan. The objectives are clear, and the tasks and methods are appropriate and related to objectives (a problem noted last year). We appreciate the difficulty of focusing on specific tasks in a system so large and hydraulically complex.

The objective of affecting hydro operations because of fishery objectives in the reservoir is probably unrealistic when taken in a regional perspective. Lower river managers expect Lake Roosevelt to provide water when needed. The project would be more realistically scoped in the context of managing fisheries in an unstable and non-natural environment. Having more modest expectations for the usefulness of the model for obtaining specific results is essential, although the model is a useful conceptual guide and synthesis tool. The establishment of an ecosystem model for Lake Roosevelt is a laudable goal, but will it be able to capture the unique features of this system and truly be useful as a fisheries management tool?

Facilities and personnel are adequately described but may not be adequate for the goal of managing fisheries in such a large and complex system. Collaborative use of personnel from other projects is important for mounting large field operations. Additional use of outside consultants, including a senior biometrician, could bolster the professional capabilities.

The project is represented as adequately transferring its information to other projects for their M&E needs, but no data were presented in the proposal and little data appeared in the other proposals to illustrate or substantiate this. The project should have a large and important benefit for fish and fisheries of Lake Roosevelt. There are likely benefits to non-target species and habitats from increasing general understanding of the system. All consistency criteria are met.

The proposal is informative but contains parts that lead to concern. One example: on narrative p. 6, paragraph 2, is it really meant that “all kokanee with an adipose fin clip” (i.e., those from the hatchery) are to be excluded from harvest, or should it be that all unclipped kokanee are to be excluded from harvest?

The project has budgeted \$40K per year for “writing studies for the public in professional journals.” We applaud publication, but wonder if the expectation of \$40k/year worth is a realistic target. There is no publication yet from the project but one has been submitted. A major concern is that the project is behind schedule for both modeling and data

collection (p11) but there is no indication of how extra money will allow catch-up. Both the proposal and the oral presentations caused us to wonder if staff is adequate to handle the statistical analysis and modeling aspects of the project. Outside consultation by a senior statistician and a trained modeler could be helpful.

Another project is proposing evaluation of strobe lights as an entrainment deterrent at Grand Coulee Dam. There was no mention of whether this monitoring project is gearing up to be able to detect differences in kokanee population dynamics in the reservoir when (if?) strobe lights are successful at reducing entrainment. If that technology works, it could mean a big change in the way several hatchery and net pen projects are operated. Monitoring the reservoir for effects of reduced entrainment should be a major objective of this project.

ProjectID: 199104700

Sherman Creek Hatchery Operations and Maintenance

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Operate and maintain Sherman Creek Hatchery (SCH) and the Lake Roosevelt Kokanee Net Pens to aid in the restoration and enhancement of the Lake Roosevelt and Banks Lake Fisheries. SCH is a key component of the Lake Roosevelt Fishery Enhancement Project.

Sponsor Request FY01: \$269,898

Sponsor Request FY01-03: \$802,864

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. The move toward using native stocks is commendable and should continue. This project is well integrated with the other Lake Roosevelt Hatchery projects. They should present results from the M&E project, 199404300, to support their own operation.

The three HGMPs are thorough but perhaps are inappropriately boilerplated in parts. Section 2.3.1 of all the HGMPs alludes to the idea of “alleviation of fishing pressure in limited naturally reproducing populations.” Is this fact or myth? References to studies supporting (and/or failing to support and/or refuting) this idea should be cited.

ProjectID: 199500900

Rainbow Trout Net Pen Rearing Project

Sponsor: LRDA**Province:** Inter-Mountain**Subbasin:** Lake Roosevelt**Short Description:** Operate and maintain the net pen program to aid in the enhancement and restoration of the Lake Roosevelt fisheries.**Sponsor Request FY01:** \$100,550**Sponsor Request FY01-03:** \$328,328**CBFWA Recommendation:** Urgent/High Priority**ISRP Recommendation Compared with CBFWA's:** Agree, Fundable**ISRP Final Recommendation and Comments:**

Fundable. Good use of volunteers. This very effective project operates and maintains net pens at several locations throughout Lake Roosevelt to provide final rearing for the output of several province hatcheries. Fish are released to the lake to support recreational fisheries. The project is conducted largely by volunteers with BPA financial support for coordination and maintenance of facilities. There appears to be excellent organization and enthusiasm. It is a highly visible and popular program.

There is a clearly identified problem in sustaining a reservoir fishery in the face of large amount of entrainment of fish through Grand Coulee Dam and lack of spawning habitat. The rationale and significance are well described. There are good relationships with other projects. In fact, the net pens are integral (and final) to the interlocking sequence of fish movements between adult capture, hatching, rearing, and release that involve other multiple facilities and a planning committee (the oral presentation of this project did the best job of explaining the whole sequence). The history is well described. Objectives are clearly explained in relation to fishery benefits. Methods are clear. Monitoring and evaluation are well formulated and handled by the Lake Roosevelt Fisheries Evaluation Program. Facilities are appropriate. The volunteer efforts are laudable. The proposers do an excellent job of providing information to the public, which is essential to maintaining a volunteer work force. There is clear benefit to fish, judged in terms of human use through fisheries. The project meets all consistency criteria.

Some details of the proposal raised comment by the reviewers. Section c (Rationale and Significance) contains unsupported statements in 2nd paragraph of p. 5 concerning (lack of effect on?) genetic integrity of native rainbow trout and, as in other projects of this province, the idea that stocking hatchery fish “tends to reduce harvest of native stocks thereby helping to enhance their recovery.” These points are relevant on a broader basis than just this one project, and warrant further evaluation on a subbasin basis. On the positive side, reviewers were pleased to see some mention of a goal for angler harvest: 500,000 fish released for 190,000 fish in creel, (p5) overall 35-57% harvest. This is not great, but probably in an acceptable range. The claim is that “survivors spawn along shoreline in autumn, not in tributaries with native rainbows in spring” should be substantiated somewhere. The possible issue of dilution of native rainbow stocks because of successful spawning by netpen survivors is of concern here.

ProjectID: 21021

Ford Hatchery Improvement, Operation And Maintenance

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Improve water supply and operate and maintain Ford Hatchery to enhance the recreational and subsistence kokanee fisheries in Lake Roosevelt and Banks Lake, and bolster put-and-take resident trout fishing lakes in Region 1 (Eastern WA).

Sponsor Request FY01: \$213,249

Sponsor Request FY01-03: \$768,463

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. This is a straight-forward proposal for upgrading a deteriorated water supply system in a hatchery that provides fish for Lake Roosevelt and Banks Lake stocking programs (and a few others). The state has agreed to pay for a new building that was once part of the proposal. The proposal also includes M&E for Banks Lake and other minor lakes to assess success of the "plantings" (which seems oddly placed in this proposal, although important).

There is well-written, informative background material. However, it is not clear that added hatchery capacity is needed considering all the other hatchery facilities in the subbasin, although the oral presentations indicated that there really is a need for more hatchery rearing space. The relationship of this project to others in Lake Roosevelt is described in the Spokane Tribal Hatchery (Galbraith Springs) Operation and Maintenance Project 199104600. There still seems to be a need for prioritization among the several hatcheries, but that goes beyond the ISRP role. There appears to be good benefit to fish from stocking. Consistency criteria are met.

ProjectID: 199106200

Spokane Tribe of Indians Wildlife Mitigation Project

Sponsor: STOI

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Mitigation and protection of lands purchased for partial mitigation on the Spokane Indian Reservation due to the construction and inundation of winter range habitat caused by Grand Coulee Dam.

Sponsor Request FY01: \$1,528,806

Sponsor Request FY01-03: \$4,787,306

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. The proposal is adequate as amended.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response includes more detail concerning methods for identification of limiting factors to and for population-indexing (monitoring) of target species.

Specific comments and questions.

1. The proposal is well written with attention to detail and ranking of lands that might be purchased.
2. This is reported to be an ongoing project, but a project by this name and number was not reviewed in the ISRP July 15, 1999, report. If this project is the same as the 1999 proposed project 20081, STOI Wildlife Land Acquisition And Enhancements, then significant progress has been made in the quality of the proposal.
3. The proposal should contain designs and protocols with references for data collection in the monitoring and evaluation section. Plans should be included for electronic storage of data and metadata. Comparable methods are needed for monitoring and evaluation of this and the other projects in the Inter-Mountain Province and to evaluate progress toward meeting objectives of the sub-basin summaries.

ProjectID: 199204800

Hellsgate Big Game Winter Range Operation And Maintenance Project

Sponsor: CCT-FWD

Province: Inter-Mountain

Subbasin: Lake Roosevelt, Lake Rufus Woods

Short Description: Protect, enhance, manage and evaluate wildlife habitats and species for partial mitigation for losses to wildlife resulting from Grand Coulee and Chief Joseph Dams.

Sponsor Request FY01: \$388,071

Sponsor Request FY01-03: \$1,263,471

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. The proposal addressed the ISRP's past concerns. The presentations and site visits further substantiated the value of the project. This appears to be a well-managed and effective program.

ProjectID: 199506700

Colville Tribes Performance Contract for Continuing Acquisition

Sponsor: CCT-FWD

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Acquire, protect, enhance and evaluate wildlife habitat and species for partial mitigation for losses to wildlife resulting from Grand Coulee and Chief Joseph Dams.

Sponsor Request FY01: \$1,500,000

Sponsor Request FY01-03: \$4,500,000

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. The proposal addressed the ISRP's past concerns. The presentations and site visits further substantiated the value of the project. This appears to be a well-managed and effective program.

The proposal is to acquire an additional 2,000 to 4,000 acres of land (or management rights thereto) for habitat mitigation. Criteria to be used for acquisition of particular lands are specified and the site visit verified past effectiveness of purchases in addressing fish and wildlife mitigation goals. The panel noted a need for this project to be able to have more money readily available so that high priority properties can be purchased when they become available. Perhaps a different arrangement with BPA could be arranged for wildlife mitigation purchases for projects such as this that have established a sound scientific approach. See the general ISRP comments on "Trust Funds for Habitat and Water Right Acquisition."

ProjectID: 199800300

Spokane Tribe of Indians Wildlife Operations and Maintenance

Sponsor: STOI

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Partial mitigation to protect, mitigate, and enhance wildlife mitigation lands on the Spokane Indian Reservation for construction and inundation losses of wildlife habitat on the Spokane Indian Reservation caused by Grand Coulee Dams,.

Sponsor Request FY01: \$182,497

Sponsor Request FY01-03: \$558,974

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. The proposal is adequate as amended.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response provides adequate detail concerning the methods for enhancement and monitoring of target species. The concerns with the proposal were mostly addressed at the presentation and should be elaborated on in a written response.

Comments and specific questions.

1. The proposal is improved from past versions, however additional details are needed on enhancement and monitoring methods for target species. For example, what are the methods for "...more intensive vegetation monitoring ...", including criteria for location of sites for noxious weed control.

2. It is not acceptable to include tasks of, for example, "This year we will determine how many plots are needed and protocol on collecting information ..." Proposals should contain designs and protocols with references for data collection in the monitoring and evaluation section. Plans should be included for electronic storage of data and metadata. Comparable methods are needed for monitoring and evaluation of this and other projects in the Inter Mountain Province and to evaluate progress toward meeting objectives of the subbasin summaries. The site-specific management plan that is stated as having been submitted to Bonneville might be provided to facilitate review of methods and sampling designs.

3. Explain why it is possible to have too much bitterbrush on deer winter range. Are these old desiccate stands? What are the criteria for planting the different grass species, e.g., crested wheatgrass? Crested wheatgrass has frequently been used to quickly stabilize soils, but has proven to be poor habitat for wildlife. Explain other apparently contradictory management practices such as burning to reduce shrubs versus active fire suppression and planting to increase them, and planting crested wheatgrass versus actively removing non-native species. This does not sound like working with natural habitat potential.

ProjectID: 21008

Evaluation of the Banks Lake Fishery

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Lake Roosevelt

Short Description: Determine the abundance and ecological interactions of fish populations in Banks Lake. Identify limiting factors for naturally recruiting and hatchery supplemented fish. Provide management recommendations to maximize the fishing potential of Banks Lake.

Sponsor Request FY01: \$170,408

Sponsor Request FY01-03: \$857,908

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. This is a very thorough proposal (indeed outstanding) that describes a gigantic, expensive project, which, however, looks worthwhile in terms of yielding much benefit. It seems to cover most of the bases needed for a great start, but we have a few misgivings, mentioned below. The proposal is strong on technical background, bringing basic literature to bear, and on relevance to the FWP and the subbasin plan. It has problems, though, in connecting the tasks and methods to critical tests of the hypotheses. The material is well written; few terms and thoughts need further explaining.

The emphasis of this project is to develop Banks Lake as major kokanee fishery. This may not be possible in the face of warm summer temperatures, drawdown, and entrainment. It would be better to make that assessment quickly rather than to futilely increase future stocking of kokanee.

The role of walleye is unclear. It is ignored for the most part in the proposal objectives, yet walleye have been stocked since 1992. The proposal contains vague words about increasing burbot. It lacks further discussion about attempts to understand limiting factors and management options. The creel census that is described for the Ford Hatchery project (21021) might be more appropriate for this project. The personnel are well qualified for the task.

ProjectID: 199501100

Chief Joseph Kokanee Enhancement Project

Sponsor: CCT

Province: Inter-Mountain

Subbasin: San Poil, Lake Rufus Woods

Short Description: Determine natural production kokanee status using adult recruitment, genetic stock mapping and entrainment at Grand Coulee Dam as indicators. Enhance kokanee and rainbow trout populations by augmentation and entrainment prevention.

Sponsor Request FY01: \$1,145,762

Sponsor Request FY01-03: \$3,987,762

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable. It was evident that the project has been significantly re-energized over the preceding year, dropping two objectives and focusing on assessing and ultimately reducing kokanee entrainment. Results presented from the year 2000 study of fish distribution and water velocity adjacent to the third powerplant were exciting and provided compelling evidence of recent progress toward those goals.

The proposal for ongoing work clearly outlined efforts to monitor kokanee abundance and collect genetic sample material at a number of sites, to contract analysis that will hopefully complete characterization of the stocks present, and to contract evaluation of a prototype strobe light system. These tasks seem well organized and staffed by personnel likely to produce quality scientific results.

The ISRP is gratified that this important project has demonstrated its previous results and embarked on a rigorous research program directed at a principle problem of Lake Roosevelt that affects many other BPA-funded projects. The turn-around from last year's review is to be commended.

ProjectID: 199001800

Evaluate Rainbow Trout/Habitat Improvements Of Tributaries To Lake Roosevelt

Sponsor: CCT

Province: Inter-Mountain

Subbasin: San Poil

Short Description: Increase the quality and quantity of spawning and rearing habitat in selected streams that drain into Lake Roosevelt by eliminating migration barriers, improving riparian conditions, and improving instream habitat.

Sponsor Request FY01: \$199,019

Sponsor Request FY01-03: \$826,019

CBFWA Recommendation: Urgent/High Priority

ISRP Recommendation Compared with CBFWA's: Agree, Fundable

ISRP Final Recommendation and Comments:

Fundable; the responses are adequate in general, although the data provided in the response still did not enable the reviewers to clearly evaluate past results of the project.

ISRP feels it is essential that project staff secure the services of a senior level scientist with expertise in data acquisition and interpretation.

ISRP Preliminary Recommendation and Comments:

Fundable only if the response adequately addresses the ISRP concerns. Proposers have focused on evaluating fish barriers because they have shown that strategy works. The proposal to continue to evaluate and improve fish passage seems appropriate. However, there is risk if remnant populations of bull, redband or cutthroat trout exist above a barrier and would be impacted by introgression or competition if the barrier were removed. Protocol for assessing and protecting any remnant populations should be added to the proposal.

The proposal focuses on Bridge Creek, where a fish passage problem clearly exists. Plans to evaluate, monitor, and recreate the original stream channel seemed well thought through. But what about after Bridge Creek? Are there similar problem sites elsewhere? A three-year plan, or description of how such a plan will be developed, should be presented.

The figures provided to convey data in the proposal and presentation were inadequate to allow reviewers to understand past results. Those figures should be re-done with more appropriate axes and labels. Also, the scientific background material contains only gray literature. It should include also substantial reference to basic material on stream ecology and fish habitat.

Figure 2 on p. 10 shows “Fish Density.” Does this pertain to juveniles or adults?

Paragraph 2 on p. 10 begins: “Habitat improvements such as drop structures and meander construction were selected as the method to extend flow duration [emphasis added]. . .” What does this mean?

Same paragraph: a “strategy” is mentioned in the last sentence. What strategy?

P. 13, near end of paragraph 2: “The enclosure was less than effective in reducing livestock damage to the plants stocked.” Why was the enclosure less than effective?

P. 14, near end of first paragraph: “Fencing projects to control livestock use in riparian areas is [sic] not a guarantee of success for recovery of the riparian function.” Why not?

P. 17, paragraph 2: A backpack electrofisher is mentioned as the sampling gear for population estimates. This probably means the current used will be pulsed DC. The drawbacks of high rates of fish injury and death from pulsed DC should be acknowledged, and the advantages of using far less destructive unpulsed DC (non-backpack units) should be considered. We understand that the Montana Department of Fish Wildlife & Parks has banned use of pulsed DC for sampling fish in that state.

P. 18, Task 12: Landowner maintenance of riparian protection fences is stated. What will be the quality control on the maintenance?

***ISRP Fundable or Not Reviewed and No Comparison with CBFWA
Recommendations: Policy Issues***

ProjectID: 21006

Characterize and Assess Wildlife-Habitat Types and Structural Conditions for Sub-Basins within the Inter Mountain Ecoprovince

Sponsor: NHI

Province: Inter-Mountain

Subbasin: Inter-Mountain

Short Description: Fine-scale wildlife habitat assessment for the Inter-Mountain Ecoprovince will produce critical baseline data for planning and monitoring efforts that is consistent within the NWPPC Framework wildlife-habitat relationships process.

Sponsor Request FY01: \$84,571

Sponsor Request FY01-03: \$84,571

CBFWA Recommendation: DNF

ISRP Recommendation Compared with CBFWA's: Technically sound. Fundable if needed in subbasin assessment by EDT. Same as 21005 in Gorge Province.

ISRP Final Recommendation and Comments:

Fundable as amended. The technical difficulties were adequately resolved in the response. If funded, we would recommend that the field validation be conducted in a 'blind' study and that they report the percent of the original target of, say 75, random points in each habitat type that was not accessed during field validation of the map.

The response did not contain a direct expression of a need by the fish and wildlife managers at a regional level. For example, there were no letters of support from the fish and wildlife project managers, although participants at the subbasin meetings were supportive and expressed that they would use the maps. The ISRP agrees with CBFWA that if habitat mapping at the proposed scale is primarily to be used for the EDT component of the NWPPC habitat assessment process, then the project should be endorsed by those using EDT and perhaps funded through the EDT development process.

ISRP Preliminary Recommendation and Comments:

Fundable only if three conditions are met 1) a regional need by resource managers is demonstrated and 2) the ground truth methods are presented in more detail, and 3) the maps to be generated are specified as a deliverable to the funding agency rather than a product that NHI may own and sell. Further, the ISRP questions whether objective 2 should be included. This might better be left to local resource managers to evaluate with direct, primary local data. A response is needed that provides sufficient information before the project could be recommended for funding.

Overall evaluation. The proposers appear competent for completion of the project. Except for field testing, the proposal appears to provide adequate technical background and

justification, however it is not written for reviewers who are not expert in GIS. The proposal does not refer to any subbasin plan objective, only asserts that "planning requires a finer resolution of mapping than what [sic] currently exists", the objectives are not measurable with respect to wildlife restoration. The proposal indicates that it would build on previous work and emphasizes information transfer. However, the direct benefits to fish and wildlife and relationship to other projects are not explained. The usefulness of resulting maps to resource managers is not demonstrated, and resource managers in the province have not been asked to support the project. Proposed methods for monitoring and evaluation of the utility of the classification maps are lacking.

Specific comments and questions.

1. The field-based ground truth task is not presented in sufficient detail. Procedures for defining strata, selection of random points within strata, and methods for dealing with access problems should be presented. For example, will the number of random points that could not be accessed in the field be reported? Will all 32 classes be ground truthed in the field? What is the procedure for determining the number of random field points to be visited in each class? What is the criterion and sample size to have an accuracy of 75% on each class? Will the lower limit of a 95% confidence interval be required to be above 0.75? It was stated during the oral presentation that if the criteria are failed for some class, then a completely new random sample of points from that class would be visited in the field? We would like to see this commitment more clearly expressed in the proposal. Will the field-testing be conducted blind, i.e., will field personnel not know the "office classification" before they visit a random point in the field? What are the criteria for identification of each of the 32 classes when the biologist is standing at a random point in the field?
2. Are this proposal and its sister proposal in the Columbia Gorge Province the initial proposals to map the entire Columbia Basin at this scale? Is there a Columbia Basin wide need for vegetation maps at this scale? Will there be any cost savings to other provinces if this proposal is funded? Perhaps a pilot project should be funded to demonstrate the utility of the project.
3. The maps and resulting classifications should not be viewed as primary data. The mapping project uses primary data from the current Landsat Thematic Mapper, but classifications are derived and are subject to change in the future based on a different procedure.

ISRP and CBFWA Agree: Do Not Fund

ProjectID: 21003

Upper Columbia Subbasin Native Rainbow Population Study

Sponsor: WT

Province: Inter-Mountain

Subbasin: Inter-Mountain

Short Description: Evaluate structure, dynamics, and long-term viability of selected rainbow populations in Colville National Forest

Sponsor Request FY01: \$44,850

Sponsor Request FY01-03: \$135,450

CBFWA Recommendation: DNF

ISRP Recommendation Compared with CBFWA's: Agree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. Further ISRP response review was not warranted. The idea is good and warrants a revised proposal in future years. The experimental design is not adequate for the objectives and the objectives are not focused on the key problems such as assessing the status (both in population and genetic terms) of the species, variability in their abundance among years, and habitat-related population variability. The proposal identifies a potential problem (interaction of brook trout with rainbow trout leading to reduced production of rainbow trout), but fails to address it, only to further study details of it. Proposers might refer to Hearn's 1987 review of salmonid species interactions in Fisheries 12(5):24-31. A stronger proposal with greater utility for U.S. Forest Service resource managers (but not with tribal resource managers because of the perceived value of brook trout there) would also be directed measures that could be taken to reduce the interactions of brook trout with rainbow trout. Instead, the proposal is aimed at very basic research such as studies of trout age structure, recruitment dynamics, hydrologic conditions, and channel dynamics.

The main limitation with the study design (which may be unavoidable because of cost considerations) is the fact that there is only a sample size of six as far as some of the objectives of the study are concerned, and additionally those sites collectively are so small that reviewers estimate that only about 1% of the trout population would be sampled. As a result, one wonders what a significant difference between rainbow trout populations with and without brook trout (Section IA) might mean, particularly as the habitat conditions will confound comparisons and the criteria for selecting study streams are not defined. Differences between populations will be present. The extent to which these are meaningful in terms of the presence/absence of brook trout and other factors will be a matter of judgement only, and there is a high risk of generating a distorted view of abundance of various age groups. Reflecting the discussion during the Inter-Mountain presentations, the study could be made more valuable by expanding its scope in terms of treatment replications and examining more than just perceived optimal habitat types.

The study populations should also be characterized genetically, if this has not already been done. Also, it is important to know whether they are redband, rainbow, or a hybrid

swarm, because this will likely affect the management priority given to the population. From the presentation, it seemed that some (but not all?) of the populations had already been screened genetically.

The proposal's inclusion of assessing flyfishing as a population estimation technique was not viewed favorably, because it is probably better to combine snorkeling with electrofishing, giving consideration to the use of unpulsed DC.

ProjectID: 21032

Eastern Washington Survey for Townsend's big-eared bat

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Inter-Mountain

Short Description: This project will search and inspect all appropriate old cabins, barns, buildings for Townsend's big-eared bats. It appears these rare bats prefer these older human structures for maternity colonies. If found, efforts will be made to conserve these sites.

Sponsor Request FY01: \$73,000

Sponsor Request FY01-03: \$143,500

CBFWA Recommendation: DNF

ISRP Recommendation Compared with CBFWA's: Agree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. A response review was not warranted. The proposal failed to present evidence of a scientifically sound approach that would lead to benefit to fish and wildlife. The proposal does not adequately tie the work with the Fish and Wildlife Program and the survey designs and sampling methods are not presented in adequate detail.

This proposal has the worthy objective of collecting critical information on a sensitive species. The background, rationale, and objectives/tasks/methods are much too brief to support meaningful scientific review. The proposal lacks linkages to the Columbia Basin Fish and Wildlife Plan or to other projects within the Inter-Mountain Province. It provides no explanation as to why the FWP is the appropriate funder for bat research. Sampling methods are only minimally described. It is not clear how sites are to be selected for surveys. There is not information on how many potential sites there might be, whether it is possible to check all, or how a subset to be checked would be selected. In addition to ad hoc and extensive searches for Townsend's big-eared bats, the proposal should include a valid field sampling component. For example, it might be possible to define a stratified random sample of blocks within towns and sections of land elsewhere for intensive searches. The proposal also fails to present details on how data will be analyzed. Similar concerns about sampling methods and analyses apply to the goal of locating maternity roosts. Additionally, the project does not develop any rationale for why old structures might be preferred as nesting sites: Is it because they are old? Because of their location and degree of isolation? Their proximity to food or water? The lack of an analytical approach to this subject significantly limits the utility of the findings.

ProjectID: 21022

Evaluate Fish Habitat on the Middle Spokane / Little Spokane Rivers

Sponsor: Spokane County Public Works Department: Utilities Division

Province: Inter-Mountain

Subbasin: Spokane

Short Description: Identify target reaches on the Middle Spokane and Little Spokane Rivers. Use the Instream Flow Incremental Methodology to characterize the amount of available habitat for target reaches.

Sponsor Request FY01: \$93,000

Sponsor Request FY01-03: \$156,000

CBFWA Recommendation: DNF

ISRP Recommendation Compared with CBFWA's: Agree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. The unsolicited response is largely a reaction to the misperception that the ISRP rejected this proposal because the ISRP rejects use of IFIM. That is not what ISRP stated. The proposal was criticized for not clearly showing relevance to the FWP or benefit to fish and wildlife. It was further criticized for failing to describe methods and analyses, which calls into question the quality of this proposed application of IFIM. The ISRP did not suggest an overall rejection of IFIM but rather suggested that IFIM is one of several tools useful in evaluating quantity, quality, and adequacy of fish habitat. As with any modeling exercise, the outcome is only as good as the data input, model analysis, and interpretation, and these were inadequately presented. The ISRP specifically stated that some provision for ground-truthing or local biological baselining is needed in a modeling study that purports to provide specific local management recommendations as an output. That was not included in the proposal, and the proponent who presented the proposal verbally stated that it would not be done. The proposal and the presentation both gave little biological information and little evidence that the project team had adequate biological background to conduct the proposed study.

ISRP Preliminary Recommendation and Comments:

Do not fund. No response was warranted.

The proposal is generally well organized with respect to hierarchy of subjects but does not link the project closely to the Fish and Wildlife Program or other projects in the basin, does not indicate benefits to fish and wildlife, and does not adequately describe methods and analyses. The methods section is a mere list of general procedures, often phrased as objectives. What lies behind this proposal appears to be a controversy over minimum instream flows set by the Washington Dept. of Ecology, following input from WDFW.

The proposed project is based on IFIM/PHABSIM technique, the validity of which is controversial among fish biologists (Castleberry et al. 1996; Van Winkel et al. 1997), and the sponsor does not seem aware of the drawbacks and cautions with regard to its use. We question whether the IFIM parameters proposed here are comprehensive enough for

this area. The effort would need to incorporate ground truthing—measures of important physical habitat features and fish abundances at a wide variety of flows. Stalnaker (1990) maintained that the minimum flow concept is a myth and should be discarded. Stream ecologists now realize that, instead, full annual flow regimes should be considered; a wide, in part seasonal variation of flows tends to be the natural condition to which the biota is adapted and therefore often requires (Hill et al. 1991).

The project includes the tasks, 1. Consultation, 2. Collection of data for use in a model, and 3. Complete the validation study (p. 2). What is meant by “consultation,” and what is to be accomplished by it? Exactly what data will be collected and by what means? What are statewide preference curves? Why would they be valid rather than site-specific data? What are the properties of the model that is mentioned? What is meant by “complete the validation study”? How would the report use factors such as physical feasibility, risk and economics to formulate recommendations? The abstract provides more information (incomplete as it is) on some of these subjects than does the body of the proposal.

Facilities and equipment (item g) required to complete the proposal were not given. The information on qualifications of the project personnel is completely inadequate. Input into the proposal from biologists seems to be lacking. No basic literature on stream ecology and fish habitat was referenced. Unless basic stream ecology and stream fish requirements are well understood, then the project is unlikely to pay off in terms of fish and wildlife benefits.

References:

Castleberry, D. T., and 11 co-authors. 1996. Uncertainty and instream flow standards. *Fisheries* 21(8):20-21.

Hill, M. T., W. S. Platts, and R. L. Beschta. 1991. Ecological and geomorphological concepts for instream and out-of-channel requirements. *Rivers: Studies in the Science, Environmental Policy, and Law of Instream Flow* 2:198-210.

Stalnacker, C. B. 1990. Minimum flow is a myth. U.S. Fish and Wildlife Serv. *Biological Rept.* 90(5):31-33.

Van Winkel, W., and 7 co-authors. Uncertainty and instream flow standards: perspectives based on hydropower research and assessment. *Fisheries* 22(7):21-22.

ProjectID: 21030

Forest Carnivore Surveys for Spokane Subbasin

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Spokane

Short Description: This project will conduct surveys to verify many reported sightings of the lynx, wolverine, marten and fisher in the Spokane Subbasin. Techniques will include the use of remote cameras, bait stations, scratch stations, and track stations.

Sponsor Request FY01: \$70,000

Sponsor Request FY01-03: \$140,000

CBFWA Recommendation: DNF

ISRP Recommendation Compared with CBFWA's: Agree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. A response review was not warranted. This weak proposal fails to establish why surveys of forest carnivores are of particular relevance to the Fish and Wildlife Program. It provides an inadequate technical background to the problem, simply describing the animals. It fails to present methods by which the surveys will be conducted and does not establish how the work would be beneficial to fish and wildlife. Although it would be useful to verify the sightings of the forest carnivores, the proposal contains few details about methods and no indication of what the likelihood of detecting a species may be assuming it is in fact present.

ProjectID: 21031

Land Use Analyses of Spokane County

Sponsor: WDFW

Province: Inter-Mountain

Subbasin: Spokane

Short Description: This project analyzes and compares past and current vegetation types and land uses in order to determine, and for the future, predict, the impacts different land uses and human development has had and will have on wildlife in Spokane County.

Sponsor Request FY01: \$47,000

Sponsor Request FY01-03: \$94,000

CBFWA Recommendation: DNF

ISRP Recommendation Compared with CBFWA's: Agree, Do Not Fund

ISRP Final Recommendation and Comments:

Do not fund. The proposal is not adequately tied to the Fish and Wildlife Program and potential benefits are not demonstrated. A response review was not warranted.

Specific comments and questions to address in future proposals.

1. Field sampling procedures for public and private land should be described for ground truth (field testing) of the accuracy of classifications from the recent photographs. How many randomly selected points would be visited in each class? What procedures will be applied if access is denied? What accuracy is required and what are the criteria for

accepting the results? If changes are made based on field visits, will a second set of random points be selected?

2. We assume that procedures developed for digitizing and classifying the recent photographs would be used to digitize and classify the old photographs, but these kind of assumptions should be spelled out in detail. How will the accuracy of classifications based on the old photographs be assessed?

3. No reference is given to the FWP or other projects funded by BPA.

Table of Proposals

Sorted by Province, ISRP Agreement with CBFWA, and Subbasin

ProjectID	Title	Sponsor	Subbasin	CBFWA Category	ISRP Comparison	FY01	FY01-FY03	Page #
Columbia River Gorge Proposals								9
ISRP Disagrees with CBFWA: ISRP Fundable and CBFWA Lower Priority or Do Not Fund								9
21004	Determination of difficult passage areas by examining swimming activity of upriver migrating salmon implanted with EMG transmitters	PNNL	Klickitat	Recommended Action	Disagree with CBFWA priority. This is a high priority project that deserves funding.	\$212,929	\$632,929	9
21016	Accelerate the Application of Integrated Fruit Management to Reduce the Risk of Pesticide Pollution in Fifteenmile Sub-basin Orchards	Wy'East RC&D	Fifteenmile	Do Not Fund	Disagree, this proposal is fundable.	\$308,772	\$738,457	10
ISRP Disagrees with CBFWA: ISRP Do Not Fund and CBFWA High Priority or Recommended Action								12
199304001	15-Mile Creek Steelhead Smolt Production	ODFW	Fifteenmile	Urgent/High Priority	Disagree, Do Not Fund	\$33,704	\$92,204	12
21011	Assess the Current Status and Biotic Integrity of the Resident Fish Assemblage in Bonneville Reservoir	USGS/CRRL	Bonneville Reservoir	Recommended Action	Disagree, Do Not Fund	\$351,700	\$1,099,700	13
21024	Evaluate Hatchery Reform Principles	NMFS	Wind	Recommended Action	Disagree, Do Not Fund	\$1,063,200	\$3,351,307	15
21026	Inventory and Restore Beaver and Beaver Habitats	YN	Klickitat	Recommended Action	Disagree, Do Not Fund	\$205,440	\$675,440	17

ProjectID	Title	Sponsor	Subbasin	CBFWA Category	ISRP Comparison	FY01	FY01-FY03	Page #
ISRP Conditional Fundable Recommendation - CBFWA High Priority or Recommended Action								18
Klickitat Fisheries Program Recommendation								18
198811525	Yakima/Klickitat Fisheries Project Design and Construction	YN	Klickitat	Urgent/High Priority	Fundable on interim basis.	\$3,683,000	\$5,867,000	24
198812025	Yakima/Klickitat Fisheries Project (YKFP) Management, Data and Habitat (Klickitat Only)	YN	Klickitat	Urgent/High Priority	Fundable on interim basis.	\$363,510	\$1,170,964	24
199506325	Yakima/Klickitat Fisheries Project Monitoring And Evaluation (Klickitat Only)	YN	Klickitat	Urgent/High Priority	Fundable on interim basis.	\$447,723	\$1,468,082	25
199701725	Yakima Klickitat Fisheries Project Operation and Maintenance (Klickitat Only)	YN	Klickitat	Urgent/High Priority	Fundable on interim basis.	\$0	\$2,530,000	26
Other Gorge Proposals with ISRP Conditional Fundable Recommendations								27
21012	Evaluate Status of Coastal Cutthroat Trout in the Columbia River Basin above Bonneville Dam	USGS-CRRL	Columbia Gorge	Urgent/High Priority	Partially agree, objective 1 is fundable, funding of any other objective should require further review per the ISRP comments.	\$39,770	\$533,734	27
199304000	Fifteenmile Creek Habitat Restoration Project (Request For Multi-Year Funding)	ODFW	Fifteenmile	Urgent/High Priority	Agree, Fundable. Concerns should be addressed in Council review or BPA contracting process.	\$220,040	\$670,113	28

ProjectID	Title	Sponsor	Subbasin	CBFWA Category	ISRP Comparison	FY01	FY01-FY03	Page #
21001	Fifteenmile Creek Riparian Fencing / Physical stream Survey Project	ODFW	Fifteenmile	Urgent/High Priority	Agree, Fundable. Concerns should be addressed in Council review or BPA contracting process.	\$151,685	\$471,843	30
199705600	Lower Klickitat Riparian and In-Channel Habitat Enhancement Project	YN	Klickitat	Urgent/High Priority	Fundable if funding is based on achievement of milestones.	\$313,318	\$1,090,459	31
ISRP and CFWA Agree: ISRP Fundable and CFWA High Priority or Recommended Action								33
21013	Western Pond Turtle Recovery - Columbia River Gorge	WDFW	Columbia Gorge	Urgent/High Priority	Agree, Fundable	\$167,025	\$361,225	33
Hood River Production Program								34
198805303	Hood River Production Program - CTWSRO M&E	CTWSRO	Hood	Urgent/High Priority	Agree, Fundable	\$509,959	\$1,609,959	37
198805304	Hood River Production Program - ODFW M&E	ODFW	Hood	Urgent/High Priority	Agree, Fundable	\$431,331	\$1,321,331	38
198805307	Hood River Production Program: Powerdale, Parkdale, Oak Springs O&M (88-053-07 & 88-053-08)	CTWS and ODFW	Hood	Urgent/High Priority	Agree, Fundable	\$1,082,983	\$4,796,653	39
198902900	Hood River Production Program - Pelton Ladder - Hatchery	ODFW	Hood	Urgent/High Priority	Agree, Fundable	\$139,534	\$254,545	40

ProjectID	Title	Sponsor	Subbasin	CBFWA Category	ISRP Comparison	FY01	FY01-FY03	Page #
199500700	Hood River Production - PGE: O&M	PGE	Hood	Urgent/High Priority	Agree, Fundable	\$46,300	\$96,300	41
199802100	Hood River Fish Habitat Project	CTWSRO	Hood	Urgent/High Priority	Agree, Fundable	\$299,953	\$1,699,953	41
21014	Mitigate Streambank Sediment Sources in Fifteenmile Watershed using Bioengineering Techniques	Wasco SWCD	Fifteenmile	Recommended Action	Agree, Fundable	\$159,355	\$202,934	42
21019	Fifteenmile Subbasin Water Right Acquisition Program	OWT	Fifteenmile	Urgent/High Priority	Agree, Fundable	\$32,000	\$128,000	43
199801900	Wind River Watershed Restoration	UCD,USFS, USGS-CRRL, WDFW	Wind	Urgent/High Priority	Agree, Fundable	\$658,532	\$2,770,221	44
21009	Assess current and potential salmonid production in Rattlesnake Creek associated with restoration efforts	UCD, YN, USGS	White Salmon	Urgent/High Priority	Agree, Fundable	\$227,951	\$736,756	45
21033	White Salmon River Watershed Enhancement Project	UCD	White Salmon	Recommended Action	Agree, Fundable	\$242,221	\$801,748	46
199405400	Bull trout population assessment in the Columbia River Gorge, WA.	WDFW	Klickitat	Urgent/High Priority	Agree, Fundable	\$155,938	\$500,938	46
21027	Inventory and Assess Amphibian Populations in the Klickitat Subbasin	YN	Klickitat	Recommended Action	Agree, Fundable	\$135,797	\$401,391	47

ProjectID	Title	Sponsor	Subbasin	CBFWA Category	ISRP Comparison	FY01	FY01-FY03	Page #
ISRP Fundable or Not Reviewed and No Comparison with CBFWA Recommendations: Policy Issues								49
21005	Characterize and Assess Wildlife-Habitat Types and Structural Conditions for Sub-Basins within the Columbia Gorge Ecoprovince	NHI	Columbia Gorge	Do Not Fund	Technically sound. Fundable if needed in subbasin assessment by EDT.	\$58,521	\$58,521	49
21015	Riparian Buffers	Wasco SWCD	Fifteenmile	Do Not Fund	The position looks valid and offers potential benefit. However, funding the position is a policy decision.	\$73,414	\$226,914	51
21028	Klickitat Watershed and Habitat Enhancement Project	YN	Klickitat	Recommended Action	NA	\$2,741,360	\$9,001,360	52
ISRP and CBFWA Agree: Do Not Fund								53
21010	Feeding, growth, and smoltification of juvenile steelhead infested with the ciliated protozoan, Heteropolaria lwoffii	USGS-CRRL, USFWS	Wind	Do Not Fund	Agree, Do Not Fund	\$106,988	\$467,132	53

ProjectID	Title	Sponsor	Subbasin	CBFWA Category	ISRP Comparison	FY01	FY01-FY03	Page #
Inter-Mountain Proposals								54
ISRP Disagrees with CBFWA: ISRP Fundable and CBFWA Recommended Action or Do Not Fund								54
21025	Intermountain Province Resident Fish Symposium	LRF	Inter-Mountain	Recommended Action	Disagree with CBFWA priority. This is a high priority project.	\$41,000	\$129,297	54
21002	Early life history and survival of adfluvial rainbow trout in the San Poil River Basin	PNNL	San Poil	Recommended Action	Disagree with CBFWA priority. This is a high priority project.	\$155,092	\$495,092	55
Mule Deer Projects:								56
21023	Determine causes of mule deer population declines in the IM Columbia Basin: a test of the "apparent competition " hypothesis	WSU	Inter-Mountain	DNF	Disagree. This research proposal is fundable and should be of equal or higher priority than project 21029.	\$205,532	\$531,625	56
21029	A cooperative approach to identifying the role of forage quality in affecting physical condition....of mule deer in north central Washington.	WDFW	Inter-Mountain	Urgent/High Priority	Agree, fundable if addresses ISRP concerns in Council review or BPA contracting process.	\$133,650	\$325,250	58

ProjectID	Title	Sponsor	Subbasin	CBFWA Category	ISRP Comparison	FY01	FY01-FY03	Page #
ISRP Disagrees with CBFWA: ISRP Do Not Fund and CBFWA High Priority or Recommended Action								60
21020	Monitor and Enhance the Lakes and Streams of the Spokane Indian Reservation	STOI	Lake Roosevelt	Urgent/High Priority	Disagree, Do Not Fund	\$92,177	\$281,177	60
199502800	Restore Moses Lake Recreational Fishery	WDFW	Lake Roosevelt	Urgent/High Priority	Disagree, Do Not Fund	\$213,072	\$653,676	64
21035	Phalon Lake Native Redband Rainbow trout Trap Construction and O & M	WDFW	Lake Roosevelt	Urgent/High Priority	Disagree, Do Not Fund	\$126,000	\$199,671	67
ISRP Conditional Fundable Recommendation - CBFWA High Priority or Recommended Action								72
199502700	Develop and Implement Recovery Plan for Depressed Lake Roosevelt White Sturgeon Populations.	STOI	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$152,000	\$537,000	72
21018	Implement Fisheries Enhancement on the Coeur d'Alene Indian Reservation: Hangman Creek	Cd'A	Spokane	Urgent/High Priority	Agree, fundable if project addresses ISRP concerns in Council review or BPA contracting process.	\$179,483	\$775,062	75
ISRP and CBFWA Agree: ISRP Fundable and CBFWA High Priority								77
21017	Implement Wildlife Habitat Protection and Restoration on the Coeur d'Alene Indian Reservation: Hangman Watershed.	Cd'A	Spokane	Urgent/High Priority	Agree, Fundable	\$158,252	\$3,738,752	77
21034	Colville Tribes Restore Habitat for Sharp-tailed Grouse	CCT-FWD	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$169,400	\$508,200	78
198503800	Colville Tribal Fish Hatchery	CCT	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$789,642	\$2,489,346	79

ProjectID	Title	Sponsor	Subbasin	CBFWA Category	ISRP Comparison	FY01	FY01-FY03	Page #
199104600	Spokane Tribal Hatchery (Galbraith Springs) Operation and Maintenance	STOI	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$549,856	\$1,735,856	80
199404300	Lake Roosevelt Fisheries Evaluation Program	STOI	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$1,113,584	\$3,112,168	82
199104700	Sherman Creek Hatchery Operations and Maintenance	WDFW	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$269,898	\$802,864	85
199500900	Rainbow Trout Net Pen Rearing Project	LRDA	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$100,550	\$328,328	86
21021	Ford Hatchery Improvement, Operation And Maintenance	WDFW	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$213,249	\$768,463	87
199106200	Spokane Tribe of Indians Wildlife Mitigation Project	STOI	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$1,528,806	\$4,787,306	88
199204800	Hellsgate Big Game Winter Range Operation And Maintenance Project	CCT-FWD	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$388,071	\$1,263,471	89
199506700	Colville Tribes Performance Contract for Continuing Acquisition	CCT-FWD	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$1,500,000	\$4,500,000	89
199800300	Spokane Tribe of Indians Wildlife Operations and Maintenance	STOI	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$182,497	\$558,974	90
21008	Evaluation of the Banks Lake Fishery	WDFW	Lake Roosevelt	Urgent/High Priority	Agree, Fundable	\$170,408	\$857,908	91
199501100	Chief Joseph Kokanee Enhancement Project	CCT	San Poil	Urgent/High Priority	Agree, Fundable	\$1,145,762	\$3,987,762	92
199001800	Evaluate Rainbow Trout/Habitat Improvements Of Tributaries To Lake Roosevelt	CCT	San Poil	Urgent/High Priority	Agree, Fundable	\$199,019	\$826,019	92

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ISRP Fundable or Not Reviewed and No Comparison with CBFWA Recommendations: Policy Issues								94
21006	Characterize and Assess Wildlife-Habitat Types and Structural Conditions for Sub-Basins within the Inter Mountain Ecoprovince	NHI	Inter-Mountain	DNF	Technically sound. Fundable if needed in subbasin assessment by EDT.	\$84,571	\$84,571	94
ISRP and CBFWA Agree: Do Not Fund								96
21003	Upper Columbia Subbasin Native Rainbow Population Study	WT	Inter-Mountain	DNF	Agree, Do Not Fund	\$44,850	\$135,450	96
21032	Eastern Washington Survey for Townsend's big-eared bat	WDFW	Inter-Mountain	DNF	Agree, Do Not Fund	\$73,000	\$143,500	97
21022	Evaluate Fish Habitat on the Middle Spokane / Little Spokane Rivers	Spokane County	Spokane	DNF	Agree, Do Not Fund	\$93,000	\$156,000	98
21030	Forest Carnivore Surveys for Spokane Subbasin	WDFW	Spokane	DNF	Agree, Do Not Fund	\$70,000	\$140,000	100
21031	Land Use Analyses of Spokane County	WDFW	Spokane	DNF	Agree, Do Not Fund	\$47,000	\$94,000	100

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