Independent Scientific Review Panel
for the Northwest Power Planning Council

Review

of

Fiscal Year 2001

Innovative Proposals

for the

Columbia River Basin
Fish and Wildlife Program

ISRP 2000-10
December 15, 2000

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ISRP Review of Fiscal Year 2001 Innovative Proposals

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Background

In past reviews, the Independent Scientific Review Panel and Peer Review Groups (ISRP) recommended that the Northwest Power Planning Council (Council) establish a special funding category to encourage innovative projects. For the first time, for Fiscal Year 2001, the Bonneville Power Administration (Bonneville) and the Council created a specific solicitation for innovative fish and wildlife project proposals and offered to allocate up to $2 million to fund these innovative projects.

The solicitation specified that the proposed project be consistent with the Council's Columbia River Basin Fish and Wildlife Program and not exceed a total request for Bonneville funding of $400,000 (5 projects minimum). Without excluding other types of innovative projects, the solicitation expressed an interest in projects demonstrating the effect of nutrient supplementation and those testing experimental selective fishing gear.[1] In response to the solicitation, Bonneville received 66 proposals that in total request about $20 million.[2]

For the solicitation, innovative projects were defined as those which rely primarily on a method or technology that (1) has not previously been used in a fish or wildlife project in the Pacific Northwest, or (2) although used in other projects, has not previously been used in an application of this kind. The purpose of "innovative" projects is to explore new methods and technologies and new applications for existing methods and technologies designed to directly benefit fish and wildlife. The solicitation reflects the Council's interest in establishing a mechanism to improve knowledge and encourage creative thinking.

Review Process and Results

In early November 2000, each ISRP reviewer was sent a packet of the 66 proposals. Due to the large number of proposals (2,000 pages) and short review time, proposals were divided among ISRP reviewers by topic areas that best suited the reviewer's expertise and interest. The proposals fell into several broad topic areas: 1) nutrient supplementation; 2) fish health; 3) fish population monitoring; 4) information transfer/planning; 5) artificial production; 6) habitat restoration and enhancement; and 7) fisheries technology. At least three ISRP reviewers evaluated each proposal using the ISRP innovative review criteria (Attachment 1). After completing individual evaluations,

[1] The solicitation on the World Wide Web only referred to nutrient supplementation and not to experimental selective fisheries gear.

[2] The proposals are on CBFWA's website at: www.cbfwa.org/2001/innovative/id.htm

the ISRP met for two days to discuss evaluations and reach a consensus recommendation and rank for each proposal.

The first review task was to determine whether the proposal met the solicitation's definition of "innovative." In addition, each proposal was evaluated on its scientific merit and potential benefit to fish and wildlife. The ISRP divided the proposals into four categories:

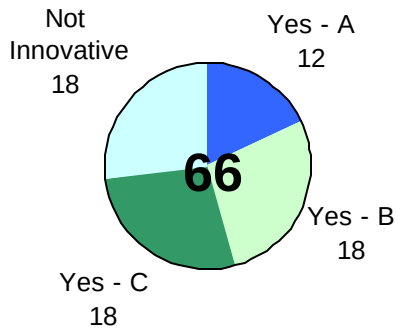
Yes - A. Proposals that are innovative, offer a high likelihood of benefit to fish and wildlife, are scientifically sound, and provide a high likelihood of success. Many of these proposals offer more or less new ideas or concepts and test those concepts on an appropriate scale (proof of principle). (12 proposals)

Yes - B. Proposals that meet the solicitation criteria, offer some likelihood of benefits to fish and wildlife, and are scientifically sound. Generally, these proposals offer a lesser degree of innovation and the likely benefits seem to be smaller than those in category **Yes-A**. (18 proposals)

Yes - C. Proposals that show little likelihood of benefiting fish and wildlife and were judged to be marginally innovative. (18 proposals)

Not Innovative. Proposals that did not meet the innovative definition. These proposals were not considered for ranking. Nevertheless, some of these proposals were technically sound and several addressed ongoing critical uncertainties in the basin. Support for these proposals in another venue may be warranted. (18 proposals)

Figure 1. Breakdown of ISRP Rankings



The ISRP ranked the top twenty proposals (Table 1). This includes the twelve proposals in the Yes-A category and eight proposals in the Yes-B category. These twenty proposals offer innovative and scientifically sound approaches that will likely benefit fish and wildlife. All are worthy of funding; however, the Yes-A proposals are generally ranked higher and thus, should receive higher priority for funding. Considerable thought

and discussion went into the rank order in Table 1. The rank order illustrates the ISRP's prioritized recommendations for funding support, particularly for the first twelve (Yes-A) proposals, and reflects a combined judgement for each proposal of its degree of innovation, technical soundness, likelihood of success, and ramifications of its results, if it successfully achieves its objectives.

The ISRP did not specifically rank proposals below the top twenty, because at that point the proposals were judged to provide marginal benefit to the Council's Fish and Wildlife Program, to only marginally meet the innovative criteria, or were judged to not satisfy the innovative criteria. Moreover, the top eight proposals request funds that exceed the $2 million allocated to innovative proposals.

Table 1. Top 20 Ranked Proposals

Project	Title	Sponsor	Total Request	ISRP Rank
22001	A Feasibility Study for Pacific Ocean Salmon Tracking (POST)	Kintama Research Corporation	$228,600	1; Yes - A
22013	Genetic sex of chinook salmon in the Columbia River Basin	University of Idaho	$99,736	2; Yes - A
22063	Determination of difficult passage areas, migration patterns and energetic use of upriver migrating salmon and steelhead	Pacific Northwest National Laboratory	$319,542	3; Yes – A *(Prefer to fund through Gorge Province)*
22002	Influences of stocking salmon carcass analogs on salmonids in Columbia River tributaries	WDFW, Bio-Oregon, Shoshone-Bannock Tribe, NMFS, Yakama Nation, Weyerhaeuser Co.	$399,829	4; Yes - A
22022	Using Induced Turbulence to Assist Downstream-Migrating Juvenile Salmonids	Washington State University	$219,923	5; Yes - A
22050	Habitat Diversity in Alluvial Rivers	Confederated Tribes of the Umatilla Indian Reservation	$319,860	6; Yes - A
22033	Evaluate new methodologies for monitoring Pacific salmon and steelhead: methods for evaluating the effectiveness of restoration and recovery programs	U.S. Fish & Wildlife Service	$353,376	7; Yes – A *(Fund only at a pilot-scale level to evaluate new tags)*
		TOTAL - Up to ~$2 Million	***$1,940,866***	***See note at bottom of table***
22047	Salmonid response to fertilization: an experimental evaluation of alternative methods of fertilization	NMFS/ Northwest Fisheries Science Center	$400,000	8; Yes – A *(Project could be reduced in scale and budget)*
22042	Evaluate the effects of nutrient supplementation on benthic periphyton, macroinvertebrates, and juvenile sturgeon in the Kootenai River	Kootenai Tribe of Idaho	$170,635	9; Yes - A

Project	Title	Sponsor	Total Request	ISRP Rank
22057	Waterbody and Aquatic Habitat Characterization Utilizing High Resolution Satellite Imagery and Aerial Imagery	Teasdale Environmental Associates	$126,371	10; Yes - A
22055	Develop a Nutrient/Food-Web Management Tool for Watershed-River Systems	Battelle Memorial Institute	$329,000	11; Yes - A
22064	Reintroduction success of steelhead from captive propagation and release strategies	NMFS, Resource Enhancement and Utilization Technologies Division	$262,350	12; Yes - A
22019	Use a Multi-Watershed Approach to Increase the Rate of Learning from Columbia Basin Watershed Restoration Projects	ESSA Technologies Ltd.	$295,036	13; Yes - B
22060	Assess Feasibility Of Enhancing White Sturgeon Spawning Substrate Habitat, Kootenai R., Idaho	USGS/ Kootenai Tribe of Idaho	$300,000	14; Yes - B
22056	Development of Salmon DNA Finger Printing Microarrays	Battelle, Pacific Northwest Division	$400,000	15; Yes - B
22043	Enhancing instream flow by adopting best agricultural land management practices	Washington State University	$135,305	16; Yes - B
22037	Locate chum and fall chinook salmon and redds in deep and turbid water using an acoustic camera	USGS/BRD	$164,334	17; Yes - B
22010	Echo Meadow Project - Winter Artificial Recharge to Cool Rivers	IRZ Consulting	$660,714	18; Yes - B
22005	An experimental evaluation of nutrient supplementation on juvenile salmonid fish abundance in nutrient-limited streams	Department of Biological Sciences, Idaho State University	$398,246	19; Yes - B
22038	Design and assessment of artificial spawning habitat for kokanee in Lake Pend Oreille, Idaho	University of Idaho	$286,809	20; Yes - B
		TOP 20 TOTAL	***$5,869,666***	

Note: If only the pilot-scale portions of the proposals are funded, more proposals can be funded under the $2 million budget specified in the solicitation; e.g. the ISRP recommends funding only the innovative portion of proposals 22033 and 22047.

In the sections below, the ISRP provides general comments on the innovative solicitation and nutrient supplementation, and specific comments on each proposal. Because a response loop is not included in this process, the ISRP generally did not comment on how to improve a proposal. Instead, the comments are directed toward helping the Council select proposals that offer the most promising new methods and technologies and are most likely to directly benefit fish and wildlife.

General Comments

The ISRP views the Innovative Proposal Category as a "venture capital" program for the Fish and Wildlife Program. As such, proposals that test or develop new ideas, approaches, or applications should receive priority. In general, the ISRP recommends that innovative projects should be pilot-scale, operate on modest to moderate budgets, and be of relatively short duration. Those that generate promising results would be expected to develop implementation-scale proposals for consideration under the Provincial Review Process of the Fish and Wildlife Program.

While it is tempting to fund proposals with the highest probability of success, riskier proposals may also be worth supporting where the potential benefits of the proposed work are profound or have widespread application. Implicit in this approach is the recognition that some portion of the supported innovative projects may fail to reach their stated objectives.

In considering the "venture capital" nature of innovative projects, the Council may want to articulate a policy regarding the public funding of private developmental research. Some projects are based on tests of developmental technologies that would, if successful, become patented products held by private companies. Technology development was a component of some proposals reviewed by the ISRP, but the appropriateness of using public funds to develop private technologies is a matter of policy rather than science and was not considered by the ISRP. Joint ventures between private companies and the Fish and Wildlife Program may be a possible funding mechanism.

The Council may also want to develop a policy regarding funding projects located out of the Columbia River Basin. Some proposals describe work that would take place outside the Basin that is nevertheless relevant to Basin needs and problems. In some cases, outside-Basin settings provide a better or more cost-effective field site for testing new techniques and ideas than within-basin locations. Under these conditions, and where research results are directly translatable to Basin problems, it may be fully appropriate to fund research projects in outside-Basin locations.

Proposal Scale, Budgets, Duration, and Targeted RFPs

In our FY2000 review, the ISRP commented on project scale and the confusion of implementation and evaluation (p. 19; ISRP 99-2, Volume 1). These comments are also pertinent to the FY2001 Innovative Proposal Review. We noted that new ideas and experimental methods are often best tested as pilot projects before stepping up to full-scale implementation. Indeed, we believe that a major purpose of the innovative funding category is the "proof of concept."

Testing at a small-scale can help determine feasibility and identify real or potential problems, thereby facilitating an adaptive learning process prior to full-scale implementation. Implementation of full-scale projects without a test phase limits the likelihood that projects will be implemented cost-effectively. Pursuing untested full-scale projects risks the financial resources of the program, and also risks harming the fish and

wildlife resources the program is mandated to protect and enhance. Pilot-scale field testing should be preceded by a quantitative research design that identifies the factors needing measurement and testing.

We believe that this year's solicitation for innovative proposals, which set a budget cap at $400,000, inadvertently encouraged the submission of larger-scale proposals. These proposals, roughly 10% of the submissions, typically had two or more phases, often a Phase-1 pilot-scale test, followed by one or more additional larger-scale implementation phases. We believe the venture capital nature of the innovative funding category and the Fish and Wildlife Program as a whole will be better served by funding a larger number of pilot-scale projects of moderate budget than by supporting fewer large budget projects. We suggest that future solicitations cap budgets of innovative projects at $250,000 and recommend a range of $50,000 - $150,000. We also believe that in general, the Fish and Wildlife Program will be best served if innovative projects are able to test concepts and methods in 12-18 months time (where possible[3]), leaving the longer-term implementation phase for funding under the Provincial Review Process.

Finally, the ISRP recommends that the annual budget for the innovative proposal solicitation be increased, and that a separate budget be set aside for targeted Requests For Proposals (RFPs). The Innovative Funding Category is now allocated 1.4% of the Fish and Wildlife Program's annual $127 million budget.

Targeted RFPs are a proven vehicle to examine specific critical uncertainties but should be separated from the innovative proposal solicitation. The inclusion of "nutrient supplementation" as a targeted research area in the FY2001 innovative proposal solicitation confused the review process because strong nutrient supplementation proposals did not necessarily have to be innovative. Special topic solicitations should be developed as targeted RFPs rather than addressed through the innovative process. Emerging topics that could be addressed through the targeted RFP approach might include (1) non-point pollution and its effects on population viability and fitness, and (2) research-oriented studies on the effects of various artificial production strategies on reproductive fitness, particularly with relation to ongoing supplementation programs.

Nutrient Supplementation Proposals

As noted above, the call for innovative proposals included a request for proposals addressing the application of nutrients within the Columbia Basin. The recent fisheries literature includes a number of publications highlighting the potential benefits of nutrient supplementation. Nevertheless, questions remain about the applicability of nutrient supplementation over the range of habitats in the Columbia Basin. The effect of nutrient enrichment on several microbial, algal, invertebrate, and fish species complexes in a variety of stream habitats remains untested. Despite these uncertainties, pilot studies within the Columbia Basin could prove beneficial, and in fact may have already started (e.g., Naches River).

[3] We recognize that some innovative proposals, such as those for example that are tied to salmonid life history studies, may require longer time periods to come to fruition.

Few of the proposals took full advantage of the literature or the increasing number of projects placing salmon carcasses in streams. A manual on stream rehabilitation techniques in British Columbia lists research needs for future advances in fertilizer addition, but few proposals referenced this list. In addition, the proposals failed to clearly define the need for this rehabilitation tool, other than the statement that salmon used to exist in a particular location. To establish a need for nutrient supplementation, measurement of background nutrient levels and identification of limiting factors are required. Furthermore, the interaction of nutrients and other watershed activities must be considered. Nutrient addition work should be a component of an ecosystem-based watershed restoration and should be derived from a thorough watershed assessment. For example, forest and stream fertilization might be integrated, but there are limits to the nutrient capacity of streams in agricultural areas. Nutrients are but yet another component to consider in subbasin plans.

Several investigators proposed comparisons of nutrient briquettes, salmon carcasses, and yet-to-be-developed carcass analogs as application alternatives. These comparisons are tests of organic versus inorganic nutrient application procedures. However, experimental controls are difficult to establish. The timing of applying inorganic nutrients placed in spring and summer differs from that of organic nutrients placed in the fall. In addition, much of the justification for using salmon carcasses as a nutrient source was based on the assumption of direct feeding by juvenile salmonids. However, the most likely benefit provided by salmon carcasses is the release of nutrients to the stream ecosystem and uptake in the spring and summer, particularly in areas where these nutrients are retained over winter and not lost in fall, winter, or spring freshets. Additional benefit is derived from feeding on eggs and subsequent fry, as well as some feeding on products from carcass decomposition.

An addition to the nutrient supplementation research that would add value to the Basin is a series of workshops each focused on a single objective; e.g., test inorganic nutrient application in areas of the Columbia, or compare briquettes and carcasses applications in fall and spring. The workshops should include discussions of key areas requiring further research, research methods, and identification of procedures for mesocosm and pilot studies, field-testing, demonstration sites, full implementation and evaluation. The workshops could lead to agreement on standardized experimental approaches. Indeed a workshop on some of these issues is scheduled for the near future in the Pacific Northwest.

In this review the ISRP identifies several proposals that could provide valuable information on the application of nutrient supplementation. We suggest a logical sequence of funding. Specifically, development and testing of carcass analogs should precede projects that test these analogs against salmon carcasses and nutrient briquettes. Much more work remains, including a comparison of inorganic and organic micronutrients in streams and the identification of macro and micro nutrient limiting factors. Yet enough is known to justify experimental field tests. This work may be best addressed through a targeted RFP or included in the Provincial Review Process.

Table 2. Nutrient Supplementation Proposals

Project	Title	Sponsor	Total Request	ISRP Rank
22002	Influences of stocking salmon carcass analogs on salmonids in Columbia River tributaries	WDFW, Bio-Oregon, Shoshone-bannock Tribe, NMFS, Yakama Nation, Weyerhaeuser	$399,829	Ranked 1 for Nutrient Proposals; Ranked 4 Overall; Yes - A
22047	Salmonid response to fertilization: an experimental evaluation of alternative methods of fertilization	National Marine Fisheries Service	$400,000	Ranked 2 for Nutrient Proposals, Ranked 8 Overall; Yes - A
22042	Evaluate the effects of nutrient supplementation on benthic periphyton, macroinvertebrates, and juvenile sturgeon in the Kootenai River	Kootenai Tribe of Idaho	$170,635	Ranked 3 for Nutrient Proposals, Ranked 9 Overall; Yes - A
22055	Develop a Nutrient/Food-Web Management Tool for Watershed-River Systems	Battelle Memorial Institute	$329,000	Ranked 4 for Nutrient Proposals; Ranked 11 Overall; Yes - A
22005	An experimental evaluation of nutrient supplementation on juvenile salmonid fish abundance in nutrient-limited streams	Idaho State University	$398,246	Ranked 5 for Nutrient Proposals; Ranked 19 Overall; Yes - B
22008	Evaluate and compare the effects of nutrient supplementation from carcasses and fertilizer on fish growth and survival and lower trophic levels.	Utah State University, Utah Cooperative Fish and Wildlife Unit, Logan, Utah.	$377,700	Ranked 6 for Nutrient Proposal; Not Ranked Overall; Yes - B
22029	Evaluate the ecological role of marine derived nutrients in areas artificially blocked to anadromous fish migrations.	Confederated Tribes of the Colville Reservation	$391,212	Not Ranked; Yes - B
22034	Influence of marine-derived nutrients on juvenile salmonid production: a comparison of two nutrient enhancement techniques	U. S. Geological Survey, Biological Resources Division	$236,270	Not Ranked; Yes - B
22017	Monitor and Evaluate Nutrient Supplementation as a Tool for Increasing Production and Survival of Juvenile Chinook Salmon from Infertile Streams	Paulson Environmental Research, Ltd.	$208,628	Not Ranked; Not a stand-alone project
22040	Ecosystem effects of anadromous salmon	Idaho Department of Fish and Game	$396,500	Not Ranked; Yes - C
22028	Design and Coordinate Nutrient Supplementation Evaluations in the Salmon and Clearwater Subbasins, Idaho	Idaho Department of Fish and Game	$77,582	Not Ranked; Not Innovative

Comments on Proposals Ranked in the Top 20 and "Yes - A"

ProjectID: 22001

A Feasibility Study for Pacific Ocean Salmon Tracking (POST)
Sponsor: Kintama Research Corporation
Total Request: $228,600
Target Species: Chinook, steelhead, and coho
Short Description: (1) Evaluate new acoustic tracking technology to verify its capabilities for use on the West Coast and (2) Design an acoustic monitoring network to track movement of salmon smolts into the ocean and along the continental shelf to areas of ocean residency
Rank: 1; Yes - A
Comments:
This excellent innovative proposal ranked the highest because it promises the greatest potential benefit among the proposals to the Council's Fish and Wildlife Program. The proposal calls for testing the feasibility of using sonic tags for tracking juvenile salmon. The tags are particularly attractive because they also work in saltwater, unlike traditional radio tags currently in use in the region. Likelihood of success seems excellent, because similar work has been tested with success in the Bay of Fundy on the North Atlantic Coast. Success of this project should allow design of studies for better estimation of survival rates of emigrating juveniles through the estuary and into the ocean. Ability to track fish in saltwater would also provide needed information on the use of estuary habitat. The sonic tags also work in freshwater allowing fish to be tracked from some point upstream through the estuary and into the ocean plume. The proposal is clearly presented.

The sponsor proposes to also consider the design of a series of detection sites to track the migration of fish along the Coasts of Oregon, Washington, British Columbia, and Alaska. For some species, this would potentially provide valuable information on mortality in the ocean, migration to the open ocean, residence in areas along the coast for an extended period, and exposure to ocean fisheries. The proponent recognizes potential limitations of the methodology and plans to work through technical and scientific issues in workshops.

During the Council review and BPA contracting process, the availability of the principal investigator needs to be assured.

This is an excellent proposal that the ISRP read with great interest. In the process of review, the ISRP made some suggestions that would potentially improve the project:

1. The feasibility of the project might be tested with large smolts, for example, steelhead or spring/summer chinook. Growth enhancement of smolts of other species so that they can carry the sonic tag might be left for future applications.
2. The major objectives and steps of the feasibility study are well thought out and justified. The ISRP suggests that the sponsor consider use of a three-factor (site,

distance, and tag/receiver orientation) experiment with at least two levels of each factor with blocking on time.
3. Sequence of implementation might begin in the river, move to the estuary, the plume, and then the ocean. This approach could get at some critical information while testing the application of the technology at increasingly more challenging scales.
4. Sonic tags may also enhance the recovery of archival tags that store information on time and the migration path of a tagged fish in the open ocean.

ProjectID: 22013

Genetic sex of chinook salmon in the Columbia River Basin
Sponsor: University of Idaho
Total Request: $99,736
Target Species: chinook salmon
Short Description: Determine with molecular tests whether wild chinook salmon are correctly expressing their genetic sex, and assess the incidence of males with abnormal numbers of Y-chromosomes. Over the 4-year sampling period assess these effects on breeding populations.
Rank: 2; Yes - A
Comments:
This is an innovative proposal because it addresses a newly recognized critical uncertainty in the Hanford Reach fall chinook stock and proposes to use a new genetic assay technique to do so. It is also a high priority project as it addresses a critical question about population genetic structure in the Hanford Reach and other chinook stocks.

The authors' preliminary data show surprising evidence of sex-reversal (some genetic males are functional females) in Hanford-Reach-spawning wild chinook, apparently the result of some environmental insult (e.g., EDC's, exposure to pesticides). The data are intriguing and worrisome. Half the offspring of the sex-reversed fish will be normal males, but half will be YY males, capable of producing only sons, disproportionately increasing the ratio of males to females in the next generation, an accelerating increase if the sex-reversal continues in each generation. The effect would be a decreasing proportion of normal females and decreasing reproductive fitness, a serious barrier to recovery. It's clearly important to find out if other stocks of wild spawning chinook are affected, and it's important to find out if YY males are indeed present. The region needs to know the extent of the genetic sex reversal phenomenon.

ProjectID: 22063

Determination of difficult passage areas, migration patterns and energetic use of upriver migrating salmon and steelhead
Sponsor: Pacific Northwest National Laboratory
Total Request: $319542
Target Species: Chinook salmon, coho salmon, steelhead
Short Description: The goal of this project is to pin-point areas of difficult fish passage under different flow regimes using EMG telemetry and to examine movements, habitat use, and energetic consumption of fish during the upstream migration.
Rank: 3; Yes - A
Comments:
This proposal was reviewed favorably in the Columbia Gorge province and fits in the provincial review as well as in this innovative solicitation. It is innovative and provides an opportunity to critically examine fish passage problems identified in the Klickitat River and elsewhere. It is an excellent proposal with local and regional application. 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. The ISRP identified it as a high priority fundable project in the Columbia Gorge Rolling Review (for further comments, see that report). It should not fall through the cracks, and is recommended for funding either here or through the Gorge province. The proposal is well targeted and meritorious. We had some question as to whether the proposal is over budgeted. The proposal shows a duration of two fiscal years, with over $300k for the first year. If funded with the innovative proposals, then it should be assured that this work can be done for under $400,000 during the Council review and BPA contracting period.

ProjectID: 22002

Influences of stocking salmon carcass analogs on salmonids in Columbia River tributaries
Sponsor: Washington Department of Fish and Wildlife, Bio-Oregon, Shoshone-bannock Tribe, National Marine Fisheries Service, Yakama Nation, Weyerhaeuser Co.
Total Request: $399,829
Target Species: Rainbow/steelhead trout, cutthroat trout, chinook salmon, sculpins
Short Description: Restore salmonid populations by increasing food available to salmonids. The efficacy of using salmon carcass analogs to benefit salmonid populations will be tested in three sub-basins of the Columbia River.
Rank: 4; Yes - A
Comments:
This proposal ranked the highest out of the set of nutrient supplementation proposals. The proposal is well prepared and on target with the current thought on the best use of nutrient supplementation. It aggressively takes existing knowledge one step further. The gist of this project is to develop and test a carcass analog in cooperation with the production company, Bio Oregon. This proposal is the most thorough of the set of proposals for nutrient enhancement on examining risks of using the analogs. Use of an analog would avoid using salmon carcasses, which pose the risk of disease transmission.

It appears this proposal would need to be implemented before #22047, because it develops and tests the carcass analogs that #22047 proposes to use.

However, there was little or no mention of the need to examine background nutrient levels before proceeding with enrichment, nor was there an indication of the difficulties in achieving target nutrient levels in the spring and summer given carcass analog introductions in the fall. This is a fault common to several proposals, but see the review of #22055 below.

Inclusion of testing of a trout stream that does not have nutrient input from anadromous fish is a strong component of the study design. Beforehand, however, mesocosm experiments should be incorporated, where artificial stream channels are utilized to examine chlorophyll and invertebrate response to different levels of addition, with controls.

The research group is broad-based and well qualified to undertake and complete the work.

ProjectID: 22022

Using Induced Turbulence to Assist Downstream-Migrating Juvenile Salmonids
Sponsor: Washington State University, Department of Civil and Environmental Engineering, Albrook Hydraulics Laboratory
Total Request: $219,923
Target Species: Juvenile Salmonids
Short Description: Turbulence in salmonid-bearing streams will be reproduced in experimental facilities and used to test whether juvenile salmonids follow turbulent "trails" that could lead to dam surface bypass collection systems.
Rank: 5; Yes - A
Comments:
This proposal is to characterize turbulence in the vicinity of entrances to reservoir forebays in order to increase the effectiveness of surface flow bypass systems. Success of this project would contribute significantly to the overall passage of juveniles through the Snake and Columbia River projects.

The initial careful collection of field data (velocity contours) upon which to build the lab and applied test was very appealing to the reviewers. The Principal Investigator has a good lab and has designed a good applied test of the turbulence hypothesis. This is a reasonable proposal laid out as a pilot experiment with a solid study design. The compelling argument supporting this proposal is that the information it generates could lead to better design of surface flow bypass systems and thus, it has the potential for large regional significance.

ProjectID: 22050

Habitat Diversity in Alluvial Rivers
Sponsor: Confederated Tribes of the Umatilla Indian Reservation
Total Request: $319,860
Target Species: All aquatic organisms, including resident and anadromous fish.
Short Description: Developing innovative remote sensing and modeling tools for quantitative functional assessment of aquatic habitats by integrating spatial-temporal interactions between channels, floodplain and groundwater.
Rank: 6; Yes - A
Comments:
This is judged as the best of the three innovative proposals that proposed to make use of LIDAR (airborne laser altimetry) data to obtain detailed habitat and physical information about streamside vegetation, channel cross-sections, and channel slopes. The vertical resolution has accuracy to tens of centimeters and can measure the height of vegetation with accuracy of horizontal resolutions in meters. See proposals 22049 and 22059. This proposal has a good interface of various fields of endeavor. It is well written, and clearly articulates how this detailed source of topographic and vegetation data would be used to assess connections between catchment hydrology, channel geomorphology, and ecological function. The proposal draws on past work in the Umatilla basin, and would be a collaboration of tribal, university, and state agency personnel. In addition to use of LIDAR data, stream temperature assessment and modeling would be facilitated through use of airborne infrared surveys, and the project would draw on other sources of remote sensing data (e.g., SRTM – Shuttle Radar Topography Mapping mission) available through one of the Co-Principal Investigator's NASA projects.

The proposal is innovative in seeking to apply evolving remote sensing tools to habitat restoration projects within the basin. The panel was particularly impressed by the collaborative nature of the work, which should help assure that the work aids in transferring knowledge about data sources that should be of value in future projects.

ProjectID: 22033

Evaluate new methodologies for monitoring Pacific salmon and steelhead: methods for evaluating the effectiveness of restoration and recovery programs
Sponsor: U.S. Fish & Wildlife Service
Total Request: $353,376
Target Species: Coho salmon, steelhead trout, chinook salmon, bull trout, cutthroat trout
Short Description: Assess new methodologies for monitoring survival and migration of naturally spawned juvenile salmonids. These methods will be demonstrated by assessing the status and life history characteristics of coho salmon and steelhead trout in Abernathy Creek .
Rank: 7; Yes - A
Comments:
This project has an excellent component that is innovative because PIT-tags with this signal range have not been used in the Pacific Northwest in fisheries studies. The chance for success is very high because, the larger PIT-tag (23 mm) has been tested on the East

Coast for monitoring Atlantic salmon in stream environments. This tag should be valuable in several ways, because it would potentially allow a series of receivers to be installed over a stream to detect the passage of tagged smolt or a portable receiver to detect presence of tagged individuals during stream surveys. It would then be possible to estimate, for example, over-winter survival in tributary habitat, winter tracking to determine salmonid habitat use, return of adults to the stream, etc.

Use of this larger PIT-tag would add a new dimension to monitoring efforts in many subbasins, because the tag could potentially provide information that is currently available only through the use of larger and more intrusive radio-tags. It is obvious that if the portable monitoring system works, a stream can be surveyed periodically during the rearing period to estimate in stream survival rates using the same mark-recapture methodology currently in use to estimate survival of migrating juveniles between dams on the Columbia and Snake Rivers.

The ISRP was impressed with the component of the proposal associated with testing the feasibility and utility of using the larger PIT-tags. However, if funded, we recommend that the project be funded only at the level to test the ability of the gear to assess juvenile survival and distribution in streams. Also, it seems that testing of this innovative technique could be done in a shorter period of time than proposed for the entire project. The five-year period covered in the proposal adversely affected its relative ranking. Also, it was unclear if equipment (a screwtrap) listed for purchase under another innovative proposal (#22031) was needed here.

In discussion of the proposal, the ISRP was curious if this larger PIT-tag can be read by the standard detectors in use on, for example, the bypass systems of mainstem dams or if the detection device proposed can read the smaller tags that are currently being used in the basin? The ISRP would encourage the use of compatible systems if possible, but this should not be a requirement for funding the project.

ProjectID: 22047

Salmonid response to fertilization: an experimental evaluation of alternative methods of fertilization
Sponsor: National Marine Fisheries Service
Northwest Fisheries Science Center
Total Request: $400,000
Target Species: spring/summer chinook
Short Description: Experimentally evaluate the effects of marine derived nutrients on populations of Snake River spring/summer chinook salmon using three enhancement strategies: carcasses, carcass analogs, and inorganic nutrients
Rank: 8; Yes - A
Comments:
The proposal is innovative because it compared three sources of enrichment and the application to a chinook salmon population is new. This proposal is statistically rigorous. It correctly considers mesocosms in the field and uses field sites already studied by NMFS (PIT tag survival studies). The rationale and tie to the BiOp was good.

A good experimental design with experimental channels and appropriate facilities for a technique likely applicable to the Snake River was incorporated in the proposal, but perhaps the design is superfluous in some aspects. To compare three enhancement strategies, the level of detail proposed could be decreased. The leaf litter experiments seemed to add little, and the detailed evaluation of condition factor, to the point of examining fish livers, may be unnecessary. Many such details might be reduced considerably by focusing on alternate response variables. Because of these concerns, the ISRP suggest that the work might be funded at a reduced level from the proposed budget.

During discussion of the proposal, some additional minor concerns and questions were noted:

1. The target (and background) N and P levels should be specified.
2. The sponsors recognized the limitations of detecting a response through PIT-tagging, where approximately 2000 parr must be tagged. The ISRP suggested that the yield of smolts might be a more reasonable response variable.
3. Could adult and life stage modeling as well as the cost-benefit work come later?

ProjectID: 22042

Evaluate the effects of nutrient supplementation on benthic periphyton, macroinvertebrates, and juvenile sturgeon in the Kootenai River
Sponsor: Kootenai Tribe of Idaho
Total Request: $170,635
Target Species:
Periphyton and macroinvertebrate communities, and Kootenai River juvenile white sturgeon
Short Description: Analyze the effects of nitrogen and phosphorous additions on primary, secondary and tertiary productivity in a mesocosm to collect baseline data that will aid in determining if a large-scale fertilization effort would benefit the Kootenai River ecosystem.
Rank: 9; Yes - A
Comments:
This very good proposal is innovative in that it ties nutrient supplementation to sturgeon and resident rainbow trout. It ranks higher than some of the other nutrient proposals because it proposes mesocosm experiments first, a step that is encouraged by the ISRP. The proposal ties well with the sturgeon stocking program. Graduate student support is (mainly) for required research on nutrient limitations to sturgeon production. The approach has not been applied in this area for this species, and has not previously been used in an application of this kind, but is not truly innovative – tools and methods used elsewhere are applied. Nevertheless, this research is required before proceeding with a full-scale nutrient addition experiment in the mainstem. The mesocosm work should have application elsewhere in the basin.

ProjectID: 22057

Waterbody and Aquatic Habitat Characterization Utilizing High Resolution Satellite Imagery and Aerial Imagery
Sponsor: Teasdale Environmental Associates
Total Request: $126,371
Target Species: Fall Chinook
Short Description: Demonstrate the practical use of new commercial high resolution satellite and aerial imagery in the assessment of waterbody physical habitat, geomorphology and water quality impairment potential. Develop a guidance manual for field and office use.
Rank: 10; Yes - A
Comments:
This clearly written proposal would assess the utility of innovative aerial and satellite imagery in characterizing aquatic habitat. It represents a novel application of a new technology that may be very useful in EDT assessments and may represent an important advance in data acquisition in the estuary and ocean. The guidance manual for agency staff and other practitioners sounds useful. The proposal has excellent information transfer built in as well as thorough evaluation of the utility of its products. The cost is relatively low.

During discussion of the proposal the ISRP noted that the sponsors could have better discussed possible limitations of the technology and potential benefits to the Clearwater restoration efforts.

ProjectID: 22055

Develop a Nutrient/Food-Web Management Tool for Watershed-River Systems
Sponsor: Battelle Memorial Institute
Total Request: $329,000
Target Species: Anadromous Fish
Short Description: Develop a integrated analysis system by linking state-of-the-art watershed and river models together with nutrient and food-chain component models. The system can be used to perform assessments of nutrient supplementation schemes.
Rank: 11; Yes - A
Comments:
The ISRP was favorably impressed by this well written innovative nutrient proposal. It is different than the other nutrient proposals in that it does not propose to actually supplement with nutrients. Instead, it proposes to help determine whether a system is nutrient deficient and assess what is required, a step the ISRP supports and judges necessary before informed decisions can be made. If the region is going to supplement with nutrients, then this type of model will be beneficial and should be universally available.

ProjectID: 22064

Reintroduction success of steelhead from captive propagation and release strategies
Sponsor: National Marine Fisheries Service, Resource Enhancement and Utilization Technologies Division
Total Request: $262,350
Target Species: Steelhead
Short Description: Utilize fish behavior and DNA analyses to evaluate reproductive success and offspring fitness of steelhead from different captive propagation strategies.
Rank: 12; Yes - A
Comments:
This proposal is innovative because it evaluates free-living sequestration (isolation of steelhead in a lake for generations) as an innovative method of captive rearing. The design of the ongoing breeding experiment allows a comparison of breeding success of fish representing: 1) a 'traditional' strategy of captive rearing in which anadromous steelhead were taken into artificial, one-full-life-cycle culture, 2)
a sequestration strategy in which steelhead were isolated in a lake for many generations, and 3) intercrosses between sequestered and free-ranging anadromous steelhead from the same population.

The design also allows evaluation of captive reared descendents of sequestered fish and intercrosses of them with fish from the other strategies. This proposed project would extend the ongoing research to test hypotheses pertinent to potential applications in the Columbia River—whether these strategies of captive breeding can have effects on fitness of individuals who are products of the strategies. Breeding success will be measureable in mesocosms, arenas, both by behavioral analysis and by genotypically identified pedigrees.

The ISRP notes that part of this work is out of the Columbia basin. However, the proposed project provides an opportunity to take advantage of work underway in Alaska to answer basic questions about captive brood stock approaches that would have application in the basin. This proposal is attractive and germane because it examines the effects of hatchery rearing on fitness - a continuing, plaguing uncertainty in the basin's artificial production programs.

Comments on Proposals Ranked in the Top 20 and "Yes-B"

ProjectID: 22019

Use a Multi-Watershed Approach to Increase the Rate of Learning from Columbia Basin Watershed Restoration Projects
Sponsor: ESSA Technologies Ltd.
Total Request: $295,036
Target Species: Anadromous fish, resident fish
Short Description: Compile and compare data from restoration projects in multiple watersheds to enhance the rate of learning about effects of watershed restoration programs on aquatic populations and optimize design of future restoration projects and associated monitoring.
Rank: 13; Yes - B
Comments:
This proposal is somewhat innovative in that it applies existing techniques to a new situation: the comparison of watershed restoration performance. It treats the many different watershed projects as a multi-watershed experiment from which lessons can be learned even though controls are missing. This project would serve a valuable role in the basin in providing a unique and potentially valuable analysis of restoration projects and would provide useful information for subsequent project management. A significant contribution would seem to be the continuation of the PATH Experimental Management philosophy in evaluation of watershed restoration procedures. The PIs are well qualified, and clearly have a grasp of FWP issues and the contents of ISRP reports. The sponsor demonstrates understanding of the role of experimental design, randomization, sampling units, etc. that is required in order to compare alternatives in watershed restoration projects, but does not provide detail on the statistical analysis to be performed. The proposal is presented as a multiyear project.

ProjectID: 22060

Assess Feasibility Of Enhancing White Sturgeon Spawning Substrate Habitat, Kootenai R., Idaho
Sponsor: U. S. Geological Survey/Kootenai Tribe of Idaho
Total Request: $300,000
Target Species: Kootenai River white sturgeon (ESA) population and other native fish
Short Description: State-of-the art methods used to design scenarios and assess feasibility to enhance white sturgeon spawning substrate habitat, Kootenai R., ID. Study temporal/transient changes in sediment type, bed form, and erosion/deposition of spawning substrate.
Rank: 14; Yes - B
Comments:
The proposal would use the USGS bathymetry survey system to evaluate bedform movement in sturgeon spawning areas, with the idea being to develop better physical characterizations of habitat that would be used to foster improved egg incubation. The technology allows computer animation of bedform movement. Sediment transport

modeling would then be used to allow prediction of conditions suitable for control of characteristics to produce optimal spawning and incubation habitat. From a physical sciences standpoint this is a solid proposal with fairly innovative sediment science, but reviewers are not convinced this is the best way to assess and address white sturgeon spawning limitations.

This is an innovative proposal for the basin even though the same type of sediment dynamics study has been conducted elsewhere. However, the case is not made persuasively that sediment dynamics controls white sturgeon spawning and egg survival. It would seem important to make the biology-sediment linkage more strongly before undertaking a very detailed sediment profile and transport study. Alternative hypotheses for sturgeon spawning should be explored before this work is initiated. The ISRP has seen this proposal or slight modifications twice before in previous proposals for work on white sturgeon spawning in the Kootenai River. Because this work was once part of the Kootenai River white sturgeon studies, but has not been continued in that project suggests that support from the biologists may be lacking or at least lukewarm.

The Panel considers the proposal fundable at medium priority.

ProjectID: 22056

Development of Salmon DNA Finger Printing Microarrays
Sponsor: Battelle, Pacific Northwest Division
Total Request: $400,000
Target Species: Chinook, Coho, and Steelhead
Short Description:
Rank: 15; Yes - B
Comments:
Innovative, apparently with a high probability of success. If successful, the technique may offer widespread applicability. This is a technically robust proposal with very competent personnel. The study proposes to bring an innovative new genetic assay technique into Columbia River salmon management and provide "real - time" analysis. Most genetic analyses require weeks or months for turn around time, rather than hours or a few days as this technique promises. The technique also provides high genetic resolution, down to the family line or pedigree level usually associated with DNA fingerprinting.

While technically, the proposal was one of the two or three best proposals in the review, it suffered from weak ties to the Fish and Wildlife Program and little discussion of specific management applications. The PI's overstate both the level of inference that will be provided by the genetic results (i.e., fitness, stock ID, etc.) and the way the technique will be used by managers to inform and guide fisheries decisions. One would hope that this will be the case someday, but presently it is not the case. Despite the proposal's claim, most fisheries managers we know will not "make near-real time decisions on hydropower operations based on genetic (chip-based) stock identification data."

The proposal would probably have fared better in the review process had it proposed to develop the DNA microarray for specific populations or taxa, such as chinook and steelhead, and to have tested its efficacy on specific steelhead stocks associated with hatchery broodstock development or with an ongoing supplementation program. The assay probably has great potential in supplementation studies to track hatchery and wild stocks and to assay genetic interactions between them.

ProjectID: 22043

Enhancing instream flow by adopting best agricultural land management practices
Sponsor: Washington State University
Total Request: $135,305
Target Species: Steelhead, Sockeye, Spring/Summer-run Chinook, Fall-run Chinook and Bull Trout
Short Description: Increase groundwater infiltration during high precipitation periods by adopting proper agriculture practices. Use soil profile and aquifers to temporarily store water for subsequent release into the streams for flow enhancement and temperature control
Rank: 16; Yes - B
Comments:
This proposal is similar to 22010 to the extent that it would investigate use of winter recharge of groundwater on agricultural lands to sustain summer and fall low flows, and to reduce summer stream temperatures. Unlike 22010, this is essentially a proposal for a (field and modeling) feasibility assessment; thus, the panel felt this was more appropriate to this innovative solicitation. However, the proposal has two critical deficiencies. First, like 22010, it says little about water rights issues. If such a project were successful, what reason is there to expect that the water would stay in the stream? Second, the proposal seems to emphasize more the role of tillage practices (no till) in increasing recharge. The panel was somewhat skeptical that changes in tillage practices alone would be enough to make much difference to summer flows. If this could be shown to be a major factor, it seems curious that there is no involvement by USDA. The heavy emphasis on agricultural practices, relative to stream temperature effects, seemed curious. This aspect of the proposal might have been more convincing had it been substantiated with pilot modeling or field results.

ProjectID: 22037

Locate chum and fall chinook salmon and redds in deep and turbid water using an acoustic camera
Sponsor: U.S. Geological Survey / Biological Resources Division
Total Request: $164,334
Target Species: Chum salmon, fall chinook salmon
Short Description: Collect habitat information from fish spawning at Ives Island below Bonneville Dam to relate habitat availability to river discharge to allow for prediction of available habitat at a larger spatial scale.
Rank: 17; Yes - B
Comments:
This proposal to test an innovative piece of equipment is sound. The new acoustic camera, just recently available commercially, could be used to locate and monitor redds in deep and turbid water throughout the Columbia and Snake Rivers. However, the critical need for use of the camera to identify salmonid spawning below the Columbia River dams is not convincingly presented. What are the benefits compared to what is currently being used?

Questions and concerns:
- Why cannot this project be conducted under the current contract 99-003 "Evaluate spawning of fall chinook and chum salmon just below the four lowermost Columbia River mainstem dams" being conducted by the USGS?
- Will the camera be of use in location and monitoring of redds during high water conditions in smaller streams?

ProjectID: 22010

Echo Meadow Project - Winter Artificial Recharge to Cool Rivers
Sponsor: IRZ Consulting
505 East Main
Hermiston, OR 97838
Total Request: $660,714
Target Species: Coho, Spring & Fall Chinook and Steelhead
Short Description: Document the linkages between winter artificial recharge of groundwater to the return flows and river temperature cooling in a 13000 acre study area. Collect & analyze data that shows this method may be the sure-set way to reduce river water temperature
Rank: 18; Yes - B
Comments:
This is an interesting proposal to use cyclic storage to supplement summer streamflows with cooler water stored in aquifers. It is innovative in the sense that the approach, while not new or novel for water management purposes, has apparently not previously been used in the basin for habitat improvement. The proposal has three major shortcomings. First, the cost exceeds the limits specified in the RFP, which makes the proposal non-responsive. Second, no attention is given to water rights considerations. What reason is

there that, if the project were implemented and the claimed benefits (in terms of water temperature and increased low flows) were realized, that the water would not simply be diverted for agricultural use? Unless this hurdle was overcome first, there would be no point in proceeding. Third, the proposal would proceed directly to implementation, without prior feasibility studies (which might have been more appropriate to this solicitation). For these reasons, this project should be given low priority for funding.

ProjectID: 22005

An experimental evaluation of nutrient supplementation on juvenile salmonid fish abundance in nutrient-limited streams
Sponsor: Department of Biological Sciences, Idaho State University
Total Request: $398,246
Target Species: steelhead trout, chinook salmon, bull trout, aquatic invertebrates, periphyton
Short Description: Evaluate the effect of low-level fertilization on the abundance of organisms in nutrient deficient streams and quantify changes in space requirements and habitat quality for salmonid fishes.
Rank: 19; Yes - B
Comments:
Although this is a sound proposal with a good experimental design, it is not truly innovative because the work has, for the most part, been done in the Keogh River and published in the Canadian Journal of Fisheries and Aquatic Science. It is marginally innovative in that it meets the solicitation criteria that it has not been done in the Columbia. Nitrogen and phosphate is limiting and the addition of fry to the experimental sites will aid the evaluation if they distribute evenly. There is more detail on mechanism (e.g., territory size, feeding) than is necessary in a management experiment but there are also scientific benefits in utilizing graduate students, so there is a trade-off. This is an appropriate proposal for academic research on the mechanisms of fish response to increased food availability, the role of nutrients in the stream ecosystem, and the functional relationships through lower trophic levels. It is presented by well-qualified investigators. The level of detail proposed may not be required in a test of the application of nutrient addition to Columbia River systems as a recovery tool.

ProjectID: 22038

Design and assessment of artificial spawning habitat for kokanee in Lake Pend Oreille, Idaho
Sponsor: University of Idaho-Dept. of Fish & Wildlife and Dept. of Civil Engineering
Total Request: $286,809
Target Species: kokanee
Short Description: Design and assessment of artifical spawning habitat modules for kokanee in Lake Pend Oreille.
Rank: 20; Yes - B
Comments:
This is an innovative proposal for enhancing kokanee spawning in some shore areas in Lake Pend Oreille, in the face of winter drawdowns. Although constructed spawning platforms have been used elsewhere, this proposal is innovative in that the platforms are cleanable to remove accumulated silt. However, the effectiveness of the artificial substrate for solving the overall problem of lack of target adult kokanee abundance is not fully persuasive, for other limiting factors besides spawning are likely limiting kokanee production in Lake Pend Oreille - e.g., hatchery fish are released with unsuccessful results.

The portable characteristics are especially innovative. The technique, if proven successful, would be applicable to Lake Roosevelt, which has similar problems. All aspects appear technically sound and do-able. The cost is reasonable for the work to be accomplished. However, it would have been nice to have seen this approach already field-tested with a small prototype before plunging in at this scale.

Despite some reservations, the Panel ranked this proposal at 20.

Comments on Proposal Rated "Yes-B" but not in the Top 20

ProjectID: 22008

Evaluate and compare the effects of nutrient supplementation from carcasses and fertilizer on fish growth and survival and lower trophic levels.
Sponsor: Utah State University, Utah Cooperative Fish and Wildlife Unit, Logan, Utah.
Total Request: $377,700
Target Species: chinook, steelhead, bulltrout, and cutthroat
Short Description: Evaluate the relative effectiveness of inroganic fertilizer and carcass introductions in increasing fish growth and survival (anadromous and resident fish) and track and understand the relative importance of different pathways of energy transfer.
Rank: Yes - B
Comments:
This is marginally innovative in that it has not been done in the Columbia River Basin. This proposal intends to analyze carcasses versus inorganic nutrients. Utah's contribution to the nutrient addition experiments call includes a comparison of carcass

and inorganic nutrient additions in a controlled and treated field trial over two years. However, the comparison may be confounded by the difference in time of placement of carcasses (fall) and inorganic N and P (spring and summer, assumed). Little evidence of a nutrient limitation was provided (i.e, evidence that N and/or P was at low or undetectable ppm). The detailed invertebrate work is probably unnecessary if the target is smolt yield or resident fish growth and abundance. Recent literature on nutrient briquettes and British Columbia studies, including work published ten years ago, was not referenced.

ProjectID: 22014

Improving and Extending the Snake River Germplasm Repository
Sponsor: University of Idaho
Total Request: $378,841
Target Species: chinook salmon; steelhead
Short Description: The fertility of sperm cryopreserved in large (5 ml) straws will be improved and the female germplasm of shinook salmon will be cryopreserved and stored.
Rank: Yes - B
Comments:
This is a collection of three projects, one of which (fine-tuning sperm cryopreservation protocols) is not innovative. The others (cryopreservation and transplantation of female germplasm) are extensions of techniques from other organisms and are innovative in the context of Pacific salmon. However, the panel was concerned that much of the work on female germplasm has a fairly small chance of meaningful success at this point in time, although recognizing that PI Cloud demonstrates preliminary progress in developing the innovative techniques and is acknowledged as the most competent expert on the preservation of salmon germ cells both regionally and nationally. The project is not explicitly tied to Subbasin or Regional Plans, but one can surmise that the techniques would be valuable for ESU's in extremis. Whether that potential need warrants the expenditure is debatable and the reviewers questioned that the need was of highest priority.

ProjectID: 22015

Develop a Spatially-based Internet Portal that Integrates Distributed Northwest Fish, Wildlife, and Plant Data for On-line Mapping, Query, & Analysis
Sponsor: Northwest Habitat Institute
Total Request: $389,121
Target Species: This proposal has the potential to address all fish and wildlife species found within the Columbia River Basin
Short Description: Develop an Internet portal as an information delievery system where distributed Northwest animal and plant data are seamlessly integrated at one public site with the well-known spatially based Microsoft's Terra Server in a user oriented fashion.
Rank: Yes - B
Comments:
This proposal may be premature to the regional effort to establish a data management system. Such a site should provide valuable information sharing to the various parties in the Columbia River Basin. The method does not necessarily satisfy the criteria for an

innovative project in that the sponsor would investigate the design of a distributed database based on Microsoft's Terra Server. However, it is apparently a new application of the server to develop an integrated information system for biological data in the Pacific Northwest. It is not clear that this proposal is what is needed at this time. The ISRP recommends that the Council consider the issues in data archiving and distribution needs, and then issue a targeted request for proposals in this area.

Specific Questions and Concerns:

- Who would maintain the site upon completion of the project? Where would it be housed in the future?
- What would it cost to maintain the site?
- The author implies that there is no limit to the amount of data that the Northwest Habitat Institute is willing to host. Is this true?
- There is no assurance that agencies will be cooperative in working out data retrieval standards and query mechanisms to get the various web servers to communicate.
- There is good evidence of cooperation by Microsoft Corporation and the sponsor can probably do the proposed work. They do have good models to follow based on work done by the Conservation Management Institute's Fish and Wildlife Information Exchange.
- Availability of meta-data will continue to be a problem for many data sources.

ProjectID: 22018

Development of an Automatic System to Prevent Salmonid Diseases
Sponsor: Washington Department of Fish and Wildlife
Total Request: $400,000
Target Species: Hatchery chinook, coho, sockeye and steelhead
Short Description: Develop prototype machine that will automatically vaccinate juvenile salmon, without human handling or anesthetic
Rank: Yes - B
Comments:
The proposal suggests that this development of an automatic vaccination robot is justified by the impending availability of BKD vaccine but there are no references to any authority that such a vaccine is or will be available. There's no analysis in the proposal of the extent of BKD and its effects on supplementation and restoration, so the argument that it is 'critical' to develop an automated delivery system is not supported. It is not clear that the product of the proposed development will be freely or reasonably available; it will apparently be patented by a private company, NWMT and sold or rented to the public agencies who need it. This robot may be needed but the proposal does not adequately convey the need to raise this above other innovative proposals.

ProjectID: 22029

Evaluate the ecological role of marine derived nutrients in areas artificially blocked to anadromous fish migrations.
Sponsor: Confederated Tribes of the Colville Reservation
Total Request: $391,212
Target Species: Kokanee (*Oncorhynchus nerka*) Rainbow trout (*O. mykiss*)
Short Description: This study proposes to simulate anadromous fish carcasses with artificial fertilizer and assess the affects to resident/adfluvial salmonids. Results will be applicable throughout the west in anadromous, non-anadromous, and blocked areas.
Rank: Yes - B
Comments:
This is marginally innovative in that it has not been done in the Columbia and that it would be applied to a resident/adfluvial population. This would be a useful implementation in the subbasin, if so identified in subbasin plans. As a test for resident trout and some kokanee, this is an adequate study. However, detailed study of response in all of the lower trophic levels is likely unnecessary. Trough experiments are more appropriate for the latter studies, at a much smaller and less costly scale.

ProjectID: 22030

Delayed mortality: Assess cumulative effects of multiple, sublethal stressors on the physiological health of downmigrating juvenile salmonids
Sponsor: Oak Ridge National Laboratory
Total Request: $342,000
Target Species: Chinook salmon, steelhead/rainbow trout and other migratory salmonids
Short Description: Conduct laboratory experiments to determine cumulative effects of stressors such as gas supersaturation, physical trauma, and elevated temperatures on the physiological health and condition of downmigrating juvenile salmonids leading to delayed mortality
Rank: Yes - B
Comments:
This proposal is an innovative approach to an important problem. The project is fundable if some salmon can be added to some of the treatment levels to calibrate the study (e.g., some salmon might be added to the control and high stress treatments). Presently the study plan relies on hatchery-reared rainbow trout. The biggest issue is recognized by the sponsors, namely that trout not salmon would be used as the test units and the study would not be conducted in the Pacific Northwest. They have an excellent facility for conduct of the study. The proposal lacks details in the design in that it never comments on what the physical stressor is and how the recovery environment is managed.

Specific Comments and Questions:

- The proposed study provides a logical laboratory approach to help reduce the nagging uncertainty of the existence of delayed mortality for emigrating juvenile salmon in the Columbia River.

- The sponsors should recognize the study as a 2 X 3 cubed factorial experiment: 2 levels for constant and intermittent exposure and 3 levels (control, low and high) for each of gas, temperature and trauma. This results in 2 x 3 cubed = 54 treatment combinations, perhaps using blocks of 8 units (tanks) over time.
- The sponsor may be trying to do too much in a pilot "innovative" project. For example, it may be better to show some effects then study the intermittent exposure level?

ProjectID: 22034

Influence of marine-derived nutrients on juvenile salmonid production: a comparison of two nutrient enhancement techniques
Sponsor: U. S. Geological Survey, Biological Resources Division
Total Request: $236,270
Target Species: Various species of Salmonids, including but not limited to, spring chinook salmon, coho salmon, and steelhead. Also Pacific lamprey.
Short Description: Evaluate the influence and efficacy of marine-derived nutrient influx via either adult salmonid carcass decomposition or fertilizer media on the productivity of selected Columbia River basin tributaries and stream-rearing salmonids.
Rank: Yes - B
Comments:
This proposal is adequate, but ranks lower than the other nutrient supplementation proposals because it is not fully developed to include a complete study design with selection of study sites. Some aspects of the proposed work repeat efforts of elsewhere and thus may not be required, or may require less effort. The proposal could be improved towards development of a useful project that should commence with pilot experiments and a staircase approach.

ProjectID: 22049

Determine The Feasibility of Combining LIDAR, Computer Modeling, and GIS Techniques To Develop Effective Habitat Actions at the Watershed Scale
Sponsor: Mobrand Biometrics, Inc.
and the Yakama Indian Nation
Total Request: $388,000
Target Species: All salmonids
Short Description: Investigate the feasibility of combining a remote sensing system (LIDAR), landscape computer modeling, and GIS techniques to conduct rapid watershed analysis, and place effective habitat actions on the landscape.
Rank: Yes - B
Comments:
LIDAR data would be collected in the North Fork Teanaway River to identify channel and streamside vegetation characteristics. This is one of three proposals that would make use of LIDAR (airborne laser altimetry) data to obtain detailed information (vertical resolution tens of cm, horizontal resolutions in meters) about streamside vegetation, channel cross-sections, and channel slopes. This is not the best proposal in the group of three – it isn't clear in the proposal how the data would be used, or what the "pilot" nature of the project would be. Various models (wood delivery potential, landslide

modeling, stream temperature) would be used, but there would be no attempt to demonstrate transferability to other sites. The $130k allocated for LIDAR data acquisition is expensive relative to other proposals. The proposed schedule that includes five years for modeling could be more consistent with a proof of the principle approach, which is oriented towards shorter projects.

ProjectID: 22059

Using LIDAR technology for improved riparian vegetation monitoring and stream system water temperature modeling and TMDL development.
Sponsor: Columbia River Inter-Tribal Fish Commission
Total Request: $399,969
Target Species: all salmonids
Short Description: Project is oriented to high quality, geographically extensive, riparian tree data acquisition allowing efficient water temperature modeling and analysis of riparian tree height and cover, key fish habitat quality parameters.
Rank: Yes - B
Comments:
This is one of three proposals (22049 and 22050 are the others) that would make use of LIDAR (airborne laser altimetry) data to obtain detailed information (vertical resolution tens of cm, horizontal resolutions in meters) about streamside vegetation, channel cross-sections, and channel slopes. This is not the best proposal in the group of three. The proposal is not well written, and in particular lacks a clear plan of work. The proposers note that LIDAR data are expensive, but they do not suggest how it might be possible to extend the work beyond a relatively small site without more (expensive) flights. How important is the high resolution topographic data, as compared with streamside vegetation characterization? Would they be better off using high-resolution visible-band remote sensing data? What are the "economically feasible efficient sampling protocols" that are promised? Finally, the budget is confusing.

ProjectID: 22017

Monitor and Evaluate Nutrient Supplementation as a Tool for Increasing Production and Survival of Juvenile Chinook Salmon from Infertile Streams
Sponsor: Paulson Environmental Research, Ltd.
Total Request: $208,628
Target Species: Chinook salmon
Short Description: Develop and implement a study to monitor the effects of nutrient supplementation using statistical methods and adult/parr enumeration and estimates of survival through tagging and recapture.
Rank: Not a stand-alone project
Comments:
This proposal is innovative in that it would analyze nutrient supplementation on chinook salmon. This is not a stand-alone project, since it requires another innovative proposal (we assume 22002) to be funded, and thus raises questions about funding under the $400K cap. An experimental design is explained well, which can be tested for power analysis as more information is obtained. The project proponents to which this connects

would be wise to consider this modeling approach and methods of evaluation with six treatment and control streams with well conceived plans for conducting the study. To do this the "parent" project would need to reduce costs and add the PI of this proposal in the budget. Information on accelerated growth, improved condition factor, parr to smolt survival, etc. will require a time frame likely beyond an adequate evaluation of feasibility of this project for the innovative proposals process.

Comments on Proposals Rated "Yes - C"

ProjectID: 22003

Evaluate Reproductive Status of Salmon & Sturgeon Using Noninvasive Techniques
Sponsor: Department of Animal Sciences, Washington State University
Total Request: $413,320
Target Species: (Acipenser transmontaus) and (Oncorhynchus sp.)
Short Description: Develop ultra sound & endoscopy techniques to measure reproductive status in salmon & sturgeon.
Rank: Yes - C
Comments:
Although ultrasound is currently used in the Columbia basin (e.g., for steelhead smolts by the Yakama Nation), aspects of the techniques proposed are innovative. However, the proposal is not convincing that the work will be sufficiently valuable to restoration of salmon or sturgeon. The proposed budget is excessively devoted to equipment purchases. The investigators' roles are not clearly defined and they do not present evidence (publications) of their qualifying experience.

There are concerns about the proposers' justification for the research. They suggest that the high proportion of salmon males in hatchery populations is a barrier to restoration, referring to the danger and burden of 'extra males'. However, the objective of a supplementation hatchery is to maintain effective breeding number as high as possible, to maximise variance/inbreeding effective population size, which means never excluding a member of the population, male or female, from breeding. Artificial manipulation of sex ratios might have profound deleterious effects on fitness of wild populations in communication with hatchery populations. The proposers assume away these issues without considering them; they cite a paper by Fleming dated 1993, but do not give the full citation so it's hard to know what justification they may be guided by. They also suggest that reducing the number of males in supplemental hatchery releases would ameliorate density dependent ecological effects on wild salmon. There would be no need to screen sexes to ameliorate that effect as amelioration can be accomplished simply by reducing the number of smolts released. Preferring females in smolts at release would exacerbate one form of density dependent interaction, that of competition in space and time among females for redd sites—the most well known form of density dependent interactions in Pacific salmon.

There are also concerns about the likely success of the proposed technique. The proposers' suggestion that ultrasound imaging could distinguish testes from ovaries in immature smolts is not convincingly argued. Perhaps the maturing testes of jacks of some species would be distinguishable. The proposers do not describe their own dissections of smolts and do not give us a basis for comparison of sizes of testes and ovaries for judging their proposal that ultrasound techniques would be able to distinguish the two structures. They suggest that the technique can 'image' the heart valve of a mouse but don't tell us whether that valve is smaller than the diameter of a smolt's gonad.

ProjectID: 22004

Impact of wastewater effluent on Chinook salmon reproduction
Sponsor: Komex-H2O Science, INC.
Total Request: $392,527
Target Species: Chinook salmon (Oncorhynchus tshawytscha)
Short Description: The project objective is to discover the types and concentration of pollutants in wastewater discharged in the Lower Columbia River Basin and Columbia Gorge and the toxicity of selected groups of Endocrine Disrupting Chemicals on Chinook salmon.
Rank: Yes - C
Comments:
A proposal to study endocrine disrupters in the basin as a potential cause of salmon population disruptions is timely. The panel noted that Nagler, (University of Idaho and colleagues, in press) has demonstrated a high proportion of phenotypic females among genotypic males in Columbia River chinook salmon. It seems there is unnatural sex reversal occurring; and the culprit may well be EDC's in wastewater, the subject of this proposal.

However, this proposal lacks many features that would make it high priority for funding. It is a very large project without preliminary work, and without demonstrated preliminary knowledge from published databases about the likely amount of contamination in the River. The proposed methods will not address the objective indicated in the title, i.e. whether or not contaminants are affecting reproduction of salmon; in fact the methods only intend to measure contaminants in blood sera of mature salmon. No research on sex reversal (the pertinent problem) is planned. There is an indication of pertinence of this research to other Fish and Wildlife Program projects but it is a mere listing of titles, not an indication of understanding of the projects or of communication with their staffs. The objectives are not given in the context of a larger goal or vision. The proposers are apparently not aware of research in the Basin on reproduction of salmon, or even aware of the biological effects of EDC's on salmon.). The first objective amounts to a literature search; it should already have been done, at least in an exploratory way.

The methods are either poorly described or misguided. For instance the water sampling protocol indicates that samples would be taken below the Gorge, but the important, vulnerable, at-risk populations of salmon spawn upstream of the Gorge and their embryos are vulnerable upstream of the Gorge.

The proposers have apparently not communicated with the responsible agencies about their ability to collect fish samples, indicating that they assume they would be able to collect animals. This is not necessarily the case. There is no real indication of laboratory methods, of quality control methods, etc. There is no real justification given for not analyzing samples within the region, merely a statement that labs in Europe are more experienced. This may be so, but it was not persuasively demonstrated.

The panel was concerned that the proposers do not plan to openly share their results, which is contrary to the use of public funds. The Panel does not believe this proposal should be funded in its present form.

ProjectID: 22009

Ultrasonic Induced Sonochemical Destruction of Pathogens, Viruses, Nitrates and Other Nutrients and Contaminants From Waste Discharge Streams
Sponsor: Water Services, L.L.C.
Total Request: $775,000
Target Species: Juvenile and Adult Salmonids
Short Description: Develop process for the economical and efficient removal of organic and chemical contaminants from wastewater streams, thereby improving water quality.
Rank: Yes - C
Comments:
The proposal is not strongly presented in several aspects. The first objective of this proposed project is to prepare background materials that would appropriately be part of the proposal itself. Devotion in the project of five people full time for a year seems unwarranted for a machine that is already developed. The proposal refers to the NMFS BIOP which explicitly concerns the detrimental effect of poor-condition hatchery salmon on wild-spawning salmon, with the idea being that treatment of afferent and efferent water from hatcheries would reduce incidence of disease, but there is no quantification of the problem and no suggestion of the value of this technology. The proposal is vague about experimental design, even about the chemical contaminants that would be tested in the machine.

ProjectID: 22011

Demonstrate Proprietary Husbandry System for Musca domestica as Reliable Aquaculture Insect Nutrient Resource
Sponsor: Oregon Feeder Insects Corporation
Total Request: $400,000
Target Species: All salmon, steelhead and trout
Short Description: Demonstrate the scalability of our proprietary system for Musca domestica production, previously used in pet food industry applications, to provided insect material in sufficient quantity and at a reasonable cost as ingredient in juvenile fish diets.
Rank: Yes - C
Comments:
This marginally innovative (but intriguing) proposal would demonstrate the ability to grow huge amounts of housefly larvae on a commercial scale. The larvae would be used

as a salmonid hatchery diet component. This is not a critical problem facing resources in the basin and the proposal does not demonstrate a need in the Fish and Wildlife Program. The information to be gained is proprietary, and thus may not be useful publicly. This is one of several proposals that identify diet deficiency as etiology/precondition for fin erosion, but provide no experimental design for assessing how the insect product could be used to ameliorate the problem.

ProjectID: 22021

Develop Innovative Approaches for Monitoring Bats in the Clearwater Region of Idaho
Sponsor: Idaho Department of Fish and Game
Total Request: $140,430
Target Species: Little brown bat, Yuma myotis, long-eared myotis, fringed myotis, long-legged myotis, California myotis, western small-footed myotis, silver-haired bat, western pipistrelle, big brown bat, hoary bat, Townsend's big-eared bat, and pallid bat.
Short Description: The intent of this project is to develop innovative approaches and techniques for monitoring bats in the Clearwater Region of Idaho as well as to obtain the requisite life history information necessary for constructing predictive models.
Rank: Yes - C
Comments:
The PIT tag portion of this proposal, representing 1/6 of its budget, was innovative in that the writers propose the use of an existing technology in what seems to be a new application to the region on bats. There was no apparent mention of how a similar portion of the budget might indeed be used for "infrared or other new technology". The proposal did not convince reviewers of its potential benefit to wildlife relative to perceived needs.

ProjectID: 22023

Socioeconomic Analysis Tool for Sub-Basin Planning
Sponsor: CH2M HILL
Total Request: $400,000
Target Species: The Council can use the model generated by this project to analyze human effects of strategies directed at any one or all species of concern.
Short Description: The proposed project will develop the Human Effects Sub-Basin Analysis Model (HESAM), a socioeconomic analysis tool that planners can use to help evaluate economic and other human effects when considering fish and wildlife projects in the Pacific Northwest.
Rank: Yes - C
Comments:
This proposal describes an extension of modeling work already done by CH2M HILL under contract to the Council's Human Effects Working Group under the Council's framework process. It was viewed as only marginally innovative, proposing to extend the human effects model to the subbasin level so that it can be used as a decision tool. The modeling approach will draw heavily on techniques used by the U.S. Forest Service and Bureau of Land Management to develop the Fire Effects Tradeoff Model (FETM). The sponsors are currently involved in development for the FETM and state that it is very similar in concept to the HESAM model proposed for this project.

A model analyzing costs associated with various subbasin restoration strategies would be a useful planning tool for assessing alternative approaches on the basis of cost-effectiveness. The scope of the project is large and includes good evaluative review and feedback during model development. A major question concerns the availability of cost data at the subbasin level and the usefulness of the model under various missing data scenarios. The proposal does not describe what work would have to be done - upon completion of the first modeling stage - to develop subbasin models that could be used by FWP decision-makers.

ProjectID: 22024

Alternative Futures and Salmonids in the Lower Columbia River
Sponsor: Washington Department of Fish and Wildlife
Total Request: $200,000
Target Species: Project will focus on overall aquatic habitat conditions, with a focus on chinook, steelhead, coho, and chum.
Short Description: Characterize human build-out scenarios and commensurate impacts on land use/aquatic systems with a focus on examining impacts to salmonids, nutrients, and the "4-Hs" in the lower Columbia River region of WA over the timeframe of 2000-2050, inclusive.
Rank: Yes - C
Comments:
The EDT model constitutes the marginally innovative portion of this proposal. This project would be the model's first application to aquatic systems. The model would project types of human population growth and their impacts on land use and aquatic systems in the lower Columbia River. The proposal presents an interesting idea but fails to present detail on methods, the application of results, and information transfer. Given the type of information that the project is intended to produce there should be much more emphasis placed on the use to which the information will be put, the means by which it will be provided to those who will make planning decisions, and how the data would be made available and preserved. The project is not new to the Columbia Basin. In the sponsor's words "A robust alternative futures project is currently underway in the Willamette Valley of Oregon…."

ProjectID: 22027

Real Time Data Loggers for Monitoring Climate Conditions within a Riparian System
Sponsor: EcoTec
Total Request: $261,220
Target Species: Anadromous and resident fish
Short Description: Stream temperature, air temperature and light sensoring ability within one rugged yet disposable data logger will allow for riparian habitats to be monitored in real time
Rank: Yes - C
Comments:
This is marginally innovative. The proposal would develop a multi-channel data logger including capability for light measurements of riparian cover. In fact much of the project

would be to develop remote measurement for light penetration of riparian vegetation. While such data might be of some use in a few situations, and their real-time aspect would be valuable, they represent a single site. The panel felt streamside surveys or remote imagery would allow better spatial information and therefore be of greater utility to fish and wildlife researchers and managers. Further, no evidence was provided that the product could only be developed if the proposal were funded.

ProjectID: 22036

The Application of Geophysics to Better Define Fall Chinook Salmon Spawning Habitat Use in the Hanford Reach, Columbia River.
Sponsor: Golder Associates Incorporated, Pacific Northwest National Laboratory
Total Request: $240,572
Target Species: Fall Chinook
Short Description: Assess the use of efficient state of the art geophysical technology to better define fall chinook spawning habitat use based upon geomorphological and hyporehic factors.
Rank: Yes - C
Comments:
The proposal would use geophysical techniques (side scan sonar, ground penetrating radar) to determine stratigraphy and lithography of the Hanford Reach. Although the proposed methods are innovative to the extent that they haven't been used elsewhere in the Columbia River basin, some of the work has already been funded by FWP (for several years). For this reason, the project does not appear to fit the requirements of this RFP. The specialized geophysical equipment is already on hand, further arguing against its innovativeness. The panel might have been more favorable if an element of the proposal had sought to transfer what's been learned in the Hanford Reach to other locations, but as it is, no argument is made for broader significance to FWP of the work. Furthermore, the proposal says little about how the results would be used, or what the benefits to FWP would be.

ProjectID: 22040

Ecosystem effects of anadromous salmon
Sponsor: Idaho Department of Fish and Game
Total Request: $396,500
Target Species: salmon, steelhead, bull trout, elk, conifers
Short Description: Compare historic and baseline levels of marine nutrients through analysis of vegetation and deer and elk antlers.
By experimental application of anadromous fish carcasses, describe nutrient transfer vectors in the aquatic and terrestrial food web.
Rank: Yes - C
Comments:
This is interesting as an academic study, but the proposed model is of questionable benefit in rebuilding salmon and steelhead, other than an improved understanding of ecosystem changes, and is really just improving the documentation of the decline. Two hundred carcasses may not provide the results expected (i.e., perhaps not a measurable

response as N and P). Perhaps there are opportunities to link to other carcass or nutrient supplementation projects where several tons are currently placed (e.g., Naches River).

ProjectID: 22041

Using Microbial Fingerprinting to Rapidly Assess Ecosystem Responses to Watershed Restoration Efforts and Assist in Prioritizing Future Activities
Sponsor: Washington State University
Total Request: $403,150
Target Species: Aquatic Ecosystem
Short Description: This project will use microbial fingerprinting to develop a scientifically defensible classification scheme to indicate the biological integrity of potential salmonid habitat throughout the Columbia River Basin.
Rank: Yes - C
Comments:
This proposal is innovative because it proposes to develop a new procedure, microbial fingerprinting, as an indicator of biological integrity of streams. If fully developed the procedure might be a viable competitor to the use of invertebrates or amphibians as indicators of biological integrity and a potential cost-effective means of classifying ecosystem type, health and response to restoration activities. However, the link to the Council's Fish and Wildlife Program is not clearly argued. A microbial index to biological integrity does not seem particularly high priority when viewed against the needs of the Columbia system.

ProjectID: 22044

Develop commercial selective live release fisheries for spring chinook on the Columbia River
Sponsor: Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife
Total Request: $356,794
Target Species: Spring Chinook
Short Description: Develop and evaluate commercial selective live capture fisheries on the Columbia River to provide a fishery where tooth nets are used to catch marked hatchery chinook and unmarked fish are released.
Rank: Yes - C
Comments:
Although marginally meeting the innovative criteria in that the approach has not been implemented in the Columbia Basin, this proposal offers little potential benefit over what is already known. While there is a need for more selective fishing gear to enable the harvest of hatchery stocks while protecting wild stocks, this proposal is innovative only in that it will extend testing of tooth net gear to a context in which it hasn't been tested. It wasn't clear from the proposal why the results of tests elsewhere are not applicable without further testing. Other questions from the panel included why not use live tanks for tagging and release, and why not use a large box trap in the estuary.

The proposal states that there is a particular need to test delayed mortality (and we agree), but the approach described to assess long-term survival only tracks fish between

Bonneville and The Dalles dams with the assumption that survival over this time span represents long-term survival. The proposed work would experiment with 3 different soak times, 2 tooth net mesh sizes, and 1 gill net mesh size. There needs to be better description of the sampling procedure and statistical analysis that would accommodate these various experiments and be able to detect statistically significant differences in treatment effects.

ProjectID: 22048

Integrate Physical and Biological Assessment Models
Sponsor: Mobrand Biometrics, Inc.
Total Request: $96,900
Target Species: Steelhead and chinook
Short Description: Develop and demonstrate the feasibility of one or more advanced tools for bridging physical and biological models that incorporate revolutionary computing approaches, including fuzzy logic, neural networks, and genetic algorithms.
Rank: Yes - C
Comments:
This procedure meets the criteria for innovative research, because the mathematical procedures have not been used for modeling interrelationships of physical and biological parameters in the Columbia Basin. However, the proposal is not particularly well written, relying heavily on jargon without contextual explanation, and being short on methodological detail. The application to the Council's Fish and Wildlife Program is not adequately explained. The methodology is not new and has been under development for over 20 years in the mathematical journals.

Questions and concerns:

- Should this project be funded through the Framework process? It is essentially an enhancement to the EDT method.
- How would the effectiveness of this project be monitored and evaluated?
- A clear description in simple English is needed of how the model will be tested to see whether it matches reality.
- The research team seems rather short on demonstrated research achievements through published research in established peer reviewed journals.

ProjectID: 22051

Characterize Genetic Differences and Distribution of Freshwater Mussels
Sponsor: Confederated Tribes of the Umatilla Indian Reservation
Total Request: $203,386
Target Species: Freshwater mussels
Short Description: Conduct freshwater mussel surveys to assess their status and test for geographical genetic differences among the western pearlshell mussel, Margaritifera falcata.
Rank: Yes - C
Comments:
The proposal is marginally innovative because microsatellite DNA analysis would be used, and it would be the first systematic survey of freshwater mussels at the subbasin

level. Conducting the distribution survey is especially important, when it is believed that mussels may no longer be present. The survey for distribution and abundance portion of the proposal is not innovative and could be done for significantly less money than that requested by the proposal. Genetic analysis is not warranted at this time, but tissues should be collected and archived in the National Biological Service Tissue Repository. Genetic analysis could be done later, if warranted. Why not propose genetic analyses after surveys and sample collections have been accomplished, when some idea of geographic distribution is in hand? The genetic research collaborators/subcontractors were viewed as very competent.

ProjectID: 22052

Sources, Fate and Biological Impacts of Sediments as Part of a Comprehensive Sediment Management Plan
Sponsor: Washington State University, Washington Water Research Center
Total Request: $398,674
Target Species: Steelhead trout, resident rainbow trout
Short Description: Development of an innovative Source Fate Impact Methodology for rapidly identifying sources of sediments, quantifying sediment fate, and statistically analyzing impacts on fish habitat and aquatic biota.
Rank: Yes - C
Comments:
This proposal would use isotope “fingerprinting” methods to identify the source of sediment in Cottonwood Creek, a tributary of the Clearwater. Although the method could potentially be useful in helping to direct sediment control measures, it appears to have shortcomings. First, the proposed study catchment is low elevation, and the source of sediment might logically be readily identifiable as being of agricultural origin. Therefore, the use of such a sophisticated method in this case appears to be overkill – a better study site might be one within which the source of sediment is less apparent. Second, there is no indication in the proposal of how the information generated would be used to help in the design or assessment of ongoing habitat restoration efforts – this is critical, as it is the potential pathway that could benefit FWP should the method prove useful. Finally, the proposal appears to have been hastily prepared, or the authors are not familiar with the study site. There are several Cottonwood Creeks in northern Idaho -- Figure 1 shows the Cottonwood Creek that the text seems to suggest would be studied, but Figure 5 another Cottonwood Creek! Which one is the proposed study site?

ProjectID: 22053

Analyze the historic productivity of Wallowa Lake and its implications for sockeye reintroduction and water quality management
Sponsor: Oregon State University
Total Request: $185,514
Target Species: Sockeye salmon
Short Description: Analyze the recent (100 year) history of primary productivity at Wallowa Lake to inform potential sockeye restoration and kokanee management
Rank: Yes - C
Comments:
This marginally innovative proposal is not likely to be of significant value for sockeye management in the basin. The proposal does not make a convincing case for the concept that ancient historical information on lake productivity, or lack thereof, can be useful in future management of sockeye salmon in the basin. The proposal is extremely site-specific. That lake stratigraphic analysis has not yet been used in the BPA system seems a weak claim for innovation.

Questions and comments on the proposal: Is the introduction of mysid shrimp into the test lake, Wallowa Lake, a major problem in evaluating primary productivity or potential for recovery of sockeye salmon? Could a different lake, say Redfish Lake, be selected? Are two core samples sufficient to establish the spatial variation in the data? Are the results directly applicable to other lakes? If not, what would be required to evaluate carrying capacity, need for fertilization, etc. in another lake?

ProjectID: 22061

Fluid Dynamics and Mechanics of In-Stream Wood Debris
Sponsor: Philip Williams and Associate, Ltd.
Total Request: $221,400
Target Species: All Fish
Short Description: 1:1 scale experimental placement if a large tree into the Henry's Fork of the Snake River. Monitoring and documenting changes in bed formation and flow characteristics. the geomorphic chages will be be used to calibrate 2-D and 3-D models
Rank: Yes - C
Comments:
This is a marginally innovative proposal that would investigate hydraulic characteristics of wood debris in channels to determine longevity, and help in future design of habitat reconstruction efforts. Controlled experiments in Henry’s Fork of the Snake River would endeavor to assess viability of alternative strategies. There is an abundance of information on this subject. No critical purpose would be served by inspecting the details of one structure as proposed here.

ProjectID: 22065

Design & Implement a System-wide Fish, Wildlife & Habitat Conservation Enforcement Web-Based Data Center
Sponsor: Steven Vigg & Company
Total Request: $41,112
Target Species: anadromous salmonids, sturgeon, resident fish, wildlife -- and their essential habitats in the Columbia Basin
Short Description: Develop a Columbia Basin web-based data center to facilitate conservation law enforcement data compilation & analysis and information sharing for enforcement programs, resource managers, and public information & education.
Rank: Yes - C
Comments:
Although a database for law enforcement information is perhaps useful, it is not particularly innovative. The need for such a database is a policy question, rather than a technical one.

Comments on Proposals Rated "Not Innovative"

ProjectID: 22006

Evaluate Use of Small (Nano) Radio Tags to Determine Subadult Bull Trout Population Status In Dworshak Reservoir, N.F. Clearwater River Drainage, ID
Sponsor: Idaho Department of Fish and Game
Total Request: $121,102
Target Species: Bull Trout
Short Description: Evaluate distribution, habitat use, and movement patterns of bull trout (Salvelinus confluentus) in Dworshak Reservoir.
Rank: Not Innovative
Comments:
This proposal does not meet the basic innovation criteria because these nano tags have been used in the basin and their use has become standard practice. There is no clear rationale for the work to benefit fish and wildlife and the study design is inadequate. Methods and procedures to accomplish Objectives 1 and 2 do not appear to be new for the study of bull trout in reservoirs. Also, based on the author's abstract, use of nano radio tags on bull trout in reservoirs would apparently not be unique to this project.

ProjectID: 22007

Develop Population Dynamic Model for White Sturgeon
Sponsor: Idaho Department of Fish and Game
Total Request: $98,761
Target Species: White Sturgeon
Short Description: This project will develop a population simulation model that can be utilized by manager to determine white sturgeon population status for planning purposes that could include responses to varying management alternations.
Rank: Not Innovative
Comments:
This proposal is not innovative. The project apparently builds on existing methodology to modify the inland fishery simulation model to accommodate white sturgeon life history. This proposal is to modify a population simulation model previously developed by the sponsor. It would employ data collected by Idaho Power Company biologists. The proposal does not meet the intent of the council's solicitation for innovative proposals. While the project itself has not been undertaken, similar efforts have been made and these are cited in the proposal. Therefore, while the proposal is for "new" work, it is not innovative because no new concepts or methods are proposed.

ProjectID: 22012

Restoration Of Riparian Zones With Enabling Technology and Grazing Practice Enhancement
Sponsor: Clouston Energy Research
Total Request: $234,000
Target Species: Anadromous
Short Description: Moving solar powered water pumps permits the reduction of riparian impacts by the delivery of water for grazing away from the stream. Benefits to spawning habitat to be proven with innovative remote monitoring.
Rank: Not Innovative
Comments:
It is difficult to determine what is proposed and how it will be evaluated, but it appears to focus on the use of portable solar-powered pumps to provide off-channel water for livestock. This is not innovative. Solar pumps, coupled with fencing, have been in use for a decade and are commonplace in the Columbia Basin. The only hint of innovation might be that the pumps would be portable.

ProjectID: 22016

Anadromous Salmonid Engineered Habitat For Production and Transit
Sponsor: Aquaculture Research Institute, University of Idaho, Moscow, ID
Total Request: $396,740
Target Species: chinook and steelhead
Short Description: Develop (1) prototype engineered rearing habitat for application in areas where habitat has been lost or reduced from river development, (2) test prototype engineered fish passage channel/conduit system for downstream migrant transit around dams.
Rank: Not Innovative
Comments:
This project is actually two proposals that are linked by an unfocused background statement. The proposed engineered rearing habitat is not innovative. It is a slightly modified version of spawning and rearing channels that have been used in the basin for many years, sometimes successfully, and sometimes not, depending on the location, design and operation. For instance, an effective spawning channel is currently used for chum salmon below Bonneville Dam.

The proposed passage channel/conduit for downstream migration around dams is not an innovative idea, although it has not been tested. It has been proposed in different forms for many years but uniformly rejected as not feasible for the uses proposed. A more modest and focused proposal for a test of the passage channel might be appropriate if a suitable site were selected. The present proposal is not fundable.

ProjectID: 22020

Assess Washougal River and its tributaries
Sponsor: Lower Columbia Fish Recovery Board
Total Request: $70,250
Target Species: Chinook, chum, steelhead, sea run cutthroat, and coho
Short Description: Complete Phases 2 and 3 assessment to identify, inventory and map both existing high quality habitat and those at-risk from urbanization in order to develop a list of priority restoration projects.
Rank: Not Innovative
Comments:
We particularly recognize the multi-agency participation in development of this project to be one of its positive elements. While it offers to develop new information for the Washougal River, we feel that it does not meet the council's standard for innovative proposals. The methods and tasks that are described have been employed elsewhere in the basin. It is part of an ongoing project, focuses on augmenting existing data, and does not propose to use innovative techniques.

ProjectID: 22025

Identification and assessment of technologies and methods to census spawning adult population size of spring and summer chinook salmon
Sponsor: Nez Perce Tribe
Total Request: $396,000
Target Species: Chinook Salmon
Short Description: Identification of new and innovative methods to accurately and precisely enumerate chinook salmon spawner abundance.
Rank: Not Innovative
Comments:
The proposal does not meet the requirements of an innovative proposal. It does not propose to develop new procedures and methods for estimation of spawner abundance with a design for monitoring and evaluation of results. The sponsors ask for funds to "Identify all available methods and technologies that would allow for accurate total abundance of spring and summer chinook salmon during the entire run." To be funded, this proposal should identify, discuss, and propose to evaluate an innovative procedure (or procedures) to accurately estimate total abundance of spawners.

The proposal addresses a problem of critical importance in the basin, i.e. enumeration of spawning populations of salmon and steelhead. Innovative approaches are needed to address the problem. While the idea is commendable and ought to be pursued, it does not meet the Council's standards for innovative projects.

ProjectID: 22026

Columbia Basin Interactive Watershed Atlas
Sponsor: Smart Map Imaging
Total Request: $390,425
Target Species: All Fish & Wildlife
Short Description: An Interactive Atlas of the Columbia Basin Watershed System on DVD that incorporates 1-Meter Color Imagery, subbasin data, activities to stimulate local preservation/enhancement projects, and public GIS data. 250 teachers in region would Beta test.
Rank: Not Innovative
Comments:
The panel felt that this proposal, which would provide educators and other public with an electronic atlas of the Columbia Basin watershed system, is not innovative in the sense required by the RFP. Although the proposal outlines a plan, via a series of workshops, to define a product, and subsequently to test it in classrooms, it does not indicate how the final product would be distributed. More importantly, it simply isn't clear that the project would have enough benefits to FWP to justify funding. Furthermore, there are some technical questions as to the source of the data (why is 1 m resolution satellite data necessary, and what would the source be?? – the only imagery of which the panel is aware at this resolution comes from classified sources. Perhaps the proposer means 1 km, at which resolution many land cover products are available?). Finally, the duration of the project isn't specified, nor is the source of funding that would be needed to

maintain the product beyond the project period. The panel noted double counting in the cost-share calculation where a value is placed on the use of the final product in classrooms.

ProjectID: 22028

Design and Coordinate Nutrient Supplementation Evaluations in the Salmon and Clearwater Subbasins, Idaho
Sponsor: Idaho Department of Fish and Game
Total Request: $77,582
Target Species: chinook salmon, steelhead, bull trout, cutthroat trout, resident rainbow/steelhead trout
Short Description: Produce an experimental design for nutrient supplementation investigations that coordinates projects over a number of project sponsors and broad geographic area, and identifies specific information needs so multiple projects are complementary.
Rank: Not Innovative
Comments:
This is not innovative research and is weaker than the other fertilization proposals. It does offer a good suggestion towards development of an experimental design. The ad-hoc committee might be better served by considering a workshop approach (see general comments in the proposal review process) where the question is clearly defined (e.g. inorganic nutrients increase smolt yield), response variables are chosen (e.g., smolt yield), and a method of addressing the question is developed, based on the best available evidence (much of the pertinent literature was missed in this proposal, e.g., Johnston et al 1990) and model approaches to identify key uncertainties

ProjectID: 22031

Evaluation of Two Captive Rearing Methods for Assisting with Recovery of Naturally Spawning Populations of Steelhead and Coho Salmon.
Sponsor: U. S. Fish & Wildlife Service, U.S. Department of the Interior
Total Request: $264,064
Target Species: Steelhead and coho salmon
Short Description: (1) Develop a native broodstock of steelhead via captive rearing to sexual maturity of natural-origin, age 0+ juveniles and (2) short-term rearing of pre-smolt, natural-origin coho salmon to increase survival and provide fish for reintroduction programs.
Rank: Not innovative, but a good proposal.
Comments:
This proposal is not recommended for support through the innovative review process because it does not meet the innovative criteria. It relies on standard practices even though it addresses a long-standing critical uncertainty. It is a well written and well designed proposal that would be of value to the region. Consequently, the project deserves "high priority" support through other venues, particularly for its application to upriver (ID) listed steelhead stocks. The proposal is technically sound, and the PI competent and meticulous. The proposal is particularly attractive because it proposes to

rigorously examine the effects of hatchery rearing on fitness - a continuing, plaguing uncertainty in the basin's artificial production programs.

ProjectID: 22032

Develop a practical method through diet modification to improve quality of hatchery reared steelhead trout and coho salmon.
Sponsor: U.S. Fish and Wildlife Service, Idaho State University
Total Request: $241,000
Target Species: steelhead trout and coho salmon
Short Description: Prevent fin erosion in steelhead and sunburn (steatitis) in coho salmon by providing cost-effective, nutritionally complete, feeds. Current feeds are deficient in essential trace elements.
Rank: Not Innovative
Comments:
While the panel recognizes that fin erosion and sunburn are fish production problems, this proposal was not viewed as being sufficiently innovative because diet modification is standard hatchery practice. The Panel would have been more supportive if the proposal had established priority need for the work relative to Fish and Wildlife Program priorities. Idaho State University was incorrectly identified as a project co-sponsor.

ProjectID: 22035

Renaturalize Functional Floodplain Habitat within the Portland Reach of the Lower Willamette River
Sponsor: ZRZ Realty Company (a Zidell Company)
Total Request: $1,420,500
Target Species: salmonid juveniles, riparian wildlife, aquatic invertebrates
Short Description: Restore river/floodplain habitat diversity in an urbanized, channelized reach of the Willamette R. by adding river alluvium, plant materials and large wood in an existing shallow depositional area. This is one component of a larger project.
Rank: Not Innovative
Comments:
Although the proposal may be worthwhile, the panel was not convinced that implementing urban habitat restoration on a large scale fits the innovative criteria. The habitat restoration technique is not particularly innovative (other than in its magnitude). Even if cost sharing is subtracted from the project it apparently exceeds the funding limit specified in the solicitation package. It may be more appropriate to submit this with the subbasin proposals for this Province.

ProjectID: 22039

Assess the Feasibility of Mainstem Habitat Improvements to Enhance survival of ESA Listed Species
Sponsor: Department of Fish & Wildlife
University of Idaho
Total Request: $216,511
Target Species: steelhead, chinook salmon, sockeye salmon
Short Description: Develop recommendations from mainstem authorities (Universities, Federal and State agencies and tribal) to identify the practicality of making potential habitat improvements to enhance survival of short-term rearing and migrating salmonids.
Rank: Not Innovative
Comments:
This proposal is not innovative. A facilitated workshop to provide recommendations for mainstem habitat work may be a worthy task, but may also be possible through sessions at professional meetings, at least in the developmental stage, which a small task group could then utilize as a basis for more formal proposal development. The proposal presents a good concept, with innovative thought, but remarkably high cost. This proposal does not fit well into the evaluation criteria or process, i.e., it is not an innovative experiment. Nevertheless, an avenue for support for workshops of this type is required (as noted in the Columbia Gorge project review process).

ProjectID: 22045

Habitat/Subbasin Planning Electronic Newsletter
Copyright October 30, 2000, Bill Crampton, 60968 Onyx Street, Bend, OR 97702
Sponsor: Intermountain Communications
Total Request: $119,280
Target Species: Columbia Basin fish and wildlife
Short Description: Deliver by e-mail to policymakers, planners, watershed councils, researchers, stakeholders, and public a twice-monthly electronic newsletter offering information related to regional habitat restoration and subbasin planning coordination
Rank: Not Innovative
Comments:
This proposal to extend the approach used in the well-respected Columbia Basin Bulletin to subbasin watershed planning. While it describes a useful coordination approach, and would probably be of high quality, it is not innovative. It probably should be submitted for regular Fish and Wildlife Program funding.

ProjectID: 22046

Deschutes Subbasin Stakeholder Facilitation - A Pilot Project

Sponsor: TIGERS Success Series
Total Request: $69,000
Target Species: Columbia Basin Fish and Wildlife
Short Description: Locally-driven facilitation of Deschutes Subbasin stakeholders that will create a process and template for local participation in the NWPPC's and Federal Agencies' Subbasin planning and habitat restoration efforts.
Rank: Not Innovative
Comments:
This proposal to apply facilitation to stakeholder processes is not innovative. The project would develop a template for using stakeholder input in subbasin planning based on this pilot effort. This type of proposal probably should be submitted for general funding under the Fish and Wildlife Program.

ProjectID: 22054

Effects of Chronic Disease on Delayed Mortality of Chinook Salmon and Steelhead Trout in the Columbia River Estuary
Sponsor: Oregon State University
Total Request: $393,731
Target Species: chinook salmon, steelhead trout
Short Description: Evaluate the outcome of chronic infections in salmon as they enter sea water and develop methods for predicting pathogen-related delayed mortality in the ocean.
Rank: Not Innovative
Comments:
A well-prepared proposal with a high probability of contributing to recovery, however this proposal is not particularly innovative. The study is relevant to concerns about estuary transition and delayed mortality and consequently funding might be pursued through avenues other than the innovative solicitation process. The personnel are qualified.

ProjectID: 22058

Experimental Selective Fishery Techniques Development, Evaluation, and Coordination
Sponsor: National Marine Fisheries Service, Northwest Regional Office, Sustainable Fisheries Division
Total Request: $400,000
Target Species: Salmon and steelhead species, primarily chinook (Oncorhynchus tshawytscha), steelhead (O. mykiss), and coho (O. kisutch)
Short Description: Design and/or solicit proposals, and coordinate development and testing of selective fishery techniques in the Columbia River Basin, evaluating short- and long- term mortalities of non-target fish encountered during effort directed at harvestable species.
Rank: Not Innovative
Comments:
This proposal focuses on the solicitation and coordination of projects evaluating selective fishing techniques. It describes a useful coordination function, but does not meet the innovative criteria. Coordination per se is not innovative. A single budget figure is provided without any justification for its derivation.

ProjectID: 22062

Evaluate the use of anaerobic digestion to produce nutrient supplements for trout and salmon
Sponsor: Duke Engineering and Services
Total Request: $134,800
Target Species: Salmon and trout
Short Description: Develop environmentally beneficial uses and model for dairy farm manure including salmon and trout nutrient supplement, organic fertilizer, and renewable energy
Rank: Not Innovative
Comments:
This proposal boils down to manufacturing anaerobic composting units using livestock manure, and then "demonstrating the use" of those nutrients produced for at least one fish species. The proposal does not communicate how composting manure would produce nutrient supplements. Reviewers were unconvinced of the feasibility and priority of this effort.

ProjectID: 22066

Live Capture Harvest
Sponsor: Steven Vigg & Company
Total Request: $32,542
Target Species: anadromous salmonids
Short Description: Test feasibility of live capture harvest techniques for anadromous salmonids in the Columbia Basin
Rank: Not Innovative
Comments:
This is not innovative, but is potentially useful in the Columbia River. A decision to implement live capture harvest is a policy decision. The absence of live capture harvest in the Columbia Basin is a socio-political issue, since the gear is prohibited by state law, and, as far as we know, is not permitted by the treaty tribes. Clearly, live capture harvest offers the opportunity to continue to fish in areas with mixed stocks of fish, where the target stock is abundant, but endangered or threatened stocks are taken as incidental catch. As for the technical issue, much information is available on live capture technology, and the subsequent survival of released fish. A summary of such information might be useful in addressing the policy issue.

Attachment 1. ISRP Review Criteria

PART I: Innovative Criteria Screen

Is the proposed project innovative?

Does the proposed project offer a method or technology designed to directly benefit fish and wildlife, that (1) has not previously been used in a fish or wildlife project in the Pacific Northwest, or (2) although used in other projects, has not previously been used in an application of this kind. **(YES/NO) _____**

If yes, provide scores on Part II below

PART II: Ranking Criteria

1. Technical and Scientific Background

Is there an identified problem related to fish and wildlife in the Basin? Does the proposal adequately explain (with references) the technical background and logical need to address the problem to benefit fish or wildlife? (0=no explanation; 1=poorly defined problem; 5= adequately defined problem; 10=highly persuasive, clearly defined problem) **SCORE (0-10)_____**

2. Rationale and Significance to Regional Programs

Does the proposal demonstrate a clear relationship to specific objectives of the Council's Fish and Wildlife Program, NMFS Biological Opinions or other plans? (0=no explanation; 1=poorly defined problem, not associated with Programs, 5= significance to subbasin summary and regional plan; 10=well associated with a high priority in a subbasin summary and regional plan.) **SCORE (0-10)_____**

3. Relationships to Other Projects

Does the proposal put the work into the context of other work funded in the wish and wildlife program? Do the innovative techniques and methods offered by this proposal have application to other Fish and Wildlife Program projects? Does this proposal include collaborative efforts with similar projects, even if not part of an overall joint plan? (0=no effort to document or collaborate, 3=minimal linkage or rationale, 5=clear application of innovative technique to ongoing efforts and projects, strong collaborative effort with logical allocation of effort and linkages described, or full rationale why linkages are not appropriate).
SCORE (0-5)_____

4. Proposal Objectives, Tasks, and Methods

A. Objectives

Does the proposal have clearly defined and measurable objectives (whenever possible in terms of measurable benefits to fish and wildlife) with specific timelines? Are the objectives tied to those in the fish and wildlife program? Do the objectives and associated timelines and budgets ensure that the proposed innovation will be sufficiently tested to determine its potential benefit to fish and wildlife without further funding? (0=no explanation; 1=poorly explained with poor match to subbasin objectives, explained as tasks where could be in biologically measurable terms; 5=adequately explained in terms of measurable benefits to fish and wildlife management, with timelines, and assurances that the innovation will be adequately tested with proposed budget; 10=clearly explained with close match to management objectives and when possible stated in biologically measurable terms with specific timelines, with adequate testing with proposed budget.) **SCORE (0-10)_____**

B. Methods

Are the methods adequately described, innovative and appropriate? Are they based on sound scientific principles? Does the project offer innovative techniques and methods that will further the understanding of fish and wildlife ecology, correct a specific problem in the basin, or broaden and better define the spectrum of management options? Is the project or experimental design reasonable and defensible in techniques and resources? (0=no Is the project or experimental design reasonable and defensible in techniques and resources? (0=no explanation or scientifically unsound; 1=poorly explained or poor techniques; 10=adequately explained, sound and innovative techniques; 15=clearly explained with promising innovative techniques and the best available scientific information)

SCORE (0-15)_____

C. Monitoring and Evaluation

Does the proposal include provisions for monitoring and evaluation of results (in the context of the objectives) that apply at the project level? (0=no explanation; 1=poorly explained, will not allow for determination if the project met its objectives; 5=adequately explained and will allow for determination if project met its objectives; 10=clearly explained, will allow for determination of success or failure of the project, inform adaptive management decisions, and be applicable to other efforts)

SCORE (0-10)_____

5. Facilities, Equipment, and Personnel

Are the facilities and personnel appropriate to achieve the objectives and timeframe milestones? (0=no explanation; 1=poorly described or inadequate; 3=reasonable; 5=exceptionally unique personnel and facilities for the work) **SCORE (0-5)_____**

6. Information Transfer

Does the proposal include explicit plans for how the information, technology, etc. from this project will be disseminated and used? Are methods and procedures for collection of monitoring data (i.e., metadata) adequately described? Are plans for release and long-term storage of data and metadata adequate? (0=no explanation; 1=poorly explained and inadequate dissemination given the importance of the information generated; 3=adequate plan for the information generated; 5=excellent plan for the information generated, e.g. included in usable format on regional website, peer review journal. **SCORE (0-5)_____**

7.A. Benefit to Fish and Wildlife (Proposal as a whole)

Will the proposed project benefit target species/indicator populations, as an individual project or as a critical link in a set of projects? Will the benefits persist over the long-term and not be compromised by other activities in the basin? (0=no benefit; 5=likely benefits but short-term; 10=some benefits that will persist; 15=demonstrated significant benefits that will persist over the long-term)

SCORE (0-15) _____

7.B. Will the project effect other non-target species? Does the project demonstrate that all "reasonable" precautions have been taken, based on the best available science, to not adversely affect habitat/populations of native biota? (-10= adverse effect and precautions not taken; 0= no adverse effect; or potential adverse effects and adequate precautions proposed; 5=demonstrated benefits to non-target species, habitat, populations.) **SCORE (-10 to 5) _____**

TOTAL SCORE: ____ of 90

Consistency with Power Act Amendment Criteria:

1) SOUND SCIENCE PRINCIPLES (all proposal)
2) CONSISTENT WITH PROGRAM (criterion 2)
3) BENEFIT TO FISH AND WILDLIFE (all proposal)
4) CLEARLY DEFINED OBJECTIVES AND OUTCOME (criterion 4a)
5) PROVISION FOR M&E OF RESULTS (criterion 4c)

Attachment 2. Table of Proposals Sorted by Rank, Evaluation Category, and Project Number

Project	Title	Sponsor	Total Request	ISRP Rank	Page
22001	A Feasibility Study for Pacific Ocean Salmon Tracking (POST)	Kintama Research Corporation	$228,600	1; Yes - A	9
22013	Genetic sex of chinook salmon in the Columbia River Basin	University of Idaho	$99,736	2; Yes - A	10
22063	Determination of difficult passage areas, migration patterns and energetic use of upriver migrating salmon and steelhead	Pacific Northwest National Laboratory	$319,542	3; Yes - A (prefer to fund through Gorge Province)	11
22002	Influences of stocking salmon carcass analogs on salmonids in Columbia River tributaries	WDFW, Bio-Oregon, Shoshone-bannock Tribe, NMFS, Yakama Nation, Weyerhaeuser Co.	$399,829	4; Yes - A	11
22022	Using Induced Turbulence to Assist Downstream-Migrating Juvenile Salmonids	Washington State University	$219,923	5; Yes - A	12
22050	Habitat Diversity in Alluvial Rivers	Confederated Tribes of the Umatilla Indian Reservation	$319,860	6; Yes - A	13
22033	Evaluate new methodologies for monitoring Pacific salmon and steelhead: methods for evaluating the effectiveness of restoration and recovery programs	U.S. Fish & Wildlife Service	$353,376	7; Yes - A (Fund only at a pilot-scale level to evaluate new tags)	13
22047	Salmonid response to fertilization: an experimental evaluation of alternative methods of fertilization	NMFS/ Northwest Fisheries Science Center	$400,000	8; Yes - A (Project could be reduced in scale and budget)	14
22042	Evaluate the effects of nutrient supplementation on benthic periphyton, macroinvertebrates, and juvenile sturgeon in the Kootenai River	Kootenai Tribe of Idaho	$170,635	9; Yes - A	15
22057	Waterbody and Aquatic Habitat Characterization Utilizing High Resolution Satellite Imagery and Aerial Imagery	Teasdale Environmental Associates	$126,371	10; Yes - A	16
22055	Develop a Nutrient/Food-Web Management Tool for Watershed-River Systems	Battelle Memorial Institute	$329,000	11; Yes - A	16

Project	Title	Sponsor	Total Request	ISRP Rank	Page
22064	Reintroduction success of steelhead from captive propagation and release strategies	NMFS, Resource Enhancement and Utilization Technologies Division	$262,350	12; Yes - A	17
22019	Use a Multi-Watershed Approach to Increase the Rate of Learning from Columbia Basin Watershed Restoration Projects	ESSA Technologies Ltd.	$295,036	13; Yes - B	18
22060	Assess Feasibility Of Enhancing White Sturgeon Spawning Substrate Habitat, Kootenai R., Idaho	USGS/ Kootenai Tribe of Idaho	$300,000	14; Yes - B	18
22056	Development of Salmon DNA Finger Printing Microarrays	Battelle, Pacific Northwest Division	$400,000	15; Yes - B	19
22043	Enhancing instream flow by adopting best agricultural land management practices	Washington State University	$135,305	16; Yes - B	20
22037	Locate chum and fall chinook salmon and redds in deep and turbid water using an acoustic camera	USGS/BRD	$164,334	17; Yes - B	21
22010	Echo Meadow Project - Winter Artificial Recharge to Cool Rivers	IRZ Consulting	$660,714	18; Yes - B	21
22005	An experimental evaluation of nutrient supplementation on juvenile salmonid fish abundance in nutrient-limited streams	Department of Biological Sciences, Idaho State University	$398,246	19; Yes - B	22
22038	Design and assessment of artificial spawning habitat for kokanee in Lake Pend Oreille, Idaho	University of Idaho	$286,809	20; Yes - B	23
22008	Evaluate and compare the effects of nutrient supplementation from carcasses and fertilizer on fish growth and survival and lower trophic levels.	Utah State University, Utah Cooperative Fish and Wildlife Unit, Logan, Utah.	$377,700	Yes - B	23
22014	Improving and Extending the Snake River Germplasm Repository	University of Idaho	$378,841	Yes - B	24
22015	Develop a Spatially-based Internet Portal that Integrates Distributed Northwest Fish, Wildlife, and Plant Data for On-line Mapping, Query, & Analysis	Northwest Habitat Institute	$389,121	Yes - B	24

Project	Title	Sponsor	Total Request	ISRP Rank	Page
22018	Development of an Automatic System to Prevent Salmonid Diseases	Washington Department of Fish and Wildlife	$400,000	Yes - B	25
22029	Evaluate the ecological role of marine derived nutrients in areas artificially blocked to anadromous fish migrations.	Confederated Tribes of the Colville Reservation	$391,212	Yes - B	26
22030	Delayed mortality: Assess cumulative effects of multiple, sublethal stressors on the physiological health of downmigrating juvenile salmonids	Oak Ridge National Laboratory	$342,000	Yes - B	26
22034	Influence of marine-derived nutrients on juvenile salmonid production: a comparison of two nutrient enhancement techniques	U. S. Geological Survey, Biological Resources Division	$236,270	Yes - B	27
22049	Determine The Feasibility of Combining LIDAR, Computer Modeling, and GIS Techniques To Develop Effective Habitat Actions at the Watershed Scale	Mobrand Biometrics, Inc. and the Yakama Indian Nation	$388,000	Yes - B	27
22059	Using LIDAR technology for improved riparian vegetation monitoring and stream system water temperature modeling and TMDL development.	Columbia River Inter-Tribal Fish Commission	$399,969	Yes - B	28
22017	Monitor and Evaluate Nutrient Supplementation as a Tool for Increasing Production and Survival of Juvenile Chinook Salmon from Infertile Streams	Paulson Environmental Research, Ltd.	$208,628	Not a stand-alone project	28
22003	Evaluate Reproductive Status of Salmon & Sturgeon Using Noninvasive Techniques	Department of Animal Sciences, Washington State University	$413,320	Yes - C	29
22004	Impact of wastewater effluent on Chinook salmon reproduction	Komex-H2O Science, INC.	$392,527	Yes - C	30
22009	Ultrasonic Induced Sonochemical Destruction of Pathogens, Viruses, Nitrates and Other Nutrients and Contaminants From Waste Discharge Streams	Water Services, L.L.C.	$775,000	Yes - C	31
22011	Demonstrate Proprietary Husbandry System for Musca domestica as Reliable Aquaculture Insect Nutrient Resource	Oregon Feeder Insects Corporation	$400,000	Yes - C	31

Project	Title	Sponsor	Total Request	ISRP Rank	Page
22021	Develop Innovative Approaches for Monitoring Bats in the Clearwater Region of Idaho	Idaho Department of Fish and Game	$140,430	Yes - C	32
22023	Socioeconomic Analysis Tool for Sub-Basin Planning	CH2M HILL	$400,000	Yes - C	32
22024	Alternative Futures and Salmonids in the Lower Columbia River	Washington Department of Fish and Wildlife	$200,000	Yes - C	33
22027	Real Time Data Loggers for Monitoring Climate Conditions within a Riparian System	EcoTec	$261,220	Yes - C	33
22036	The Application of Geophysics to Better Define Fall Chinook Salmon Spawning Habitat Use in the Hanford Reach, Columbia River.	Golder Associates Incorporated, Pacific Northwest National Laboratory	$240,572	Yes - C	34
22040	Ecosystem effects of anadromous salmon	Idaho Department of Fish and Game	$396,500	Yes - C	34
22041	Using Microbial Fingerprinting to Rapidly Assess Ecosystem Responses to Watershed Restoration Efforts and Assist in Prioritizing Future Activities	Washington State University	$403,150	Yes - C	35
22044	Develop commercial selective live release fisheries for spring chinook on the Columbia River	Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife	$356,794	Yes - C	35
22048	Integrate Physical and Biological Assessment Models	Mobrand Biometrics, Inc.	$96,900	Yes - C	36
22051	Characterize Genetic Differences and Distribution of Freshwater Mussels	Confederated Tribes of the Umatilla Indian Reservation	$203,386	Yes - C	36
22052	Sources, Fate and Biological Impacts of Sediments as Part of a Comprehensive Sediment Management Plan	Washington State University, Washington Water Research Center	$398,674	Yes - C	37
22053	Analyze the historic productivity of Wallowa Lake and its implications for sockeye reintroduction and water quality management	Oregon State University	$185,514	Yes - C	38

Project	Title	Sponsor	Total Request	ISRP Rank	Page
22061	Fluid Dynamics and Mechanics of In-Stream Wood Debris	Philip Williams and Associate, Ltd.	$221,400	Yes - C	38
22065	Design & Implement a System-wide Fish, Wildlife & Habitat Conservation Enforcement Web-Based Data Center	Steven Vigg & Company	$41,112	Yes - C	39
22006	Evaluate Use of Small (Nano) Radio Tags to Determine Subadult Bull Trout Population Status In Dworshak Reservoir, N.F. Clearwater River Drainage, ID	Idaho Department of Fish and Game	$121,102	Not Innovative	39
22007	Develop Population Dynamic Model for White Sturgeon	Idaho Department of Fish and Game	$98,761	Not Innovative	40
22012	Restoration Of Riparian Zones With Enabling Technology and Grazing Practice Enhancement	Clouston Energy Research	$234,000	Not Innovative	40
22016	Anadromous Salmonid Engineered Habitat For Production and Transit	Aquaculture Research Institute, University of Idaho, Moscow, ID	$396,740	Not Innovative	41
22020	Assess Washougal River and its tributaries	Lower Columbia Fish Recovery Board	$70,250	Not Innovative	41
22025	Identification and assessment of technologies and methods to census spawning adult population size of spring and summer chinook salmon	Nez Perce Tribe	$396,000	Not Innovative	42
22026	Columbia Basin Interactive Watershed Atlas	Smart Map Imaging	$390,425	Not Innovative	42
22028	Design and Coordinate Nutrient Supplementation Evaluations in the Salmon and Clearwater Subbasins, Idaho	Idaho Department of Fish and Game	$77,582	Not Innovative	43
22031	Evaluation of Two Captive Rearing Methods for Assisting with Recovery of Naturally Spawning Populations of Steelhead and Coho Salmon.	U. S. Fish & Wildlife Service, U.S. Department of the Interior	$264,064	Not innovative, but a good proposal	43
22032	Develop a practical method through diet modification to improve quality of hatchery reared steelhead trout and coho salmon.	U.S. Fish and Wildlife Service, Idaho State University	$241,000	Not Innovative	44
22035	Renaturalize Functional Floodplain Habitat within the Portland Reach of the Lower Willamette River	ZRZ Realty Company (a Zidell Company)	$1,420,500	Not Innovative	44

Project	Title	Sponsor	Total Request	ISRP Rank	Page
22039	Assess the Feasibility of Mainstem Habitat Improvements to Enhance survival of ESA Listed Species	Department of Fish & Wildlife University of Idaho	$216,511	Not Innovative	45
22045	Habitat/Subbasin Planning Electronic Newsletter Copyright October 30, 2000, Bill Crampton, 60968 Onyx Street, Bend, OR 97702	Intermountain Communications	$119,280	Not Innovative	45
22046	Deschutes Subbasin Stakeholder Facilitation - A Pilot Project Copyright October 30, 2000. TIGERS Success Series, PO Box 267, Bend, OR 97709.	TIGERS Success Series	$69,000	Not Innovative	46
22054	Effects of Chronic Disease on Delayed Mortality of Chinook Salmon and Steelhead Trout in the Columbia River Estuary	Oregon State University	$393,731	Not Innovative	46
22058	Experimental Selective Fishery Techniques Development, Evaluation, and Coordination	National Marine Fisheries Service	$400,000	Not Innovative	47
22062	Evaluate the use of anaerobic digestion to produce nutrient supplements for trout and salmon	Duke Engineering and Services	$134,800	Not Innovative	47
22066	Live Capture Harvest	Steven Vigg & Company	$32,542	Not Innovative	48

Index by Project Number