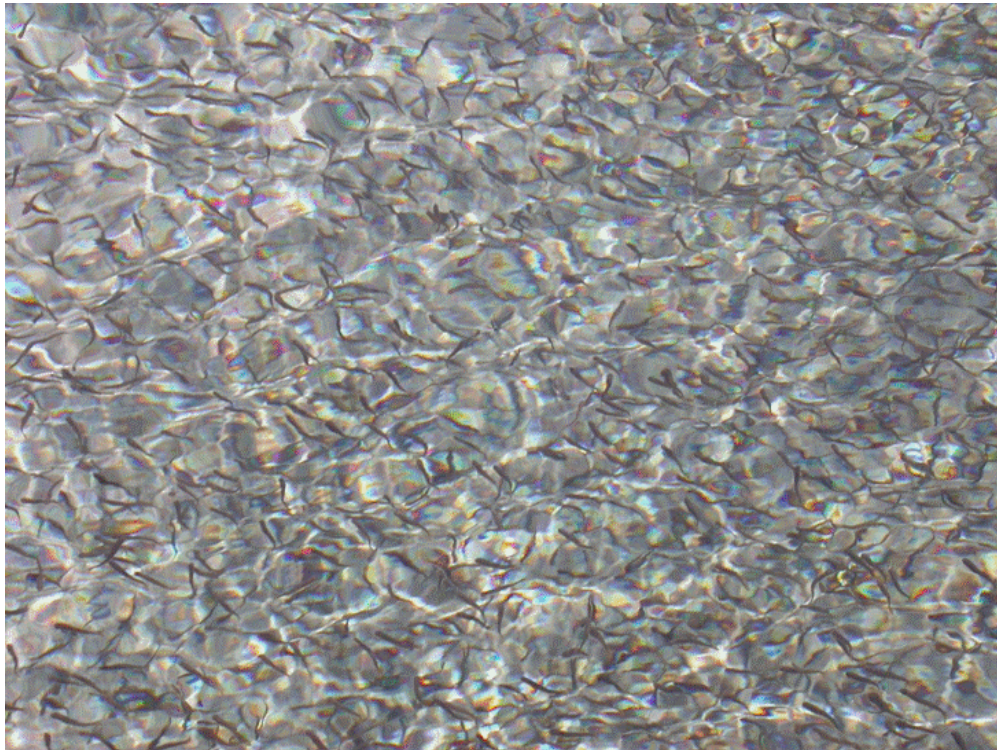




**Independent Scientific Review Panel**  
for the Northwest Power & Conservation Council  
851 SW 6<sup>th</sup> Avenue, Suite 1100  
Portland, Oregon 97204  
[www.nwcouncil.org/fw/ISRP](http://www.nwcouncil.org/fw/ISRP)

# Review of FY 2007-09 Innovative Proposals for the Columbia River Basin Fish and Wildlife Program



ISRP 2007-9  
June 26, 2007

#### ISRP Members

**J. Richard Alldredge, Ph.D.**, Professor of Statistics at Washington State University.

**Peter A. Bisson, Ph.D.**, Senior Scientist at the Olympia (Washington) Forestry Sciences Laboratory of the U.S. Forest Service (former ISAB member).

**John Epifanio, Ph.D.**, Director and Associate Professional Scientist for the Center for Aquatic Ecology at the Illinois Natural History Survey, an expert in conservation genetics and molecular ecology.

**Linda Hardesty, Ph.D.**, Associate Professor of range management at Washington State University, an expert in the biological diversity of eastern Washington.

**Charles Henny, Ph.D.**, Senior Research Scientist at the U.S. Geological Survey in Corvallis, Oregon, an expert in wildlife and environmental toxicology.

**Colin Levings, Ph.D.**, Scientist Emeritus and Sessional Researcher, Department of Fisheries and Oceans. Canada (also an ISAB member).

**William Liss, Ph.D.**, Professor Emeritus of Fisheries at Oregon State University (former ISAB member).

**Eric J. Loudenslager, Ph.D.**, Hatchery Manager and Adjunct Professor of Fisheries Biology, Humboldt State University, California, an expert in genetics and fish culture. (ISRP Chair, former ISAB member)

**Katherine Myers, Ph.D.**, Principal Investigator of the High Seas Salmon Research Program at the School of Aquatic and Fishery Sciences, University of Washington.

**Thomas P. Poe, M.S.**, Consulting Fisheries Scientist, an expert in behavioral ecology of fishes, formerly with the U.S. Geological Survey (also an ISAB member).

**Bruce Ward**, Fisheries Scientist, Ministry Of Environment, Aquatic Ecosystem Science Section, University of British Columbia, Vancouver, B.C., Canada.

#### Staff

**Erik Merrill**, ISRP and ISAB Coordinator, Northwest Power and Conservation Council.

#### Acknowledgement

Special thanks to Eric Schrepel, Council staff, for designing the ISRP's online innovative review site, which allowed for an efficient review process and could be used as a model for other proposal review processes.

# ISRP Review of FY 2007-09 Innovative Proposals

## Contents

Table of Proposals with Page Index.....	ii
Five Ranked, Innovative, On-the-Ground, and Highly Justified Proposals.....	ii
Four Ranked, Innovative, On-the-Ground, and Adequately Justified Proposals .....	ii
Five Ranked, Innovative, Research-oriented, and Highly Justified Proposals .....	iii
Forty-Five Unranked Proposals .....	iii
Background .....	1
Review Process and Overall Results .....	1
Programmatic Comments .....	3
ISRP Comments on Each Proposal.....	5
Five Ranked, Innovative, On-the-Ground, and Highly Justified Proposals.....	5
Four Ranked, Innovative, On-the-Ground, and Adequately Justified Proposals .....	10
Five Ranked, Innovative, Research-oriented, and Highly Justified Proposals .....	15
Forty-Five Unranked Proposals .....	19

## Table of Proposals with Page Index

Of the 59 proposals submitted, the ISRP finds that nine proposals substantially meet the innovative solicitation criteria: employ innovative techniques, are on-the-ground, describe scientifically sound techniques, and offer potential benefits to fish and wildlife. Five of these are highly justified, and four are adequately justified. In addition, the ISRP identifies five proposals that are innovative and highly justified, but are research oriented and thus are not on-the-ground. These 14 ranked proposals are presented first by rank order then project number. The remaining 45 unranked proposals are presented next. For a variety of reasons, these proposals did not meet the standards for funding under the innovative solicitation.

### Five Ranked, Innovative, On-the-Ground, and Highly Justified Proposals

Proposal#	Title	Funding Request	Page	Priority
200752100	Improving Fish Habitat Using Innovative Strategies to Remediate Contaminated Sediments in the Columbia River Basin	\$185,112	5	A1
200752400	Integrated Non-Lethal Electric Barrier and Sonar System to Deter Marine Mammal Predation on Fish in the Columbia River System: A Demonstration Project	\$1,440,483	6	A1
200751300	Eelgrass enhancement and restoration in the Columbia River Estuary through innovative site selection and planting techniques	\$252,794	7	A2
200751600	Enhancing Summer Instream Flow and Reducing Temperature in Agricultural Watersheds	\$224,766	7	A2
200755700	What was old is new again: evaluate traditional gears for selective harvest	\$444,971	9	A2
	<b>Total Request Top Five Ranked Proposals</b>	<b>\$2,548,126</b>		

### Four Ranked, Innovative, On-the-Ground, and Adequately Justified Proposals

200753500	Physical and Biological Field Testing of a Flow Velocity Enhancement System (FVES)	\$318,310	10	B1
200752600	Lake oxygenation pilot study: Improving Redband Trout habitat quality in Twin Lakes, WA	\$271,634	11	B2
200751800	Evaluation of artificial upwelling to enhance lower Columbia River Gorge chum salmon spawning	\$173,590	12	B3

200754200	Shad for Nutrient Enhancement -- Demonstration of Fishery Supply, Disease Evaluation, Product Type and Potential Use	\$163,400	14	B4
	<b>Total Request Ranked Proposals - B List</b>	<b>\$926,934</b>		

### Five Ranked, Innovative, Research-oriented, and Highly Justified Proposals

Proposal#	Title	Funding Request	Page	Priority
200753800	Predicting the future effects of climate-induced stream warming on spring Chinook salmon and their predators in the John Day River Basin	\$214,959	15	R1
200755400	Using advanced technologies to help reduce the impacts of global warming on anadromous and resident fish populations in the Columbia Basin	\$294,302	16	R2
200750800	Designing Pre- and Post-Fire Restoration Strategies For Recovery of Salmonid Habitats in a Period of Climate Change and Increased Forest Fire Disturbance	\$88,300	17	R3
200750200	Application of Innovative Acoustic Telemetry Technology to Underpin Statistically-Valid Survival Estimates for Chinook Salmon in the Nearshore Ocean Off the Mouth of the Columbia River	\$532,680	18	R4
200751100	DNA typing to identify native inland <i>Oncorhynchus mykiss</i>	\$217,364	18	R5
	<b>Total Request Ranked Research-oriented Proposals</b>	<b>\$1,347,605</b>		

### Forty-Five Unranked Proposals

Proposal#	Title	Funding Request	Page	Priority
200750000	A New Aging Technique For Lake Trout and Northern Pike minnow Using Allometric Relationships Between Fish Size and Otolith Mass	\$115,240	19	Unranked
200750100	Adapting tree-ring techniques to reconstruct stream environmental histories from the growth increments of long-lived freshwater mussels	\$73,502	20	Unranked

<b>Proposal#</b>	<b>Title</b>	<b>Funding Request</b>	<b>Page</b>	<b>Priority</b>
200750300	Assessment of Functional Biological Differences Between Natural and Hatchery-Raised Redfish Lake Sockeye Salmon	\$199,751	21	Unranked
200750400	Automated Scale Image Analysis (ASIA)	\$198,250	22	Unranked
200750500	Catching Predator fish with commercial traps	\$400,000	23	Unranked
200750600	Chiwawa River Adult Spring Chinook Otolith Study	\$47,913	23	Unranked
200750700	Crumble-Crete Habitat Revegetation and Stability Blocks - Development of degradable bank protection/reveg block to provide temporary stability during recovery of natural bank-stabilizing vegetation.	\$27,738	24	Unranked
200750900	Develop structure for implementing and maintaining a Master Sample of rivers and streams in the Columbia Basin, and develop statistical tools for analyzing Master Sample applications.	\$386,806	25	Unranked
200751000	Development of a Low-cost Dual-Frequency Acoustic Tracking Capability for Ocean & Freshwater Components of the POST Tracking Array	\$330,199	26	Unranked
200751200	Documentation of food-web linkages in the mainstem Columbia River: towards understanding the role of invasive species and establishing a baseline trophic state	\$337,374	27	Unranked
200751400	Effectiveness monitoring of in-stream habitat restoration using tools from population ecology	\$193,624	27	Unranked
200751500	Elemental analysis of fin spines: A potential tool for assessing movement of white sturgeon ( <i>Acipenser transmontanus</i> ) within the Lower and Mid-Columbia River basin	\$42,122	29	Unranked
200751700	Estimating abundance of white sturgeon by using visual strip-transects; an alternative to mark-recapture population estimates	\$590,925	29	Unranked
200751900	Feasibility of using a computerized video system to estimate lamprey passage at Bonneville Dam	\$93,532	30	Unranked
200752000	Genetic Predisposition of Smoltification in Rainbow Trout and Steelhead	\$89,978	31	Unranked
200752200	Innovative Fish Sample Gear for Reducing Stress and Mortality in the Catch and Increasing Efficiency in Monitoring the Effectiveness of Dike Removal Projects	\$7,838	32	Unranked

<b>Proposal#</b>	<b>Title</b>	<b>Funding Request</b>	<b>Page</b>	<b>Priority</b>
200752300	Innovative methods to quantify transport of hydrophilic and legacy pesticides to the riparian zones within the Yakima Basin	\$216,909	33	Unranked
200752500	Integrating Ecological Flows into River Management on the Willamette River	\$64,150	34	Unranked
200752700	Lake Roosevelt Littoral Habitat Enhancement Project	\$574,112	35	Unranked
200752800	Little McCormick Creek: Investigating Placer Mine Impacts to Streamflow Connectivity and Developing New Restoration Techniques	\$96,800	36	Unranked
200752900	Loss of salmon and steelhead productivity due to barriers in the Lower Columbia River ESU	\$158,326	37	Unranked
200753000	MADS Weir Demonstration Project in Walla Walla Subbasin (MADS - Modular Arch Drop Structure)	\$118,750	38	Unranked
200753100	Microbial Assessment of Thermal Impacts of Dworshak Reservoir Releases	\$165,473	38	Unranked
200753200	Molalla-Pudding Sub basin Assessment; utilizing the new EPA Watershed Assessment of the River Stability and Sediment Supply(WARSSS)procedural methods to increase anadromous fish survivability	\$271,222	39	Unranked
200753300	Monitoring fine sediment delivery to fish habitat in the Entiat River subbasin	\$295,000	40	Unranked
200753400	Performance comparison of a stationary PIT tag antenna array in Lookingglass Creek, Oregon	\$47,829	40	Unranked
200753600	Piloting StreamBank™ Web Tool and permitting efficiencies to achieve Middle Fork John Day River Channel Reactivation and Floodplain Restoration.	\$354,941	41	Unranked
200753700	Population specific in-season forecasts of Columbia River Chinook salmon (Oncorhynchus tshawytscha) returns for allowing selective in-river fisheries	\$99,762	42	Unranked
200753900	Promote Kokanee Repopulation in Lake Pend Oreille using Autonomous Underwater Vehicles (AUVs) for Location and Verification of Lake Trout Spawning Areas.	\$400,177	44	Unranked
200754000	Quantitative Assessment Sampling for Pacific Lamprey in Cedar Creek (Lewis River Subbasin), Washington	\$140,000	44	Unranked

<b>Proposal#</b>	<b>Title</b>	<b>Funding Request</b>	<b>Page</b>	<b>Priority</b>
200754100	Reecer Creek Floodplain Restoration Project to support ecosystem function using build-in-the dry and 3 yrs revegetation to encourage channel dynamics, habitat formation and natural sediment management	\$428,307	45	Unranked
200754300	Simmons Dike Removal feasibility study	\$43,000	46	Unranked
200754400	Spawning Channel for Chum Salmon at Beaver Creek Hatchery	\$398,000	46	Unranked
200754500	Stock specific run timing and upstream migration mortality of adult Chinook salmon and steelhead through genetic stock identification and PIT tagging at Bonneville Dam	\$123,150	48	Unranked
200754600	Test of protocols and validation of estimates derived with traditional and new methods for steelhead adults, smolts, and parr using an instream PIT-tag interrogation system	\$236,785	49	Unranked
200754700	The Natural Tag - TNT	\$229,288	50	Unranked
200754800	The use of cDNA microarrays to develop biomarkers of environmental stress in salmonids and other fishes	\$572,352	51	Unranked
200754900	Toppenish Creek Well Modification Project	\$351,423	51	Unranked
200755000	Toxics as a limiting factor for salmon recovery throughout the Columbia River Basin: understanding the enhanced toxicity of pesticide mixtures	\$199,244	52	Unranked
200755100	Use of a novel technique to compare of Pre-and Post-migratory energy storage and use in upriver coho salmon: How much change can occur with intense selective pressure.	\$49,245	53	Unranked
200755200	Use of LA-ICPMS and fin ray microchemistry to examine historic and present movement patterns in Upper Columbia River white sturgeon	\$75,525	54	Unranked
200755300	Using acoustic telemetry to evaluate the behavior, habitat use, and survival of tagged juvenile salmonids in the John Day Reservoir	\$977,335	55	Unranked
200755500	Using otolith microchemistry and microstructure to assess the causes and consequences of alternative life history strategies for Snake River fall Chinook	\$573,252	55	Unranked



<b>Proposal#</b>	<b>Title</b>	<b>Funding Request</b>	<b>Page</b>	<b>Priority</b>
200755600	Water Stargrass Demonstration and Management in the lower Yakima River for Spawning Habitat, Water Quality and Beneficial Uses (WiSDoM)	\$372,450	56	Unranked
200755800	Willamette Mitigation	\$277,644	57	Unranked
	<b>Total Request Unranked Proposals</b>	<b>\$11,045,243</b>		
	<b>Total Request All Proposals</b>	<b>\$15,867,908</b>		

## ISRP Review of FY 2007-09 Innovative Proposals

### Background

This FY 2007-09 innovative proposal solicitation continues the effort of the Northwest Power and Conservation Council (Council) to encourage creative solutions for improving the benefits to fish and wildlife in the Columbia River Basin from projects implemented through their Fish and Wildlife Program. This is the third innovative solicitation with other specific innovative solicitations undertaken for FYs 2001 and 2002. The ISRP's 1997-2005 Retrospective Report details the creation and outcomes of the past innovative solicitations.<sup>1</sup>

The FY 2007-09 innovative proposal solicitation specified the following requirements that a proposal:

- offers a method or technology designed to directly benefit fish and wildlife, that (1) has not previously been used in Columbia River Basin fish and wildlife projects or (2) if used before in other projects, has not been used in the proposed application
- is an innovative on-the-ground “demonstration” or “pilot” project with a focus on testing or demonstrating new methods or technologies
- if successful will contribute to direct improvements in the survival or productivity of Columbia River fish or wildlife species. (Investigations of basic biological and physical phenomenon are not targeted with this solicitation.)
- is consistent with the Council's Program
- address key management questions or limiting factors identified in the Program's subbasin plans or mainstem amendments
- be feasible to complete within 18 months, including one year to implement the work and six months to complete reports and other deliverables as appropriate
- meet the ISRP's review criteria in Section 4(h)(10)(D) of the Northwest Power Act.

For more information on the solicitation see: [www.nwcouncil.org/fw/budget/innovate](http://www.nwcouncil.org/fw/budget/innovate).

### Review Process and Overall Results

Fifty-nine proposals were submitted for the FY 2007-09 innovative proposal solicitation, requesting about \$16 million. The Bonneville Power Administration agreed to make available up to a total of \$2 million to fund innovative projects during these fiscal years.

The ISRP's review process for innovative proposals is anonymous. There is no ISRP interaction with project sponsors, project presentations, site visits, or response loops. Also unlike the annual basinwide and rolling province reviews, proposals are ranked by the ISRP based on the innovation offered, technical merit, and potential benefits. This

<sup>1</sup> [www.nwcouncil.org/library/isrp/isrp2005-14.htm](http://www.nwcouncil.org/library/isrp/isrp2005-14.htm); pages 10-11 and Appendix, pages 118-120.

ranking is possible because the set of proposals is small enough for the ISRP to discuss and compare all the proposals in a consistent and equitable manner.

Each of the 59 proposals was evaluated by a subset of ISRP members who provided individual comments and a categorical rank for group discussion at the ISRP's project evaluation meeting. Reviewers evaluated each proposal for its technical sufficiency and potential to contribute benefits to fish and wildlife. Each reviewer also evaluated whether a proposal met the definition of "innovative" and "on-the-ground" described in the solicitation for proposals. At the meeting, the ISRP discussed each proposal and reached consensus recommendations and rankings.

The ISRP found that nine proposals substantially met the solicitation criteria: were innovative, were on-the-ground, described scientifically sound techniques, and offered potential benefits to fish and wildlife. Of the nine, five proposals (two ranked A1 and three ranked A2), stood out as proposals that are high priority meriting immediate funding. The proposals ranked from B1 through B4 offered potentially valuable contributions to the Fish and Wildlife Program but did not stand out for their innovation nor demonstrate as strong a potential to provide significant benefits as those ranked A1 or A2. An additional five proposals employed innovative methods, but were not on-the-ground demonstration or pilot projects. These projects have the potential to make important contributions to the Fish and Wildlife Program by providing analytical methods that could be used to improve decision making and adaptive management. These five projects are ranked R1 through R5 (R for research), and would be fully justified for inclusion in the Fish and Wildlife Program. Comments on these fourteen ranked proposals are presented below by rank order and project number.

The ISRP did not rank the other 45 proposals submitted. For a variety of reasons, these proposals did not meet the standards for funding under the innovative solicitation. A few of these proposals were not innovative but offered approaches that could benefit the Fish and Wildlife Program (e.g., 200755000 *Toxics as a limiting factor for salmon recovery throughout the Columbia River Basin: understanding the enhanced toxicity of pesticide mixtures*). Several others were innovative, but the ISRP had questions about experimental designs or the likelihood and timeframe to demonstrate benefits to fish and wildlife (e.g., 200750300 *Assessment of Functional Biological Differences Between Natural and Hatchery-Raised Redfish Lake Sockeye Salmon*, 200754800 *The use of cDNA microarrays to develop biomarkers of environmental stress in salmonids and other fishes*). A few proposals were to collect basic biological information on focal species (e.g. 200754500 *Stock specific run timing and upstream migration mortality of adult Chinook salmon and steelhead through genetic stock identification and PIT tagging at Bonneville Dam*). A number of these proposals were reviewed in the FY 2007-09 general solicitation and received favorable ISRP recommendation, but were not funded. These proposals continue to be suitable for consideration in the general solicitation, but did not meet all of the parameters of this innovative solicitation. Comments on these 45 proposals are presented following the 14 ranked proposals.

In conclusion, the ISRP believes that high quality proposals were received in this solicitation. There is a demonstrated need for these projects which underscores the value of this funding category; in fact, the ISRP believes that the amount of funding available for subsequent innovative solicitations should be increased.

## Programmatic Comments

During the review of these proposals, the ISRP identified several themes for consideration by project sponsors and the Council.

**Solicitation Timing and Limits:** The timing of the solicitation announcement and proposal due date was brief. Potential contributors to innovation in the Fish and Wildlife Program, such as out-of-basin scientists and engineers, might not have had knowledge of the solicitation. For the next round, broad distribution beyond the standard Fish and Wildlife Program community is encouraged. Regular (annual or biannual) solicitations in this category, on a regular annual calendar, would facilitate the research community's preparation and anticipation of the funding opportunity. If individuals with innovative ideas are aware that there will be annual (or biannual) solicitations for projects that are of pilot or demonstration scale, they are more likely to commit time and energy to the initial stages of development. They would have reason to believe there was a vehicle to bring the innovation to the next stage of development – a pilot or demonstration scale exercise.

The timeframe for the projects, 12 month implementation and 6 month reporting, may have created difficulties for some projects because of the brief open solicitation period. The work could reasonably be completed within this framework but not given the brief period to prepare the proposal. There are also potential innovative methods that could require more than 12 months to complete the primary tasks. This applies to a lot of habitat restoration projects where the time frame to measure benefits is much longer. This time frame may need to be reconsidered in future innovative solicitations. The important element is that the proposal should be for a pilot or demonstration of an innovative method or strategy. It would be unfortunate if an outstanding idea was not considered because a pilot scale exercise required 24 months to compete.

**Research and Needed Projects:** Even though the solicitation requested proposals for on-the-ground “demonstration” or “pilot” projects, about half the submitted proposals were to conduct research or assessments. This indicates that there is capacity in the basin for research to address important uncertainties. Many of these research proposals would have met standard ISRP review criteria.

**Elemental Analysis:** A number of proposals offered to analyze chemical elements in fins or otoliths and use these to identify where fish had lived during a portion of their life. Most of these proposals intended to collect information on basic biological parameters for these fish species, so they did not fit the solicitation criteria. Nonetheless, it appeared to the ISRP that validation of the chemical signatures was needed to apply these methods, and this had not yet been completed. This approach requires differences in water chemistry between the different watersheds of interest. This background information

needs to be systematically collected. As found elsewhere, testing is required to determine if annual variation within a watershed exceeds that among watersheds. Collaboration between various investigators interested in applying this method to white sturgeon and salmon could also be improved to avoid duplication of effort.

**Hatcheries:** Although a significant portion of the Fish and Wildlife Program involves hatchery production of fish, few proposals were submitted aimed at improving artificial production. Research proposals were submitted that would add information about basic biological attributes of hatchery fish, but none that were evaluating alternative culture methods. It is not clear to the ISRP whether funding through the general FY 2007-09 solicitation provided the necessary resources to the fish culture community or whether the format of this innovative solicitation was not sufficiently attractive.

**In summary:** The ISRP continues to believe the recommendation from the Retrospective Report 1997 – 2005 (ISRP 2005-14) is worthy of consideration:

The ISRP recommends that an annual budget for the innovative proposal solicitation be committed to (especially if advertised in a solicitation) and perhaps increased, and that a separate budget be set aside for targeted Requests for Proposals (RFPs). While the Innovative Funding Category has been allocated at just over 1% of the Fish and Wildlife Program's annual budget, results from several innovative projects have had important benefits to the region. The retrospective review by ESSA Technologies (Marmorek et al. 2004; Innovative Project 34008) of past habitat improvement actions and their effect on salmon survival and abundance led directly to many recommendations on data needs, and coordination among projects that are currently being addressed by the developing Research, Monitoring, and Evaluation plan.

## ISRP Comments on Each Proposal

### Five Ranked, Innovative, On-the-Ground, and Highly Justified Proposals

200752100 - Improving Fish Habitat Using Innovative Strategies to Remediate Contaminated Sediments in the Columbia River Basin

**Sponsor:** Washington State University

**FY08-09 budget:** \$185,112

**Short description:** Contaminated sediments represent a critical environmental problem that impairs aquatic ecosystems. The purpose of this proposal is to demonstrate an innovative cleanup strategy designed to treat toxic sediments to improve fish habitat.

[\(View full proposal online\)](#)

**Recommendation:** Ranked A1, Innovative, On-The-Ground, Highly Justified

This well-described proposal investigates an innovative in-situ method of remediating chemically contaminated sediments. The proposed approach has been used successfully for “enhanced aerobic bioremediation” in other situations (soil and groundwater) especially for PAHs, but not in sediment. Basically, the reactive solid/chemical oxidant will be a block containing  $\text{CaO}(\text{OH})_2$  as an active ingredient that slowly releases oxygen in the presence of water to enhance biodegradation of contaminants. Treatment and control plots are in the Coeur d’Alene subbasin along the St. Joe River that contains creosote-contaminated sediments, resulting in high PAH concentrations. These PAHs will be used as a model contaminant that will be monitored at the plots over time. Additional evaluations include sediment collected from 20 different locations (prime habitat for endangered or threatened fish, and areas with known high PBDE and PCB concentrations) in the Columbia River Basin. These samples will be brought into the laboratory to determine toxics present and to evaluate the effectiveness on each contaminant class when exposed to the “reactive solid” including possible adverse effects on fish. If successful this approach could be a viable alternative to the draconian approach of dredging or capping. The proposal did an excellent job of describing the problem and the need to find an alternative method of cleaning up contaminated sediment in streams and rivers. The proposal, with a combination of field and laboratory techniques, addresses an under-investigated issue with a new technology and a solid scientific approach. The area of restoration of contaminated sites is certainly under-represented in regional restoration activities. This technology has the potential of benefiting both focal and non-focal species and could have application throughout the basin.

200752400 - Integrated Non-Lethal Electric Barrier and Sonar System to Deter Marine Mammal Predation on Fish in the Columbia River System: A Demonstration Project

**Sponsor:** Smith-Root, Inc

**FY08-09 budget:** \$1,440,483

**Short description:** This proposal would develop and evaluate a passive, integrated electric barrier and sonar array that selectively inhibits upstream marine mammal movements and predation on fish, without injuring pinnipeds or affecting anadromous fish migrations.

[\(View full proposal online\)](#)

**Recommendation:** Ranked A1, Innovative, On-The-Ground, Highly Justified

This proposal would assess the potential to deter movement of marine mammals into fish ladders and therefore alleviate predation on Columbia Basin fish species. This will be accomplished using an electric barrier to deter entry to the ladders coupled with a sonar array that detects the presence of marine mammals and activates the electric barrier. It is intended to function without injuring pinnipeds or affecting anadromous fish migrations. This project meets the criteria for this solicitation - it is innovative, on-the-ground, and a demonstration project that can be completed within 18 months. There is a highly visible problem of marine mammal predation on salmon and sturgeon at fish ladders in the lower Columbia River. Efforts to deter marine mammal predation on salmon at fish ladders, using methods that do not harm the mammals, have been unsuccessful. The integrated non-lethal electric barrier combined with sonar to detect the presence of pinnipeds has the potential of significant benefits for adult salmon, white sturgeon, and steelhead to be realized fairly quickly if it works. The proposal is well written, and the project well designed.

Preliminary testing has been performed with captive animals and in rivers in British Columbia, Canada. Data from these preliminary trials appear favorable, and the larger scale demonstration project proposed is the appropriate next step in evaluating this technology.

Possible effects on Pacific lamprey passage/immigration behavior should be included in the experiment, since lamprey are known to be sensitive to electric fields (e.g. electric barriers have been used in the Great Lakes tributaries to prevent sea lamprey from establishing new spawning grounds). The final pilot should include a specific protocol for examining if there are responses by lamprey to the barrier. Human safety testing and consideration is also needed.

The budget proposed is expensive, and the Council may wish to explore ways to conduct the test at lower cost.

200751300 - Eelgrass enhancement and restoration in the Columbia River Estuary through innovative site selection and planting techniques

**Sponsor:** Pacific Northwest National Laboratory

**FY08-09 budget:** \$252,794

**Short description:** Strong flows in the Columbia River likely limit the success of eelgrass seed dispersal and new plant establishment. We propose using innovative site selection techniques to identify 5-10 areas suitable for eelgrass enhancement, plant, and monitor success.

[\(View full proposal online\)](#)

**Recommendation:** Ranked A2, Innovative, On-The-Ground, Highly Justified

This well-written proposal documents the need for eelgrass beds in the lower Columbia River estuary, and hypothesizes the reason why no natural range expansion of eelgrass is occurring (shortage of seeds, and cannot expand upstream in Columbia River). The proposal uses innovative and detailed site selection techniques (GIS spatial assessment of previously identified environmental controlling factors and stressors) to identify 5-10 areas suitable for eelgrass enhancement by planting. Eelgrass enhancement has been used elsewhere, but not in the lower Columbia River estuary. The project is clearly linked to subbasin plans and other ongoing efforts to improve habitat conditions in the Columbia River estuary. The experimental eelgrass plantings will be monitored not only for survival but also for use by focal and non-focal species. The project is aimed at salmonids but will also most likely benefit crabs and other invertebrates. Even black brant, which historically wintered in areas with eelgrass beds along the Pacific Coast of the United States, may benefit from this project. Most black brant now winter in Mexico. Personnel are well qualified and facilities and equipment are available for the project. The authors definitely understand the estuary and know the ongoing research of others. The eelgrass plantings will need further monitoring after completion of this project before a final evaluation of success can be made.

200751600 - Enhancing Summer Instream Flow and Reducing Temperature in Agricultural Watersheds

**Sponsor:** Washington State University

**FY08-09 budget:** \$224,766

**Recommendation:** Ranked A2, Innovative, On-The-Ground, Highly Justified

This project proposes to explore groundwater recharge via direct seeding (no-till). The approach is not new but the research into effectiveness and use of no-till as a method to increase summer flows has not been adequately demonstrated. This pilot project and simulation model development exercise should provide the test and useful insight on no-till effectiveness on infiltration changes and ground water recharge towards augmentation of summer flows – an M&E requirement that ISRP has called for over several years.

The proposal provides a thorough background to the problem and the need to reduce surface water and soil runoff from tilled agricultural fields. The problem is well-



documented. Many streams in arid areas of the Columbia Basin suffer from low instream flow and high stream temperatures which are critical limiting factors for native fishes. The sponsors propose to test a method (no till, direct seeding of agricultural crops) that could lead to increased infiltration and storage of water in the soil that will be released during the summer and lead to increased flow. This project tests a method of farming—no till-- that, if widely implemented, could significantly improve habitat conditions for native fishes. Apparently no till is a limited but accepted practice in eastern Washington and this project could demonstrate to farmers that the no-till practice benefits fish as well as themselves, possibly making the practice more broadly acceptable within the agricultural community.

The potential benefits from this project are great. It remains questionable, and perhaps outside the realm of this work, if potential increased discharge would be provided for fish or simply allow an increase in agricultural consumption of stream water. If improved water infiltration takes place as project sponsors anticipate, a wide variety of species will benefit. The project could benefit focal species by demonstrating that an agricultural practice (no till) can lead to improved stream flows and temperature. The project could benefit non-focal species that depend on high stream flows and lower water temperatures. The proposed work complements many activities in the basin that address low flow and high temperature problems.

The experimental design is well explained in general. Details on different management practices are sketchy, and perhaps limited in application, and there may be issues of replication and sample size, as well as randomization, that could weaken the analyses. It was not clear if the sampling sites would include a range of soil conditions and parent geological materials (to the extent this is possible in the Pataha). Nonetheless, a competent and proven team of researchers from WSU are involved, in collaboration with the conservation district (Pomeroy/Pataha watershed). Facilities, equipment and personnel seem very well qualified to do the work. The sponsors seem to be using state-of-the-art methods and will evaluate and modify existing models of subsurface flow processes. They are very experienced with the proposed procedures and techniques. There may also be an issue of scale; i.e., the amount of no-till area that might be required to stimulate a measurable response. Because the first year of the project will be devoted primarily to model testing, only 6 months will be available to evaluate infiltration field trials; however, this should be sufficient to answer the initial questions.

Useful, publishable, scientific results are potential with this work that is relevant over large areas within the Columbia River Basin. The objectives are clear and accomplishable, and it appears that the work can be completed in the allotted time. An information transfer plan was included that listed reports, publications, and workshops. Details about data archiving were not given. Information will be disseminated through workshops, technical publications, and conference presentations. The workshops will include farmers and land managers.

A similar proposal was reviewed positively by ISRP in 2002 but not funded by BPA.

This is one of the better proposals, and could provide strong evidence that an alternative agricultural practice (direct seeding) will benefit fish and wildlife. It is on the border of innovative and on-the-ground, but meets the on-the-ground criteria because it involves a restoration technique and its evaluation, with test sites. The sponsors appear to be ready to implement immediately.

200755700 - What was old is new again: evaluate traditional gears for selective harvest

**Sponsor:** Washington Department of Fish and Wildlife

**FY08-09 budget:** \$444,971

**Short description:** Three traditional fishing gears will be evaluated for the selective harvest of fall Chinook and coho salmon: beach seine; pound net; and fishwheel. We will coordinate this work with an advisory group so that socio-economic aspects are addressed.

[\(View full proposal online\)](#)

**Recommendation:** Ranked A2, Innovative, On-The-Ground, Highly Justified

Although the techniques of beach seining, stationary net traps (pound nets), and fishwheels have been used before in the Columbia River Basin, their potential to capture live fish with less harm than tangle nets or gill nets does provide innovative possibilities. This proposal will test, in detail, several types of traditional gear for capture and release. Sooner or later these selective fishing techniques will be tried again, and the quality of the proposal suggests that this team of scientists and fishers is well qualified to conduct such a trial. Post-release survival and reproductive success of fall Chinook salmon are included in the monitoring plan. The technical and scientific background is well presented with regard to the traditional gears themselves.

The only weakness here was a lack of detail on how using the gears would be accepted by commercial, tribal, and recreational fishers. Similar gear trials have been done in the Fraser River and elsewhere in British Columbia, and the lesson learned was that the fishing community should be involved. Project sponsors should research and review the Canadian selective fishery initiative. Is there strong local resistance to these types of harvest gears in the Lower Columbia? Measuring acceptance of the traditional gears by stakeholders was not given much attention and would benefit from the addition of a natural resource sociologist to the team. The issue of seals and sea lion predation/mortality could also be problematic, especially with the pound nets. Bycatch of non-target species should also be considered.

The costs of the project appear high to the ISRP; the Council should explore whether the project could be funded at a lower level without significant loss of information. Nevertheless, this proposal was well written and persuasive.

## Four Ranked, Innovative, On-the-Ground, and Adequately Justified Proposals

200753500 - Physical and Biological Field Testing of a Flow Velocity Enhancement System (FVES)

**Sponsor:** Natural Solutions

**FY08-09 budget:** \$318,310

**Short description:** Natural Solution's patented FVES provides migration cues using mechanically generated turbulent-flow fields. Field testing will evaluate effectiveness of induced flow for enhancing & guiding smolt migration, important for developing efficient bypasses.

[\(View full proposal online\)](#)

**Recommendation:** Ranked B1, Innovative, On-The-Ground, and Adequately Justified

This proposal was reviewed by the ISRP in several earlier solicitations (see below). In concurrence with earlier recommendations, the ISRP finds the proposed project deserves support.

This proposal describes an on-the-ground field test of a flow velocity enhancement system (FVES) to provide mechanically produced turbulent flow fields to guide juvenile salmonids to safe collection and bypass facilities at hydroelectric dams. The demonstration site is in the Cowlitz River and takes advantage of an ongoing radio telemetry study to determine the effectiveness of the FVES system to alter migrational routes and improve fish collection during on/off days of FVES operation. Support and collaboration will be provided by WDFW, USGS, Tacoma Power, and Dr. Charles Coutant, and will be necessary to ensure a successful demonstration project. If successful at the demonstration stage, turbulent flow systems could next be situated and tested in the forebays of mainstem Columbia and Snake River dams for improving passage efficiency and reducing delay in passage (potentially reducing predation-related mortality).

In the previous ISRP reviews, there was some concern for potential injury and mortality of juvenile and larval fish that may be entrained in the system. Since those reviews, the proposal sponsor conducted some tests of injury or mortality to juvenile fish entrained in the eductors. The sponsor stated that test results (Jones 2003) indicated that mortality of the test group did not exceed the control group. However, the proposal did not adequately provide test data results, only the in-house 2003 reference. The proposal needs to include provisions for testing of potential injury or mortality of juvenile salmonids entrained into or exposed to high velocities produced near the nozzle.

*Independent Scientific Review Panel Final FY 2007-09 Review (August 31, 2006)*

**Recommendation:** Fundable

Comments: The problem regarding migrational passage problems of juvenile salmonids at hydroelectric projects is extensively described, and the rationale for potential passage benefits of an effective system is well defined. The "low flow" fish passage problem is identified in several subbasin plans. The proposal makes good use of studies in the basin that have described behavior of juvenile

salmonids in response to flow, and identifies a device that might produce flows for guiding them to appropriate passage routes.

There is nothing quite comparable being funded through the Fish and Wildlife Program. The proposal includes reference to an existing research project, the Cowlitz Falls Fish Collection Facility (presumably funded by Tacoma Power Public Utility District (PUD)), which includes radio tagged juvenile salmonids used to evaluate the effectiveness of a trap above Cowlitz Falls Dam. Fish that escape the trap will be available for use in evaluation of the device's (eductor) effects on migrating fish. The trap is operated by WDFW. The operators will provide data on timing of fish migrations and other elements. The phased, systematic development of the eductor technology is good.

They propose to set up the turbulence-generating eductors, characterize the flows, observe fish-flow interactions with a Didson camera, and enumerate the guidance of fish into a trap. It is not clear how they will express the flows and the turbulence intensity, or what aspect of the generated flows will be related to fish behavior. For example, if they see a fish response, will they know what precise aspect of the flow field caused it? Unless they are able to focus on particular parameters (e.g., velocity difference between the spot where fish reacted and that in reservoir, or turbulence intensity or size), they will not know what to manipulate experimentally in Phase II. There is a need to get away from trial-and-error that characterizes many of these studies.

The proposal was responsive to earlier concerns (ISRP comment in 2003) that shear-related mortality might be a factor in this experimental system. This research has potential of facilitating or improving effectiveness of juvenile fish passage facilities in the basin such as the removable spillway weir (RSW).

200752600 - Lake oxygenation pilot study: Improving Redband Trout habitat quality in Twin Lakes, WA

**Sponsor:** Washington State University

**FY08-09 budget:** \$271,634

**Short description:** This innovative project will evaluate the efficacy of lake oxygenation to improve summertime habitat for native redband trout in Twin Lakes, WA by enhancing dissolved oxygen levels in bottom waters.

[\(View full proposal online\)](#)

**Recommendation:** Ranked B2, Innovative, On-The-Ground, and Adequately Justified

The project describes an "on-the-ground" application of oxygen supplementation for the Twin Lakes, Washington. The application is intended to improve summer deep water dissolved oxygen conditions to benefit redband trout as a resident, inland focal species. Lake oxygenation is not a routine method to improve water quality in small impoundments as opposed to simple aeration (although previous applications were discussed) where anoxia limits deep water habitats. Ultimately, small impoundments

have the potential to serve as refugia for native inland trout stocks used in reintroduction efforts or as broodstock for hatchery production.

This project is designed with a treatment and reference lake, so evaluation will be built into the project. From an engineering standpoint, there is no description or design specifications about what is necessary (or likely) to achieve summer oxygenation in the treatment lake or how it will be determined as successful. As such there is too little detail in the monitoring design specifications to determine whether sufficient oxygen can be added to the bottom strata to actually reduce anoxia. The methyl mercury portion of the study was a unique component that adds value to the proposal. However, as a minor recommendation, the methyl mercury portion needs to be related to benefits to fish and wildlife species as well as the human risk perspective. Moreover the paired lake (treatment/control) is a generally good approach, but it is unclear whether the two lakes are sufficiently similar prior to treatment to avoid misinterpretation about after treatment effects (i.e., post-treatment response is due to oxygen supplementation). It is unclear whether baseline measurements (pre-treatment) will occur as well; thus, we would recommend a pre-treatment survey be included. Lastly, the sponsors describe measuring for a biological response following a single treatment year. While this funding is for a short period, is there an expectation/prediction that a longer-term treatment is needed to uncover an effect or is a one-time treatment sufficient?

#### 200751800 - Evaluation of artificial upwelling to enhance lower Columbia River Gorge chum salmon spawning

**Sponsor:** Pacific Northwest National Laboratory

**FY08-09 budget:** \$173,590

**Short description:** Evaluate efficacy of using artificial hyporheic upwelling to enhance chum salmon spawning habitat.

[\(View full proposal online\)](#)

**Recommendation:** Ranked B3, Innovative, On-The-Ground, and Adequately Justified

This is a well-prepared proposal to develop artificial upwelling zones in chum spawning areas. It meets the innovative criteria, but success is uncertain in this research and development work. Nonetheless, broader application may be possible for this technique that has been used for lake shore spawners, but not in streams. The proposal seeks to increase available chum salmon spawning habitat by employing a method to artificially upwell warmer water to attract spawning fish. The problem was well defined and adequately justified.

The primary response measure will be the number and location of chum redds relative to the artificially-created upwelling areas. It would be helpful to add survival to emergence to the variables monitored, if other confounding factors could be controlled (e.g., density, substrate). The testing and outcome will depend upon the magnitude of the chum run and egg-to-fry survival. The proposal lacked sufficient detail about the inclusion of estimates of egg and alevin survival in redds located in the vicinity of the upwelling sites that were created, and that constitutes the main test of the advantage of the proposed approach.

There is a need to monitor survival of fry to emergence as a more thorough testing of the proposed methodology. The sponsors acknowledged that they will not attempt to determine if an observed increase in spawner density results from attraction to the area by upwelling water or simply from increased abundance of adults. Furthermore, it is not clear from the proposal that they will have enough water to create adequate upwelling.

Although it is not clear from the proposal if this technology represents a long-term solution to chum salmon spawning in the lower river, it would serve as a demonstration that hyporheic upwelling is critical to redd selection in this species, if results were not confounded by density. A high density of chum spawners may force spawners into marginal habitat. Furthermore, superimposition of redds limits chum spawning success, and thus this study's results.

This is a technique that perhaps does not address the limiting factor for chum in the Columbia River. Given that 90% of their life history is salt water, variability in abundance from year to year might indicate that the problem is not in fresh water. The work is interesting and could provide a useful approach to expanding chum salmon spawning areas and conceivably lead to an increase in chum abundance if not limited elsewhere. The amount of water that can be obtained from the hyporheic zone may be insufficient to induce spawning.

The proposed work is related to several other chum salmon projects funded by BPA. The results could be useful to a BPA project to restore chum to Duncan Creek. However, it does not involve the restoration of natural riverine/riparian and hyporheic interactions but rather creates artificial upwelling zones using perforated pipe. This will limit the spatial extent of the enhanced spawning area since it will not be feasible to install pipes over many potential chum spawning areas of the mainstem river. The technique may not be as effective as the development of off-channel spawning habitat but may have an application in off-channel spawning habitat if it improves on survival to fry emergence.

Methods are appropriate, follow logically from the objectives, and were well-documented in the scientific literature. The methods described should allow the sponsors to accomplish the stated objective in the allotted time frame. Methods for data analysis were adequately described. The pilot study will be conducted at only one location. Consequently, one uncertainty is whether a sufficient quantity of hyporheic water can be delivered to the potential spawning site to induce spawning. If the quantity of hyporheic water is small, few or no chum may be induced to spawn.

The facilities, equipment and personnel are well qualified to carry out this work. Plans for information storage and reporting were clearly described. The sponsors state that results would be shared with other researchers involved in increasing chum productivity. (e.g., project 200105300 Reintroduction to Duncan Creek). The sponsors have a strong history of producing peer-reviewed publications and undoubtedly will publish the results of this work if it is successful.

This project could attract other late-spawning species such as late-run coho, which might interfere with chum reproduction. In general, however, the project will not negatively impact (and may benefit) non-focal species. The project has the potential to benefit chum salmon by increasing their spawning area possibly leading to increased production of juveniles and overall abundance.

This is an interesting study, but it remains unclear if an increase in chum recruitment would result. This might have application for other species. The proposed upwelling system may develop maintenance problems that could limit some applications.

#### 200754200 - Shad for Nutrient Enhancement -- Demonstration of Fishery Supply, Disease Evaluation, Product Type and Potential Use

**Sponsor:** Washington Department of Fish and Wildlife

**FY08-09 budget:** \$163,400

**Short description:** A pilot project to evaluate the efficacy of using the abundant Columbia River Shad run as a resource for stream nutrient enhancement throughout the Basin. Potential would be evaluated by four criteria: availability, disease risk, fish product, and demand.

[\(View full proposal online\)](#)

**Recommendation:** Ranked B4, Innovative, On-The-Ground, and Adequately Justified

This project would explore an obvious use of unwanted shad carcasses as a nutrient enrichment tool for streams, but any effort of this nature deserves a thorough and well documented monitoring and evaluation program. Success is subject to acquiring shad (capture that needs to be non-incident on salmon and trout capture) and a company to produce analogs. The possibility of using shad or pasteurized shad carcass analogs is intriguing, and in general this proposal describes an innovative project. However, no proposed location or experimental design is given, so it was difficult to classify it as on-the-ground. Capture of shad to use in development of carcass analogs is not without problems, including shad capture and salmon interception, as well as potential conflict with a developing fishery.

This screening work is to provide pathology evaluations, and product quality testing. The work is not in itself innovative, the shad use is purported as the innovation, and is required according to the investigators because salmon carcasses demand will exceed supply from hatchery fish -- the latter remains to be seen. Other fishes have been considered elsewhere (e.g., pollock).

The investigators have a very good background in this field, with current work on salmon carcasses, carcass analogs from salmon, and inorganic nutrient experiments in progress. The shad work is an interesting addition to those efforts. The technical and scientific background section is well presented. The proposal presents a brief but adequate description of its relationship to other projects. It would have been helpful to have summarized the findings of other carcass and carcass analog trials in more detail.



The design, methods, and location of the study needed additional detail for a proper scientific evaluation. For example, at what scale would shad carcasses or carcass analogs be introduced (reach versus whole stream)? What would be the spatial and temporal variation in shad placement and density? How will control sites be established and monitored? Most importantly, where will the work be done and what assurances will there be that other enhancement projects will not confound the results? The project is investigative and developmental towards a potential tool for nutrient enrichment (shad carcass analogs) but some logistical issues remain (e.g., supplier). The facilities, equipment and personnel are well qualified to conduct this work.

Deliberately introducing the carcasses of a non-native species to streams deserves very careful monitoring, both of focal and non-focal species. The timing and form of nutrient additions will be very important. Unanticipated effects on non-focal species could take place and will require careful scrutiny. Impacts are unknown for the most part at this point; a component of the investigation is to determine potential impacts (e.g., disease).

There were few details on where they are going to get the shad, where they're going to place the shad, or what their experimental design is. More details would be needed before this could be funded. Nonetheless, the lead scientist has a good track record on other related efforts.

### **Five Ranked, Innovative, Research-oriented, and Highly Justified Proposals**

200753800 - Predicting the future effects of climate-induced stream warming on spring Chinook salmon and their predators in the John Day River Basin

**Sponsor:** University of Washington

**FY08-09 budget:** \$214,959

**Short description:** We propose an innovative modeling approach that integrates climate-change projections, riparian land-use scenarios, and stream temperature modeling, to predict potential impacts on Chinook salmon, smallmouth bass and northern pikeminnow. ([View full proposal online](#))

**Recommendation:** Ranked R1, Innovative, Research-oriented, Highly Justified

This proposal describes a research project to develop models for use as a planning tool to incorporate climate change effects into habitat protection and restoration management and to predict future climate change impacts to spring Chinook salmon, the focal species in the John Day River subbasin. On that basis, the project could make essential and clear assistance to subbasin planners and managers. The tasks are not "on-the-ground", but the timelines provided indicate that the model development and analyses would be accomplished within the 18-month schedule requirement.

An excellent overview of the problem is provided in the technical background section, along with a thorough discussion of key references. The logical need for applied research on the effects of climate on fish populations is explained. The project proponents will use



a series of models that cleverly link climate change, thermal niches, enhanced invasive species, and focal species survival.

This project will provide benefits to fish and wildlife through development of a modeling tool which will help to predict species distributional responses, patterns of species co-occurrence (establishing the potential for predatory or competitive interactions), and potential future impacts by smallmouth bass and northern pikeminnow on Chinook salmon in a changing climate. In addition, the model will also be used to identify critical areas for riparian habitat restoration, protection, and conservation easements to mediate stream warming in a changing climate. This objective is clearly one of the first steps needed for future protection and conservation of John Day spring Chinook salmon.

It is also certain that changes in stream temperatures will have a dramatic effect on the coexistence of native and nonnative cold-water fish species in the John Day River, including bull trout, westslope cutthroat, rainbow trout and steelhead and nonnative brook trout. Model predictions should also be possible for these species.

In summary, the ISRP finds this proposal to be an innovative research proposal addressing a high priority in the Fish and Wildlife Program, climate change effects on spring Chinook salmon in the John Day River, and although it does not precisely fit the on-the-ground requirement, it is an excellent proposal deserving support. If it is not selected for Innovative Proposal funding, the ISRP believes that it deserves support for inclusion in the Fish and Wildlife Program under some other funding mechanism.

200755400 - Using advanced technologies to help reduce the impacts of global warming on anadromous and resident fish populations in the Columbia Basin

**Sponsor:** US Forest Service - Rocky Mt Research Station

**FY08-09 budget:** \$294,302

**Short description:** This proposal examines effects of global warming on critical habitats for salmonid fishes, develops and applies innovative management tools to lessen the effects of climate change, and provides training to facilitate tool adoption.

[\(View full proposal online\)](#)

**Recommendation:** Ranked R2, Innovative, Research-oriented, Highly Justified

This exemplary proposal addresses a high priority issue in the Pacific Northwest and for the Fish and Wildlife Program -- climate change effects on salmonids. It exceeds/meets almost all ISRP ranking criteria and is a comprehensive modeling project which could yield some new and innovative management tools to deal with climate change and headwater Columbia River Basin salmonids. However, the ISRP concludes the project does not meet the on-the-ground criteria because implementation of results would be longer term and difficult to achieve in the time frame of the innovative criteria

There is clearly a need for improving the processes available to managers for prioritizing where and when to implement mitigative actions in response to climate change and warming. The proposal does a good job of explaining the problem and previous work is

well referenced. However it is very complex and results could not be used to direct improvements in survival or productivity in the 18 month time frame.

Discussions with stakeholders and managers have to be held and models calibrated, run, and verified. The proposal could therefore be improved by careful review and revision of objectives and possible reduction in scope. If this research project were funded, or even a part of it, the results would provide a foundation for future work. Resolving mitigation for climate change is going to be a long term process and any well-done incremental steps are important.

### 200750800 - Designing Pre- and Post-Fire Restoration Strategies for Recovery of Salmonid Habitats in a Period of Climate Change and Increased Forest Fire Disturbance

**Sponsor:** Earth Systems Institute

**FY08-09 budget:** \$88,300

**Short description:** We propose to apply new watershed analysis tools to identify critical pre-fire and post-fire restoration and management strategies for enhancing recovery of Chinook, steelhead, and bull trout habitats in a period of increasing natural disturbance. ([View full proposal online](#))

**Recommendation:** Ranked R3, Innovative, Research-oriented, Highly Justified

This innovative proposal ranks with the other climate-change proposals as a highly justified, priority modeling, assessment tool, for aiding watershed rehabilitation and evaluation. This is developmental research that deserves support and is proposed by an expert team (lead by a renowned geomorphologist at Earth Systems partnered with an established leader in fish habitat and biology with USFS) that will develop watershed analysis tools (NetMap) along with a digitized watershed database to be made available to other scientists, stakeholders (many groups) and via workshops. Fire disturbance and the associated rehabilitation options will gain increasing priority with the warmer environment predicted for the Columbia Basin, and elsewhere. The assessment and modeling approach is a good test of the application of pre- and post-fire restoration strategy using modern tools and techniques. Validation over a longer time frame than accommodated in this solicitation may be appropriate, and should prove very useful. The first analysis is proposed for the Methow basin but the potential for broader application seems high; a value-added component is that the digital watershed database, in conjunction with new analysis software, could provide the basis for development of a regional monitoring and evaluation framework. The latter requires further description and development, but shows promise. The proponents should be encouraged to develop this tool to the implementation stage, and provide for field-testing and on-the-ground application. This type of developmental research within the Columbia Basin needs an avenue of support that may not fit this particular solicitation well (i.e., not on-the-ground for the most part, lacking evaluation of effectiveness, and difficult to complete in the limited time frame), but is nonetheless needed.

200750200 - Application of Innovative Acoustic Telemetry Technology to Underpin Statistically-Valid Survival Estimates for Chinook Salmon in the Nearshore Ocean Off the Mouth of the Columbia River

**Sponsor:** Pacific Northwest National Laboratory

**FY08-09 budget:** \$532,680

**Short description:** The purpose of this project is to establish innovative methods that can enhance and expand into the nearshore ocean estimates of juvenile salmonid survival and migration patterns, especially for subyearling Chinook salmon.

[\(View full proposal online\)](#)

**Recommendation:** Ranked R4, Innovative, Research-oriented, Highly Justified

This important research project is a study to use available acoustic tagging technology to improve estimates of survival and distribution of Chinook in the Lower Columbia River Estuary, specifically very near the river mouth and in the plume. An incremental approach to monitor tagged individuals is proposed with receiver arrays set up in about a 20 kilometer range around the river mouth. This appears to be a useful approach to improve data in this poorly known area. The grid proposed for monitoring is more comprehensive than previous studies in these reaches, but in general the project is not innovative. The proposal is well written. Methods and work elements are extensively detailed and justified, citing pertinent references. If the results were linked to survival estimates in other reaches of the Columbia River they could help direct improvements in the survival or productivity of Chinook. As a stand-alone project however they are not, and therefore the project is not on the ground. The proposal would also be improved by a better explanation of the relationship between U.S. Army Corps of Engineers contributions and the current Fish and Wildlife Program request.

200751100 - DNA typing to identify native inland *Oncorhynchus mykiss*

**Sponsor:** Washington State University

**FY08-09 budget:** \$217,364

**Short description:** New DNA-based tests which distinguish the inland and coastal forms of rainbow trout will be developed. These tests should be widely useful for genetic characterization of Columbia Basin rainbow trout populations.

[\(View full proposal online\)](#)

**Recommendation:** Ranked R5, Innovative, Research-oriented, Highly Justified

This is an innovative research project to develop new (updated) Single Nucleotide Polymorphism markers (SNPs) from AFLPs to identify hybrids between hatchery rainbow trout and native redband trout. It does not meet the criteria of an on-the-ground pilot or demonstration project. However, this research proposal could produce benefits to fish and wildlife in a shorter time frame than some of the other research proposals.

Identifying hybrids between hatchery rainbow trout and native redband trout has been challenging because these species are so closely related. Genetic markers that have proved useful for identifying hybrids between rainbow and cutthroat trout are not informative for these related species. Any methodological advance would be helpful.

The existing methods for discriminating between these species and their hybrids have hindered native inland trout conservation and restoration.

The personnel have a demonstrated track record of accomplishment. There is no doubt they could fulfill the goal of developing additional markers within the time frame. Sponsors have a record of widely disseminating data and results through all appropriate venues (peer-reviewed journals as well as directly with managers).

The benefits to fish and wildlife (fish) would be through better decision making. The magnitude of the problem (hybridization) and the likelihood of remediation (removal of hybrids - with reintroduction) is hard to judge from the proposal.

### **Forty-Five Unranked Proposals**

200750000 - A New Aging Technique for Lake Trout and Northern Pikeminnow Using Allometric Relationships between Fish Size and Otolith Mass

**Sponsor:** University of Montana

**FY08-09 budget:** \$115,240

**Short description:** We propose to develop and test multiple regression age models for northern pikeminnow and lake trout using allometric relations between fish size and otolith mass.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposed project is essentially a methodological research project rather than an “on-the-ground” project. Moreover, the sponsors did not truly connect how the information (and methodology) is a highly critical uncertainty and would directly improve focal species populations rather than a basic improvement in understanding population dynamics of lake trout and pike minnows.

As for the proposed project, establishing a direct relationship between otolith mass and body size may provide the basis for useful shortcut to aging (presuming there is also a relationship between age and otolith size, which preliminary data appear to suggest). The project sponsor contend that the methods to be ground-truthed will provide a substantial time and cost savings; however, no support is provided for this as to the magnitude of the savings over more commonly applied otolith aging methods (counting annuli).

The proposal could be strengthened by the sponsor providing a more substantial justification of the specific "need" for alternate aging methods, as well as a direct linking of how age data will be used by resource co-managers.

200750100 - Adapting tree-ring techniques to reconstruct stream environmental histories from the growth increments of long-lived freshwater mussels

**Sponsor:** Oregon State University

**FY08-09 budget:** \$73,502

**Short description:** We apply tree-ring techniques to i) develop chronologies from the growth increments of freshwater mussels, and ii) use mussel and tree-ring chronologies to reconstruct aquatic environmental variability prior to the beginning of instrumental records.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal aims to reconstruct continuous annual temperature regimes from river systems with freshwater mussel populations, based on variation in annual growth rings. It will be helpful in reconstructing thermal conditions for the last century; however, it will probably not be able to reconstruct pre-development thermal regimes because of the life-spans of the region's mussel species. The project is innovative in the sense that this technique has not been used with freshwater mussels in the Columbia River Basin before, although it has been used with marine bivalves in other locations. It has the potential to show trends over the last century but is of limited use in forecasting changes over the next century.

The technical background is clearly explained, although the relevance of the project to specific fish and wildlife management issues in the Columbia Basin could have been more thoroughly developed. In particular, the background could have explored the types of thermal changes, and their causes, that might be reflected in mussel growth patterns. Additionally, beyond the need to fill in the gaps in temperature and flow records in various subbasins, the proposal does not indicate why this research is strongly needed at this time. For example, the authors could have mentioned how these data could be used to choose locations for habitat improvement projects. The methods and analyses are well described, and the scientists have clearly had considerable experience with performing these types of studies. It would have been helpful to have included an objective explicitly describing how the results of this study would be incorporated into environmental planning in the context of future habitat restoration. This would have demonstrated the link between what happened in the past and how the information from the study can be used to improve management actions in the face of additional climate change.

## 200750300 - Assessment of Functional Biological Differences between Natural and Hatchery-Raised Redfish Lake Sockeye Salmon

**Sponsor:** University of Idaho - Aquaculture Research Institute

**FY08-09 budget:** \$199,751

**Short description:** The project will use microarray analysis and quantitative PCR to quantify differences in gene expression between natural and hatchery-raised Redfish Lake sockeye salmon. Functional genetic differences will then be correlated with reproductive success.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal is for the innovative use DNA microarrays to evaluate which genes are being expressed in natural and hatchery sockeye salmon from Redfish Lake. It is not an on-the-ground pilot or demonstration project.

Microarrays are very recently developed technology useful in a variety of applications to assess differences in gene expression. They have not been used in the Columbia River Basin Fish and Wildlife Program. In the near term this work would lay an important foundation for beginning DNA microarray technology development with salmon. It is unlikely to provide benefits to fish or wildlife in the near term.

No explanation is provided why Redfish Lake sockeye salmon were chosen as the experimental subject. Why not steelhead? Why not spring-Chinook? The experimental design was not adequately summarized. The sponsors suggest that they were going to follow both hatchery and natural fish through the entire life-cycle, including returning anadromous adults. No natural anadromous adult sockeye salmon have returned to Redfish Lake in years. Consequently it was not clear what the various sources of fish would be.

It is not clear how any differences detected in expressed genes would be interpreted. The summary states that the investigation would include survival through adult stages, but that would take more years than the innovative project covers. Further, because so little is known about the functional differences in gene expression between individuals and populations, it is not likely that differences observed between natural and hatchery fish will be easily interpreted. Certainly it would be difficult to extrapolate any observed differences to rearing conditions that could be manipulated or to relate these differences to survival differences.

A general framework with two objectives, an experimental design, and identification of the statistical methods used to analyze and interpret the data are provided. Because the methods used are atypical in this type of application, a much clearer explanation would be required for the ISRP to conclude that the experimental design being used could lead to interpretable data, under any assumptions of differences between natural and hatchery fish. Specifically, the sponsors propose to identify differences in gene expression between natural and hatchery fish, and then relate (correlate) this difference with survival



differences. They are also looking at developmental differences in gene expression. What is not clear to the ISRP is how you would know what the gene expression would have been at an earlier life-stage in the various fish that survive. It certainly will not be known what the gene expression would have been in the fish that do not survive.

No estimate is provided of the benefits to fish and wildlife, that is, how they will take the differences they detect and turn that into altered fish culture practices and how that in turn will yield improved survival in the hatchery fish. No timeline is given for moving this technology from the laboratory/experimental phase to yield improved fish survival.

#### 200750400 - Automated Scale Image Analysis (ASIA)

**Sponsor:** Biopar, LLC

**FY08-09 budget:** \$198,250

**Short description:** A system for quickly and automatically extracting data from fish scales (scale cards) to automatically age fish and perform stock identification.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This project involves proof-of-concept demonstrations of Automated Scale Image Analysis (ASIA). The project is innovative in that it applies a technology developed using National Science Foundation funding to Columbia River salmon populations. However, the ISRP concludes that agencies and the sponsors on their own initiative could undertake this proof-of-concept work, as the technology has already been developed. If agencies like this technology they will adopt it regardless of whether or not this project is funded. If they do not like the technology, they will not adopt it. The technical and scientific background in the proposal is insufficient, i.e., one short paragraph that refers to information in an attachment. No problem is identified. No scientific and technical justification for the project is provided. The project's goals (increase speed and improve the accuracy of ageing fish scales or, in some cases, stock identification) are not directly linked to the goals and objectives of Columbia River subbasin plans and regional programs. According to the sponsors, there is already some ongoing work with Nez Perce Tribe and the Oregon Department of Fish and Wildlife to demonstrate feasibility of this technology. The online form identifies BPA project 198805301 for aging and stock identification work (if this proposal is funded). The project objectives are stated as tasks, e.g., "collect and scan enough scale cards" and "demonstrate the automated throughput" rather than as desired outcomes.

There is no explanation in the proposal's methods section of how the automated scanning of scale acetates can be used to perform the "stock identification" function or task. The explanation of the statistical confidence in the aging of the fish from automated reading of the scales is not very clear. The inclusion of a lawyer as a co-principal investigator on this project is not adequately justified. The sponsors' CVs do not include any reports or publications of their previous work. Information transfer involves reports, public databases, and public presentations, but would be improved by scientific peer-reviewed publication of results. There are potential benefits to the Fish and Wildlife Program if the

technology improves efficiency and cost effectiveness of scale ageing. Reducing the current time frame needed to age fish scales, however, would not necessarily lead to estimation of vital parameters and increases in abundance or productivity of Columbia River salmon.

#### 200750500 - Catching Predator fish with commercial traps

**Sponsor:** Gulf Vessel Management Inc.

**FY08-09 budget:** \$400,000

**Short description:** Place baited commercial traps (pots) in pools with high predator volumes. Traps keep fish alive thus only targeted fish will be eliminated

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal was incomplete. The proposal narrative is a brief three paragraphs that does not provide sufficient information to conclude that the methods and tasks are innovative and that there would be benefits to fish and wildlife (fish in this case). The proposal does not appear to include innovative methods or technologies.

#### 200750600 - Chiwawa River Adult Spring Chinook Otolith Study

**Sponsor:** Wild Fish Conservancy (formerly Washington Trout)

**FY08-09 budget:** \$47,913

**Short description:** Analyze microchemistry of otoliths from post-spawn adult species to determine location of pre-smolt overwintering habitats

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This proposal is essentially a methodological research project that approaches questions using methods widely used in the Columbia and other watersheds (e.g., east coast shad and Great Lakes steelhead) or circumstances, thus does not merit innovative standing. The project, in and of itself, will not improve populations but could provide data to assist managers in understanding the biology of the Chiwawa Chinook and make better-informed decisions.

However, the proposed work as presented does not meet scientific criteria largely because of an inadequacy in establishing chemical “signatures” for the reference streams. The approach, design, methods, and breadth for collecting water and establishing the scale of resolution to evaluating life-history differences is critical, especially here to assign the overwinter localities in assayed fish. There is also uncertainty about the actual sample sizes to be used ( $N > 2$  up to  $n = 50$ ) and whether this would be sufficient to answer the basic question (uncertainty).



200750700 - Crumble-Crete Habitat Revegetation and Stability Blocks - Development of degradable bank protection/reveg block to provide temporary stability during recovery of natural bank-stabilizing vegetation.

**Sponsor:** WDFW and CRITFC

**FY08-09 budget:** \$27,738

**Short description:** Hollow blocks will be formed (trials of straw, gravel and cement) and installed in a ditch bank, filled with soil and planted with riparian vegetation. Block strength, transport, durability and rate of root development in the fill soil will be monitored.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This technique has been used elsewhere (e.g., coconut and concrete mats) yet is new to the Columbia Basin, and is potentially promising. The physical testing of the technology as proposed is not adequate, and lacks valid comparison to other techniques. Pilot tests on the crumble-crete might be included or combined with another larger restoration project and monitoring effort, in comparison to other restoration methods. The proposal doesn't go far enough to develop the comparative evaluation in physical or biological terms. Even as proposed, it may be difficult to complete in the time frame of this solicitation. An explanation of the manner in which the crumble-crete blocks are degradable was required, including discussion of the tests to determine their durability, duration, and benefits.

Although the concept is interesting, few details about location, implementation methods, or post-implementation monitoring were provided. There appeared to be no biological monitoring, other than possibly monitoring the survival of tree cuttings planted among the crumble-crete blocks. The sponsors do not describe how long the tests for vegetative growth and block degradation will last. There was very little discussion of the effects of the project on either focal or non-focal species. Although the project could benefit focal and non-focal species by improving riparian habitat conditions, the sponsors did not discuss the potential benefit.

In sum, the proposed project could benefit riparian restoration actions, but it probably is not of highest priority in most rehabilitation plans. Discussion that would have improved understanding the potential application include describing the sites where crumble-crete application is appropriate for streambank stabilization compared to sites where willow bundles or natural channel meandering would eventually result in quality fish habitat, and discussion of the selection of sites where crumble-crete application is appropriate. Perhaps there are particular river channel configurations that are better suited than others for this treatment, or perhaps it has limited application. Potential negative effects of crumble-crete on habitat were not considered, if any. However, the sponsors did clearly point out some of the problems with "non-deformable engineered bank stabilization, such as riprap and rock barbs."

200750900 - Develop structure for implementing and maintaining a Master Sample of rivers and streams in the Columbia Basin, and develop statistical tools for analyzing Master Sample applications.

**Sponsor:** Oregon State University

**FY08-09 budget:** \$386,806

**Short description:** The project will create and administer a Master Sample from which sub-samples can be drawn to meet specific needs of particular monitoring programs, create compatible web-accessible analysis statistical tools, and advise on Master Sample applications.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The ISRP and ISAB have expressed concern over the adequacy and potential redundancy in the collection of data on fish populations and habitats. Having a Master Sample is probably a good idea, but adopting it will require buy-in from the agencies that collect the data. That buy-in may be more difficult to achieve than the Master Sample. It is not clear that the results of this project will be used by other organizations. Creation of a Master Sample and training in its use does not necessarily mean that fish and wildlife will benefit. Evidence of support from potential users in the region should be provided.

The problem of overlap in monitoring responsibility, site selection, and indicator variables is briefly presented. A weakness in the technical and scientific background section is that it does not address the "gate keeper" that is required to implement any Master Sample. Additional justification concerning the innovative nature of the project and benefits expected is necessary. An improvement in the proposal would be identification of the limits BPA and Council wish to have on monitoring within the Fish and Wildlife Program and how this Master Sample could be used to achieve those goals.

The work is related to EPA funded work in the region. The sponsors state that the project would complement PNAMP and CSMEP efforts by creating the Master Sample framework thus allowing implementation of particular designs. Additionally the project would make statistical tools and guidance available to organizations on Master Sample applications. Perhaps this proposal should be incorporated into CSMEP, not generated as a stand-alone effort.

The objectives are clearly stated in the proposal. The work elements are appropriate for the objectives. The facilities and personnel are appropriate. The personnel have a history of achievement in this area. No provisions for monitoring and evaluation of the products and services offered to others are mentioned. A plan to evaluate adoption of the Master Sample would improve the proposal.

200751000 - Development of a Low-cost Dual-Frequency Acoustic Tracking Capability for Ocean & Freshwater Components of the POST Tracking Array

**Sponsor:** Kintama Research

**FY08-09 budget:** \$330,199

**Short description:** We propose to develop a small and long-lived acoustic tag compatible with the POST array. This should allow seamless measurement of movements and survival of ocean-type chinook >90 mm FL, and permit direct assessment of the role of the ocean on survival.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This project is an extension of existing POST Tracking Array study and proposes methods to incorporate a smaller tag that uses a higher frequency into POST. The ISRP concludes that the development of such a tag would be an important technological breakthrough. Such a tag would enable data acquisition on river, estuary, and ocean distribution and survival of wild chinook (ocean type) (> 95 mm) as well as "pre smolts" of other species. However, this project is similar in design to a previously-funded innovative project. As such, the surgical and field trials with a new version of the acoustic tag, array optimization, and deployment of a test array do not seem sufficiently different from previous and ongoing BPA-funded projects to be considered innovative. In addition, there is no compelling evidence that this project will contribute to direct improvements in the survival or productivity of Columbia River fish -- the main POST project does not directly improve survival or productivity of salmon. Consequently, the proposal does not fit the definition of "on-the-ground" used in the solicitation.

The assumed minimum size range of smolts that could be tagged with the new V6 is 90-95 mm. The proposal would be improved if information was presented on how this compares to the minimum size of ocean-type Chinook salmon smolts in the Columbia River. Collaboration efforts are not given. The background section of the proposal could be improved as it contains very few citations to papers in the peer-reviewed scientific literature or technical literature. The ISRP also suggests that the proposal could be improved by provision of more information on collaborative efforts with other researchers working on acoustic tagging in the Columbia River Basin.

200751200 - Documentation of food-web linkages in the mainstem Columbia River: towards understanding the role of invasive species and establishing a baseline trophic state

**Sponsor:** US Geological Survey - Cook

**FY08-09 budget:** \$337,374

**Short description:** We propose to use stable isotopes to document food web linkages in the Bonneville Reservoir. We propose to determine isotopic signatures of representative trophic levels and use multi-source mixing models to quantify food web sources and pathways

[\(View full proposal online\)](#)

**Recommendation:** Unranked

Stable isotope analysis (SIA) is not a new method but has not yet been applied in the Columbia River (except for a thesis project in the estuary and a study of bear ecology); thus the project marginally meets the innovation criteria. The effects of invasive species on fish and wildlife in the Columbia River Basin deserve attention. However, using SIA to trace food web relationships involving invasive species is complex, and the ISRP concludes that the proponents have underestimated the difficulty of the task. At this stage of our understanding of Columbia River ecosystems, results of SIA analyses will not contribute to direct improvements in survival or productivity of Columbia River salmonids. Therefore the project is not on the ground. The methods are well described and sound but do not measure properties that fish and wildlife managers can use directly. This proposal is definitely research oriented and would take far longer than 18 months to achieve results. It deals with a research need that should be a high priority in the mainstem Columbia and Snake reservoirs, but the proposal is not fully developed.

200751400 - Effectiveness monitoring of in-stream habitat restoration using tools from population ecology

**Sponsor:** US Forest Service - Pacific Northwest Research Station

**FY08-09 budget:** \$193,624

**Short description:** Habitat availability and diversity have been identified as limiting factors for rearing juvenile salmonids. We propose research to aid monitoring and evaluation (M&E) efforts used to scientifically validate the effectiveness of habitat restoration.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This is a project to evaluate habitat restoration strategies in the Entiat subbasin, with extra effort applied to measure density dependence within treatment and reference reaches. The proposed project could improve knowledge about processes relating habitat restoration and fish response. As such it is collecting basic life-history data on fish, not actually attempting an innovative restoration approach. Furthermore, plans to evaluate how knowledge gained in the project would apply to larger scale restoration activities are

lacking. That is, will results obtained from this investigation necessarily apply to other situations or be localized in time and space?

The proposed project seems to be determining if mechanistic processes relating macroinvertebrate abundance, foraging rates, and density dependence, coupled with bioenergetics models, can be used to predict carrying capacity at larger scales. A series of experiments are proposed to allow hypothesis testing. The project would compare growth and survival of fish in treated versus untreated stream reaches.

The general problem of establishing the capacity of a stream for salmon and steelhead is identified and appreciated by the sponsors. In-stream structural modifications have had variable success so the sponsors identify the need for new protocols for the effectiveness monitoring of restoration actions. The solution to this problem, for generating both realistic program objectives for abundance and productivity for salmon within a watershed, and for choosing among restoration sites and actions should be explained more clearly.

The sponsors note that key difficulties include assessing the biotic response of fish and macroinvertebrate populations. Although experiments conducted using artificial placements of structure on a small scale are proposed to enable replication and manageable microhabitat units, it is not clear that the work proposed will produce a solution to the dilemma.

The objectives and experimental design are reasonably clear. Provisions are made for analysis of experiments to identify processes that relate some habitat restoration activities to fish response. What is absent is linkage to the planning that would be necessary to gain any benefit from the project. It is also unclear how the small scale results will be validated with respect to large scale (subbasin) effects and differences in predictions resolved.

Monitoring and evaluation of this project would involve determining whether the density dependent functions established in the BACI experiments of habitat restoration had been incorporated into the planning of restoration actions for the Entiat and other subbasins. No plan for monitoring is evident.

Benefits for focal species are difficult to assess. The project is not intended to improve habitat conditions for focal species. Instead, the project is designed to improve the M&E of habitat restoration. This could lead to benefits to focal species, but the magnitude of the benefits is not easily estimated.

200751500 - Elemental analysis of fin spines: A potential tool for assessing movement of white sturgeon (*Acipenser transmontanus*) within the Lower and Mid-Columbia River basin

**Sponsor:** Oregon Department of Fish & Wildlife

**FY08-09 budget:** \$42,122

**Short description:** This project will investigate the utility of fin rays as biochemical markers in white sturgeon, and the potential use of fin ray microchemistry to describe movement of white sturgeon within the lower and mid-Columbia River basin

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proponents have done a thorough job of describing the pros and cons of the elemental analysis as a tool in fish ecology. Elemental analysis has been applied previously for studies of white sturgeon in the Columbia River Basin, so this project does not meet the innovative criteria. Improvements in our ability to identify migration patterns using the method will not contribute to direct improvements in the survival or productivity of white sturgeon in Columbia River Basin. If this research project is funded, results would provide baseline data on elements in white sturgeon fin rays which could lead to formulation of specific hypotheses about movements of the species. There would be a valued-added component if it is conducted in collaboration with another project proposed for upriver white sturgeon, as the proponents suggest. If the method was used as a technique in a broad scale, comprehensive program to identify limiting factors for white sturgeon, it would have merit. A fundamental problem with this project is that the methods to determine the spatial and temporal variation in elemental signatures in the Columbia River Basin are not well explained. For example the rationale for choosing certain sites for water collection needs to be explained. There is an ambitious program of field sampling of water, sediments, and white sturgeon described. It is unlikely all the work could be done, analyzed, and reported in 18 months.

200751700 - Estimating abundance of white sturgeon by using visual strip-transects; an alternative to mark-recapture population estimates

**Sponsor:** US Geological Survey - Cook

**FY08-09 budget:** \$590,925

**Short description:** We will determine if acoustic imaging technologies and visual strip-transect abundance estimation techniques can be used to estimate numbers of white sturgeon present in river reaches. This would add value to ongoing sturgeon stock assessment activities.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This proposal meets the criteria for innovation because it involves the use of underwater visualization of white sturgeon (side scan sonar, digital camera) to assess their abundance. These methods have not been used for sturgeon in the Columbia River Basin before and in only a few rivers elsewhere. The team has the required expertise for

underwater imaging as well experience with white sturgeon population dynamics. Capture/recapture methods involve repeated handling of animals and are subject to biased estimates, so there is merit in looking for alternate methods. However, the ISRP concludes that the proposal is not “on the ground” and that the proposal would be improved by a detailed description about how application of the image data would improve white sturgeon management. Specifically more information about how improved population estimates would result is required. Plans to evaluate and validate population estimates compared to capture/recapture methods are unclear. How will discrepancies among methods be resolved if both methods are subject to uncertainties and biases? In addition, 18 months seems too short to test and implement the side scan method. A number of mark-recapture experiments would have to be conducted to fully compare the two data sets.

**200751900 - Feasibility of using a computerized video system to estimate lamprey passage at Bonneville Dam**

**Sponsor:** Columbia River Inter-Tribal Fish Commission

**FY08-09 budget:** \$93,532

**Recommendation:** Unranked

This proposal describes an innovative research project to address a problem in making accurate counts of adult Pacific lamprey passing mainstem Columbia and Snake river dams. Currently, counts of lamprey passing mainstem dams are made during daylight hours, but it is known that the peak passage periods of lamprey are at night. This project will develop software to make an efficient analysis of video tapes or DVDs to accurately count lampreys passing at night. The method is not entirely new but has not been used in such an application for lamprey.

The project does not appear to be on-the-ground. It improves population estimates of lamprey but does not directly improve their abundance or productivity. The proposal does not specify how improving lamprey counts at night with this system will benefit lamprey, but it is assumed that improved counts will help to evaluate passage success and set recovery goals for lamprey. It appears that the proposed project will take more than 18 months to complete but could potentially be done in less than 2 years. If a proposed schedule was included we could better determine this.

If the system is successfully developed, it could also have benefits for automated counting of other fish species.

## 200752000 - Genetic Predisposition of Smoltification in Rainbow Trout and Steelhead

**Sponsor:** Columbia River Inter-Tribal Fish Commission

**FY08-09 budget:** \$89,978

**Short description:** This proposal seeks to identify quantitative genetic characteristics that predispose individual *O. mykiss* to smoltification. We will investigate the potential of resident rainbow trout to contribute to the recovery of ESA listed steelhead populations.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal is for a research project aimed at addressing a critical uncertainty regarding the control of smoltification. The application of microarray genotyping is a relatively new technique that offers great promise in understanding functional gene expression and important physical traits. However the basic approach outlined in the proposal begs the question as to how the information will be used within a management context – i.e., there is no obvious “on-the-ground” activity that follows this work.

There are also several questions about the experimental design of the proposed work. For example, there are a number of design issues about what specifically the gene chips can find. The genetic foundation (either additive or major gene) for smoltification is uncertain and needs to be identified prior to a search for candidate genes. The operational steps establishing heritability for anadromy is not presented in the proposal. This should be demonstrated with more traditional quantitative genetic methods. Then, a persuasive explanation of how the chip technology can be applied to management options is needed.

Other mapping techniques using QTL approaches may get at the answer as well. Moreover, the apparent experimental design aside from the laboratory work is rather complex especially in terms of creating lines – it may not be completed within the time frame for the project. Many of the comments from the review of this project during the FY 2007-09 proposal reviews remain in force. The concerns were expressed in that review and not addressed here.



200752200 - Innovative Fish Sample Gear for Reducing Stress and Mortality in the Catch and Increasing Efficiency in Monitoring the Effectiveness of Dike Removal Projects

**Sponsor:** Columbia River Estuary Study Taskforce

**FY08-09 budget:** \$7,838

**Short description:** To improve monitoring of newly evolving estuarine habitat behind breached dikes, CREST is proposing the construction of innovative fish sampling gear that will decrease salmonid stress / mortality and provide better safety and efficiency for field staff.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This project is small in scope (build four new fish traps), inexpensive, and potentially important if the proposed sampling gear can lower salmonid stress and mortality. The innovation is an apparently relatively minor change in trap design. According to the proponents, the design is not new but to their knowledge has not been used in the lower Columbia River estuary. The problem is relatively well defined, but the scientific and technical background did not provide any information to demonstrate that salmonids are actually stressed or experiencing mortality caused by the current traps. For example, there are no references to stress or mortality from capture in fishing gear of any type (including fyke nets). Because the proposed trap design is not new and has been used in areas outside the Columbia River estuary, some examples w/citations to literature on its successful use in other areas would have improved the proposal. Restored tidal creek evaluation is being conducted elsewhere in Columbia River Basin (e.g., Crimms Island), but because of hydrological differences (e.g., salinity) the work proposed is probably only relevant to the estuary itself. There are no collaborative efforts identified other than those internal to the Grays River group.

The design of the project is not well developed or scientifically based. No details are given on exactly where and when the work would be done. The trap modification is described in some detail, but the explanation would be improved by inclusion of a photo or sketch of the trap design and the geomorphological setting where it would be used. The gear might have to be modified again as the tidal channels evolve into different configurations. Therefore, results will only be applicable to a specific stage of geomorphological development. Has the proposed new trap design already been tested relative to a present trap? The proposal would be improved by more attention to the quantitative assessment of the two key variables (mortality and stress) that would be used to compare the effectiveness of new and old trap types. Some increment of improvement in survival (SARs) of fish captured in the evaluation of restored tidal creeks might be expected, but measurement of this improvement relative to other factors could be difficult. The ISRP recommends that the sponsors seek the advice of an investigator/colleague with statistical and sampling expertise. Given the low cost it is surprising that the proponents cannot fund the work to build the fish traps internally or via partner agencies. Perhaps, this proposal could be revised and submitted for a future request for scientific research proposals.

200752300 - Innovative methods to quantify transport of hydrophilic and legacy pesticides to the riparian zones within the Yakima Basin

**Sponsor:** U.S. Geological Survey- Washington Water Science Center

**FY08-09 budget:** \$216,909

**Short description:** The transport of hydrophilic pesticides to the riparian zone will be examined using electrical resistivity methods and of legacy pesticides in surface waters of the Yakima Basin will be examined by collection by time-integrated sediment sampler ([View full proposal online](#))

**Recommendation:** Unranked

Although developing innovative sampling techniques is commendable, this proposal did not sufficiently explain the potential benefits of improved sampling to fish, wildlife, or riparian vegetation. The proposal was to investigate a new sampling technique, in which a successful outcome will be to estimate the amount of "legacy" and hydrophilic pesticides adsorbed on suspended sediment in the Yakima River and deposited in riparian zones. The title suggests that the project will estimate the fluvial delivery of pesticides to riparian zones; however, the methods section does not describe how pesticide deposition in riparian areas will be measured.

The proposal describes the need for a time-integrated sediment sampler but does not go into much detail about why the sampler is needed in the context of native fish recovery in this subbasin. It points out that pesticide contamination of fish tissues in the Yakima subbasin poses health risks for human consumption, but it does not discuss how pesticides can affect riparian vegetation and fish populations. Although it describes other federal and state water quality monitoring programs, it is very weakly linked to the Yakima Subbasin Plan and other habitat and water quality improvement projects in the lower basin. The sampler is adequately described, but there is no discussion of how sediment and pesticide delivery to riparian areas would be estimated using this technique. Although there could be benefits to focal and non-focal species, the thrust seems to be measuring pesticide levels that can be correlated with contaminated fish tissues to gauge the risk to humans from consumption. Risks of pesticides to riparian vegetation are not described. The proposal's focus seems to be on instream depositional processes, as opposed to incorporation of pesticides into riparian vegetation as suggested by the title.

## 200752500 - Integrating Ecological Flows into River Management on the Willamette River

**Sponsor:** Nature Conservancy

**FY08-09 budget:** \$64,150

**Short description:** The project will identify ecological flow requirements for the Willamette River and its tributaries and design and test alternative flow releases from Corps and EWEB dams to achieve more natural flow regimes for the benefit of fish and wildlife.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The sponsors propose to develop and implement a flow management plan for the Willamette River that more closely approximates the natural flow regime. The project could benefit focal species by, for example, providing high flow to facilitate migration, reconnecting the river with the floodplain, improving rearing habitat, and establishing a more natural temperature regime. Unfortunately the proposed work does not fit the criteria for innovative. For the most part it simply applies existing methods to a problem that has been at least partially addressed by other projects. The proposal would be appropriate in a subbasin-specific project solicitation.

The stated objectives reasonably define the approach needed to accomplish the major purpose of the project which is to alter Willamette flow regimes. For the most part the methods seem adequate. Several elements of the proposal deserved greater explanation. One work element is to "Develop and implement a field monitoring program to assess the ecological and biological benefits of changes in flow." The sponsors needed to explain in more detail how they propose to go about developing an M&E program for a large and complex basin such as the McKenzie.

The sponsors will involve stakeholders in a one day workshop and will keep them informed and will provide updates to interested parties. This process is likely to be contentious and the sponsors should at least acknowledge how difficult it will be to gain consensus from stakeholders.

The sponsors propose to implement the altered regime by changing the operation of the Willamette River dams. The sponsors make this task seem easy to accomplish but in reality it will likely be very difficult. The difficulties of implementing flow regime changes should have been discussed more thoroughly.

**200752700 - Lake Roosevelt Littoral Habitat Enhancement Project****Sponsor:** Colville Confederated Tribes**FY08-09 budget:** \$574,112**Short description:** Spring drawdown of LR desiccates eggs of native resident littoral species and increases predation on the young of year reducing numbers of available prey species within the Lake and hence increasing predation on focal species of kokanee and rainbow trout.[\(View full proposal online\)](#)**Recommendation:** Unranked

The proposal generally meets the ISRP scientific review criteria for projects included in the Council Fish and Wildlife Program. However, the proposal elements only meet the innovative criteria "in part." The sponsor proposes analyzing and modeling data on nearshore habitats to quantify fish loss due to draw down of Lake Roosevelt at Grand Coulee Dam. This does not meet the innovative criteria in the solicitation. There are also elements to use floating substrates to substitute for littoral habitat. This element is "on-the-ground," but insufficient information is provided to conclude that it is innovative in the Columbia River Basin. More information is needed on use of substrates elsewhere, and what types of substrates are in current use.

The background section of the proposal is too long, including too much extraneous material. More information is needed on examples of the use of substrates to replace littoral habitat and on the types of structures that may be used. Only in the proposal Abstract is there a statement that a habitat enhancement approach (i.e. artificial substrates) will be tested, and there is a lack of description of the artificial substrates (the key focus of the proposal) to be employed.

Only several short and general statements are made regarding the monitoring and evaluation of the habitat enhancements. The schedule and frequency of monitoring are missing. No milestones are set for successful use of artificial habitats.

The potential benefits of the project are not well quantified and there was no discussion of potential adverse effects. But, perhaps the substrates could be a habitat attracting introduced fishes or invertebrates and could actually degrade the existing environmental conditions. This should be considered.

## 200752800 - Little McCormick Creek: Investigating Placer Mine Impacts to Streamflow Connectivity and Developing New Restoration Techniques

**Sponsor:** Trout Unlimited

**FY08-09 budget:** \$96,800

**Short description:** TU plans to restore surface flow and fish habitat in one mile of Little McCormick Creek. By studying bedrock geology, groundwater flows, and placer disturbance, TU will develop assessment and restoration techniques that are transferable in the region

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The problem is adequately explained and the proposal justification is generally well written, although a little weak on references. The sponsors wish to evaluate three alternative surface water retention technologies - impermeable barrier, geotextile fabric, and compacted inorganic fines - to restore surface flows in a stream that has been severely altered by recent placer mining. The sponsors have worked on many projects of this type in the past and have outlined the technical issues important to a successful completion of the project

This project is not truly innovative, in the sense that groundwater retention sills have been used by project sponsors in another Idaho stream (Eustache Creek); however, the other project was only partially successful. Although the sponsors propose to test three surface water retention technologies, the bulk of the proposed work is simply stream rehabilitation and is not innovative.

The objectives are very broad, and measurable outcomes are not given. The methods in Phase I of the work are not very detailed. This project mostly seems to be an application of standard stream restoration techniques. Phase II and III of the project is a major stream restoration activity including, among other things, channel reconstruction and placement of large wood. In short, the work includes much more than the stated objective of the proposal.

One significant unknown is whether retention sills are a suitable approach to restoring surface flows at this particular site. Because the geological survey has not yet been completed, the depth of bedrock has not been established, and it is not certain that sills are appropriate. If not, the experiment designed to evaluate the three water retention technologies - impermeable barrier, geotextile fabric, and compacted fines - will be impossible at this location.

200752900 - Loss of salmon and steelhead productivity due to barriers in the Lower Columbia River ESU

**Sponsor:** Washington Department of Fish and Wildlife

**FY08-09 budget:** \$158,326

**Short description:** Washington Department of Fish and Wildlife proposes an innovative approach to develop a predictive model for steelhead, Chinook, coho, and chum salmon to determine productivity loss due barriers using representative sampling, GIS, and culvert inventory.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal is marginally innovative. This project proposes to develop a model to prioritize barriers that impede movement of fish upstream. The prioritization will be based upon the lineal distance of habitat that will be opened by barrier removal. Lineal distance is taken to be indicative of the potential of the barrier removal to increase fish abundance and productivity. This approach could be important as barrier removal projects rarely attempt to assess the importance of the area above the barrier for salmon and the gain in production that can be accrued.

The objectives are clear and consistent with the Fish and Wildlife Program. The final product will be a model predicting lineal miles of stream above barriers that are suitable for salmon. The results will be used to prioritize barrier removal projects. The methods are clearly explained and involve sampling fish to assess the extent of their upstream distribution in several watersheds and using this information, combined with physical data on the stream and watershed, to develop a predictive model.

The sponsors should consider the quality of the habitat as well as the lineal extent in their prioritization. No field validation of the model will apparently occur and follow-up work to determine if the projects are successful in improving salmon production was not discussed. As such, the proposal did not meet the criteria of being an "on-the-ground" demonstration or pilot project.

200753000 - MADS Weir Demonstration Project in Walla Walla Subbasin (MADS - Modular Arch Drop Structure)

**Sponsor:** Steward and Associates (in conjunction with the Walla Walla County Soil and Water Conservation District)

**FY08-09 budget:** \$118,750

**Short description:** This project will demonstrate the effectiveness of a low cost method for addressing fish passage problems caused by perched culverts, incised channels, and water diversion structures, including push up dams.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal is incomplete. Only an abstract and a resume of the Principal Investigator is provided. On the basis of this information the ISRP is unable to establish that the MADS is innovative using the definition provided with the solicitation instructions. The proposal is to use pre-fabricated fiber-reinforced concrete modular structures to replace failed culverts. No sites are identified; no cooperators that are interested in using the structures are identified.

The ISRP believes that if modular concrete culverts are cost effective replacements for failed culverts, agencies responsible for the engineering and construction of replacements will adopt them without the necessity of a pilot under to auspices of the Fish and Wildlife Program.

200753100 - Microbial Assessment of Thermal Impacts of Dworshak Reservoir Releases

**Sponsor:** Washington State University

**FY08-09 budget:** \$165,473

**Short description:** The primary purpose of this project is to develop a methodology to evaluate the impacts of cold water releases from Dworshak Reservoir using innovative microbial assessment techniques.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal describes a research study to examine the linkages between water temperature, microbial communities, and juvenile steelhead growth. These linkages are not well described, and the proposal does not offer a scientifically defensible approach. Getting data on temperature profiles in reservoirs is needed, but the relationship to microbial populations is questionable. The technical background on this key part of the project needs improvement. Basic citations on key variables such as steelhead growth rates in the Clearwater River also need to be provided. No real documentation is given of hypothesized problems. Benefits are uncertain.



200753200 - Molalla-Pudding Sub basin Assessment; utilizing the new EPA Watershed Assessment of the River Stability and Sediment Supply (WARSSS) procedural methods to increase anadromous fish survivability

**Sponsor:** Molalla River Watch

**FY08-09 budget:** \$271,222

**Short description:** The Molalla supports habitat for rearing, migrating anadromous species and resident cutthroat. The impairments within the Molalla River watershed are documented. However, the analysis to identify where to implement on the ground restoration is not developed

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The thrust of this proposal is to apply an EPA model - Watershed Assessment of River Stability and Sediment Supply (WARSSS) - to the lower Mollala River/Pudding River watershed for the purposes of identifying major sediment contribution areas, which can then be targeted for remediation. According to the proposal, the model has not yet been applied elsewhere in the Columbia Basin. The project is not an on-the-ground effort, in the sense that it does not actually involve reducing sediment inputs, but instead offers a new technique for identifying problem areas. It is confined to the lower watershed and does not include the headwaters. The proposed work could have broad application across the Columbia Basin for planning and prioritization purposes. The sponsors state that this effort will be the first application of WARSSS in the west. A true test of the methodology in the west should involve application to river basins that vary in climate, geology, and land use patterns. A more detailed summary of the method and the specific products was needed.

The proposal points out shortcomings in the Lower Mollala and Milk Creek Watershed Assessment with regard to pinpointing sediment sources, although it does not provide details about the WARSSS model specifically. It only generally describes the relevance of the project to key fish species, and it does not mention specifically what species or life stages stand to benefit from sediment abatement in the basin. The proposal could have provided an explanation of why the model will represent an improvement over other techniques of identifying sediment sources in low gradient rivers. Additionally, the proposal does not suggest how the model could be linked to biologically measurable performance indicators that can be used to gauge the benefits of sediment control in this watershed. Successful accomplishment of the WARSSS methodology could produce a river rehabilitation plan and provide prioritized sites for habitat restoration in the Molalla basin. Although testing a new model that can identify chronic sediment source areas is desirable, this proposal did not really fit the overall goals of the innovative project solicitation (both innovative and on-the-ground). It would be worthwhile to apply WARSSS during the next round of watershed assessments.



200753300 - Monitoring fine sediment delivery to fish habitat in the Entiat River subbasin

**Sponsor:** PNW Research Station -- Wenatchee

**FY08-09 budget:** \$295,000

**Short description:** Test and demonstrate an improved method of monitoring fine sediment delivery to the habitat of sensitive salmonids.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This project proposes to develop and test protocols for sampling fine sediment in streams and its impact on salmon habitat. The proposal is well written and scientifically sound. The sponsors convincingly argue that current methods of monitoring sediment in streams are less than adequate. The objectives are clear and quantifiable. The work appears to be able to be accomplished within the allotted time frame. Benefits will not accrue directly, but this project could add to knowledge base that will eventually generate benefits that could be long-term.

The timeline of this funding probably is not sufficient to generate much data once the equipment is in place. The funding from the innovative solicitation really would be only for a start-up with most of what would be contributed in terms of data collection and analysis having to follow in subsequent years. Procedures are well chosen and described, but the project will not be mature at the end of funding period.

The work could be improved if the proposed new method for assessing sediment rates were rigorously compared to results from standard techniques. While fine sedimentation is clearly a problem in parts of the Columbia Basin, it is not clear that development of a new method for measuring it is of the highest priority at this time. The proposal is innovative in the sense that a new assessment technique will be developed.

200753400 - Performance comparison of a stationary PIT tag antenna array in Lookingglass Creek, Oregon

**Sponsor:** Confederated Tribes of the Umatilla Indian Reservation

**FY08-09 budget:** \$47,829

**Short description:** This project will compare estimates of migration timing, survival, and abundance for juvenile spring Chinook salmon outmigrants from Lookingglass Creek, Oregon. Comparison will be made between a screw trap and passive, stationary PIT tag array.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The sponsors propose to compare estimates of salmonid outmigrant abundance, survival and migration timing to Lower Granite Dam between rotary screw trapping and a remote PIT tag detection system. The sponsors clearly point out problems with using screw traps to monitor smolts and the need for an alternative counting technology such as a PIT tag

array is clearly explained. Of course, monitoring the movement of PIT-tagged fish, as opposed to collecting fish from a trap, will mean the loss of ability to measure growth and perform other actions that require direct handling. If the performance of the rotary traps and stationary arrays is similar, the PIT tag system could replace some screw traps in the Columbia River Basin resulting in substantial monetary savings. The distinguishing features of this proposal are that it attempts to monitor PIT-tagged fish movements in a larger stream than those in which fixed antenna technology has been used before, and it performs essentially a side-by-side comparison of a rotary smolt trap and a full stream PIT-tag antenna array. The objectives and methods are very well described, and the details presented are indicative of a project where little would be left to chance.

It is essential to recognize that this project does not attempt to determine which of the two techniques yields the best survival estimates but rather to see if the estimates generated by the two are similar. The whole point of this proposal is to determine which of the two census methods is the most cost-effective, not the most accurate. A central shortcoming of this one-year project is the uncertainty of stream conditions, particularly extreme conditions like chronic flooding, that could seriously impair the operation of the rotary trap or diminish its efficiency so much that comparison with the PIT tag array would not be very meaningful. An adequate test of the proposed methodology would likely require several years of work to take into account the effects of variable stream conditions.

200753600 - Piloting StreamBank™ Web Tool and permitting efficiencies to achieve Middle Fork John Day River Channel Reactivation and Floodplain Restoration.

**Sponsor:** Oregon Trout

**FY08-09 budget:** \$354,941

**Short description:** Oregon Trout seeks to bring web-based innovation and increased efficiency to stream restoration work in connection with a large-scale restoration project on private land in the John Day River Basin.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal is to develop a web tool (StreamBank) to permit efficient organization of restoration work in streams, but further justification on the need is required. This web-based software component is purported to accelerate watershed rehabilitation, but it is an organizational tool for the most part. In addition, the project may be unable to test the software development adequately within this basin (one site only proposed, no controls) or within this time frame. Also included in the proposal is a stream restoration project in an area of the John Day River. This involves several hundred hours of restoration effort and most of the budget, and will exceed the time frame of this solicitation. This component appears more suitable for the standard annual/provincial projects solicitation.

A good description of the software is needed, with an explanation of the attendant goals and functions, and discussion of how each component would be tested and the results integrated with the subbasin plan. Most of the components that this tool is purported to

assist with seem already available and in operation in this subbasin. Consequently the immediate utility of the tool is questionable. The software may be new, and helpful, but the field project is not, and the need to link testing of the software and its efficiencies to the field project requires further work. Furthermore, the time frame for the field project is probably over-optimistic and there would be no time in this solicitation cycle for effectiveness monitoring. Evaluation of efficiencies gained through use of StreamBank would be difficult to assess since no reference area or independent evaluation team is included. The monitoring and evaluation proposed is largely verbal, through interviews and comment, thus lacking scientific rigor. Testing the software efficiency, particularly of this nature, is difficult, and beyond the scope of the intent of this solicitation.

**200753700 - Population specific in-season forecasts of Columbia River Chinook salmon (*Oncorhynchus tshawytscha*) returns for allowing selective in-river fisheries**

**Sponsor:** Columbia River Inter-Tribal Fish Commission

**FY08-09 budget:** \$99,762

**Short description:** We will make accurate in-season forecasts of Columbia River Chinook salmon population-specific returns to increase the resolution of in-river harvest selection between weak wild and healthy wild or hatchery populations.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This proposed work's purpose is to generate in-season, real-time, escapement estimates to judge run strength and guide more effective harvest of strong versus weak stocks of salmon in the Columbia River. The project would also result in quantification of uncertainty in forecasts. The proposed technology is Genetic Stock Identification (GSI) combined with PIT tagging.

PIT tagging technology is not new, nor is assigning salmon to stocks of origin using multilocus genotyping. What is new is forecasting run size and timing on a real-time basis, in season. Genetic technologies were used in the Columbia River Basin in the early to mid-1980s to estimate the catch of depleted Snake River spring-Chinook on a real-time basis. The idea was to open or close the fishery on a weekly basis, based on the catch of Snake River spring-Chinook. When the season quota of this stock was reached the fishery was closed until the stock had passed a particular fishing zone.

The proposed project relates to the overall goal of increasing harvest by increasing the resolution of a harvest selection. Collaboration with several other agencies is noted, mainly to use data already being collected. The project would intersect and inform many other restoration, mitigation, and fishery projects in the basin. The project will necessarily rely on the efforts of cooperative groups (to collect and deliver tissue samples and provide PIT tag data) for the in-season forecast modeling. The proposal would be enhanced with a description of whether these groups would participate and if the relationships to other projects that were essential to completing this innovative effort were clearer.

One major problem was inadequately addressed in the proposal. Even with GSI aided estimates of the composition (%) of a mixed-stock selective fisheries (whether commercial, recreational, or subsistence) one must rely on the ability of the fishers to discriminate healthy versus weak stocks at the time of capture if the weak stocks are to be avoided. Also, once strong stocks are targeted and removed, the composition (%) of the mixed stocks change as they move up river. Similarly, as spawning rivers are passed and stocks peel-off to spawn, composition (%) of the mixed stocks change. GSI models have yet to accommodate these factors. The large omission in the proposal is a discussion of how one will execute a fishery if the fish are mixed together. The proposal would be improved with inclusion of a discussion of how to harvest mixed fish populations. Furthermore, targets for precision of the data should be provided.

The methods are explained in general, but there is little description of the particulars of the GSI approach (number of loci used, differences among reference populations defined as the 13 stocks, robustness of data sets to assumptions, expected sample sizes passing through Bonneville, etc.). A missing element is a discussion of the improvement necessary, or the precision required, in the run size and time forecast that is required to make the process useful in yearly harvest management. The methods do not appear to be directed toward assessing whether this precision can be attained. It is more of an effort to obtain estimates, including a probability distribution of potential estimates.

The assembled team has the expertise and facilities to accomplish and carry out the work elements. Although with sample sizes unknown, the current facilities could quickly become over-run with samples (unless a regular system of sub-sampling will be employed).

The principal uncertainty is whether any scheme exists to harvest fish in a mixture containing both weak and strong stocks. This is a classic dilemma in salmon management and more information on the stocks will not help. It will just make it clearer why fishing will not be permitted when there are abundant fish around.

200753900 - Promote Kokanee Repopulation in Lake Pend Oreille using Autonomous Underwater Vehicles (AUVs) for Location and Verification of Lake Trout Spawning Areas.

**Sponsor:** University of Idaho - Microelectronics Research & Communications Institute (MRCI)

**FY08-09 budget:** \$400,177

**Short description:** The proposed work will apply underwater robotics technology to allow researchers to visually survey large areas of the floor of Lake Pend Oreille to locate and verify Lake Trout spawning areas.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This is a well written proposal that can potentially answer a question (Where do lake trout spawn in Lake Pend Oreille?) that would otherwise be difficult and dangerous to answer. The technical background is presented effectively, and the project's justification is reasonably clear. Causes of the Lake Pend Oreille kokanee declines are not fully known, so controlling lake trout spawning may or may not be the "silver bullet" that will facilitate kokanee recovery. The presumed issue is that lake trout are limiting kokanee populations by predation, and the autonomous underwater vehicles (AUVs) will help identify lake trout spawning grounds so that adults can be netted before they can reproduce successfully. The proposal would have benefited from a more thorough discussion of possible applications of the technology in the Columbia River Basin other than to identify deep water spawning areas in this particular lake. Nevertheless, this proposal does apply a novel technological approach to the problem of identifying major deep water spawning sites, and it may offer applications to other areas of the Columbia River Basin where diving is hazardous. The ISRP wondered if the AUVs have been tested in rivers. Some explanation of possible wider applications of the technology for fisheries research would have made the proposal more relevant to a broader set of issues, and therefore more appealing.

200754000 - Quantitative Assessment Sampling for Pacific Lamprey in Cedar Creek (Lewis River Subbasin), Washington

**Sponsor:** US Fish & Wildlife Service

**FY08-09 budget:** \$140,000

**Short description:** A Quantitative Assessment Sampling Program will be developed to estimate the production of Pacific lamprey macrophthalmia from Cedar Creek in the Lewis River subbasin. It can be used to quantitatively assess lamprey populations in the Columbia River basin.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The project has the potential to provide significant benefits by developing an approach for sampling lamprey larvae that could provide more accurate and rigorous estimates of juvenile abundance. Their approach is based on a well-tested protocol developed in the

Great lakes for sea lamprey. The new approach could have broad applicability across the Columbia Basin, and it could become part of standard monitoring and evaluation protocols for lamprey.

Each objective appears to be both measurable and accomplishable within the 18 month time frame. The methods for objective 1 appear adequate, but the methods for objective 2 needed to be described much more thoroughly. Specifically, the sponsors needed to detail how the results from objective 1 and 2 would be used to develop the model for predicting macrophyte abundance.

The sponsors propose to develop a stock assessment tool for lamprey that could be broadly applicable throughout the basin. While this work is exceedingly important and in the past has been supported by the ISRP, the proposal only marginally meets the innovative criteria because, although it involves field sampling, it really is not an on-the-ground demonstration or pilot project. The purpose of the work is to synthesize a Quantitative Assessment Sampling Program, not to test it. The data collected by field sampling would be used in development of the Assessment Program.

**200754100 - Reecer Creek Floodplain Restoration Project to support ecosystem function using build-in-the dry and 3 yrs revegetation to encourage channel dynamics, habitat formation and natural sediment management**

**Sponsor:** South Central Washington Resource Conservation and Development

**FY08-09 budget:** \$428,307

**Short description:** Restore 69ac of historic floodplain on City of Ellensburg land to increase channel length, complexity and habitat area, add high flow channels and backwater swales to support water quality, dissipate flood energy, increase rearing and spawning habitat.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

Off-channel and in-channel habitat rehabilitation in this manner and as proposed has occurred elsewhere, thus few if any innovative approaches are evident. More certainty is needed in the proposal to establish that truly innovative techniques would be used, and that the habitat and fish population benefits of the project would be monitored. This proposal strongly emphasizes a bioengineered approach to floodplain reconnection. For the most part the floodplain reconnection and channel contouring techniques are in wide use elsewhere. The sponsors state that dirt bags and crumble-crete blocks "will be considered." But apart from these tools (which are the subject of a separate innovative proposal), there is little in the project description to qualify as a truly innovative approach.

While the effort to reconnect a 3/4 mile section of lower Reecer Creek with its floodplain is commendable, and should perhaps be contained within the subbasin plan, there is not enough detail in the proposal for a sufficient understanding of the biological benefits of this project. A brief list of focal species is given, but it was not clear how many of these

species, or what life stages, would benefit from the project in some way. The proposal describes other floodplain reconnection and side channel enhancement projects within the Yakima subbasin but does not provide a clear description of how the findings from this project would be used to aid those projects or floodplain restoration work in the future. The brief description of a monitoring program contained too many uncertainties (e.g., "Redd surveys may also be conducted") to provide confidence that the project will be properly monitored for biological benefits. No details about fish surveys or vegetation survival studies were given, nor were personnel and facilities adequately described.

Reconnecting lower Reecer Creek with its historical floodplain will probably benefit both focal and non-focal species, but this project plan was not sufficiently detailed to ensure that the benefits will be documented.

#### 200754300 - Simmons Dike Removal feasibility study

**Sponsor:** Umatilla Basin Watershed Council

**FY08-09 budget:** \$43,000

**Short description:** Funding sought for feasibility study to remove a 1000' levee on the Umatilla River. Designs will be drafted to reshape and restore stream/floodplain connectivity, and restore wetland function.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This proposal was incomplete and not scientifically reviewable.

#### 200754400 - Spawning Channel for Chum Salmon at Beaver Creek Hatchery

**Sponsor:** Washington Department of Fish and Wildlife

**FY08-09 budget:** \$398,000

**Short description:** WDFW proposes and innovative proposal that modifies the return water from the Beaver Creek Hatchery facility on the Elochoman River into a chum salmon spawning channel.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This project is a test of the utility of developing and operating spawning channels for chum salmon using water that is discharged from a hatchery. The approach, if successful, might be applied at other Lower Columbia River hatcheries (the number of potential sites was not specified). However, the sponsors needed to explain how water quality issues would be addressed.

The principal innovative aspect of this proposal, if any, is that it will use return water from the Beaver Creek hatchery for the spawning channel. Otherwise, spawning channels for chum salmon have been used before by diverting stream water or in groundwater channels. The objective is clear and measurable and likely can be attained in the allotted time for the project. As part of the objective, however, the sponsors set an escapement



goal of 200 fish returning to the spawning channel. This part of the objective will not be attainable in the given time frame.

The methods for collection and analysis of biological data are not adequately described, and the benefits of this project are not justified. A 500 foot channel will not likely provide much benefit relative to the overall magnitude of the chum run. The water quality will likely be an issue, resulting in excessive periphyton growth and the need to clean the channel regularly, as experienced at other spawning channels for chum and sockeye salmon. The methods for constructing the spawning channel are straight-forward. The sponsors needed to indicate when the channels would be constructed.

The argument that a spawning channel for chum salmon at the Beaver Creek Hatchery discharge stream would be beneficial should have been made more quantitatively. Although the project sponsors estimate that the channel could support 200 or more adults, it was not clear whether these fish could have spawned elsewhere, and with greater success, in the lower Elochoman, or if a limiting factor analysis had indicated lack of suitable spawning sites as a population bottleneck in this system. The issue of potential redd fouling by periphyton resulting from the nutrient-rich hatchery return water was not addressed. Although this proposal gives a detailed summary of the current status of Columbia River chum salmon, it does not provide a sufficiently thorough explanation of why adding a 500' x 15' spawning channel will result in an average increase in the chum run size of 200 or more adults, and whether this is a significant addition. The problem is clear according to the proponent: chum salmon are at low abundance in the Lower Columbia in part because of the lack of suitable spawning areas. If chum are to recover, additional spawning areas must be provided. Since the Beaver Creek hatchery is located about 10 miles above the confluence of the Elochoman and Columbia Rivers, it would have been helpful to have cited more quantitative evidence that suitable sites for chum spawning are scarce in the lower Elochoman and that normal floodplain restoration methods will not result in sufficiently increased spawning areas. Variation in chum abundance is not explained by the availability and historical variation in spawning habitat.

It was not clear from the proposal how the upwelling features that attract chum salmon would be incorporated into the spawning channel design. Additionally, the work elements did not specify if access to the spawning channel would be restricted to chum (as opposed to, say, late-run coho) or if a water quality and sediment monitoring program would be in place to prevent fouling of redds by periphyton resulting from the nutrient-rich hatchery return water.

The proposal describes other projects to increase chum salmon spawning in the lower Columbia. It would have been helpful to include estimates of the numbers of chum adults that were produced by the Duncan Creek spawning channel. The proposed work is related to the Elochoman subbasin plan and the Lower Columbia Salmon and Steelhead Recovery Plan.



Data management and reporting will be through quarterly PISCES reports, annual reports to BPA, and presentations to local interest groups. The sponsors will disseminate information through reports and presentations to the public.

200754500 - Stock specific run timing and upstream migration mortality of adult Chinook salmon and steelhead through genetic stock identification and PIT tagging at Bonneville Dam

**Sponsor:** Columbia River Inter-Tribal Fish Commission

**FY08-09 budget:** \$123,150

**Short description:** This project seeks to use Genetic Stock Identification (GSI) and Passive Integrated Transponder (PIT) tags to better assess Chinook salmon and steelhead adult migratory timing and survival through the Columbia River hydrosystem.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposal is neither innovative nor an on-the-ground pilot or demonstration project.

This proposal is to use PIT tag and genetic analysis of microsatellite loci in combination, to assign upstream migrating adult salmon and steelhead to the stock of origin and then use the PIT tag to evaluate fall back at dams, travel time upstream, and pre-spawning mortality of adult fish. Neither the PIT tagging or the genetic analysis is innovative. They are routinely employed in Columbia River Basin salmon management. They may not have been used in this combined fashion to evaluate upstream migrating adults.

The proposal is little changed from one submitted in the FY 2007-09 solicitation, 200701400. The ISRP recommended a Fundable (qualified) for that proposal. The current proposal does not address the PIT tag sampling adequacy raised by the ISRP in the earlier review.

The ISRP recognizes the value of improved information on straying, fall back, adult travel time, and pre-spawning mortality. These investigations would qualify for consideration within the usual solicitation process. Using the definition of innovative established for this solicitation, the project does not appear to fulfill the necessary criteria.

200754600 - Test of protocols and validation of estimates derived with traditional and new methods for steelhead adults, smolts, and parr using an instream PIT-tag interrogation system

**Sponsor:** US Geological Survey - Cook

**FY08-09 budget:** \$236,785

**Short description:** The goal of this project is to compare adult, smolt, and parr steelhead migrant estimates from conventional trapping and mark-recapture methods to estimates from an instream PIT-tag interrogation system.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The ISRP highly supports this work. A fish counting technique of this sort needs to be implemented by the time Hemlock dam is removed (provisionally scheduled for summer 2008). Although this is not strictly an innovative proposal, there is a strong need to monitor population recovery in Trout Creek, which is part of the Wind River Intensively Monitored Watershed project and is a major summer steelhead spawning and rearing stream. This is a well-prepared proposal, but it is site specific and does not yet have wide application to the Columbia River Basin. The project is justified, but probably not under the innovative solicitation. However, there is one somewhat novel aspect of the proposed work. It is apparently the first time this particular type of in-stream PIT-tag interrogation technology will be used on upstream migrating adults to replace an adult fish counting facility at a fish ladder.

The proposal does not go into sufficient detail regarding the construction of the PTIS system itself (three two-antenna arrays arranged longitudinally in the channel) or present a strong reason why it will be located at river mile three of Trout Creek, i.e., above the existing reservoir. It is assumed that this location will prevent it being overwhelmed with sediment when the dam is removed, but the reasons could have been made clearer. The linkage between this PTIS system and other projects is acknowledged; however, lessons learned from implementing the technology elsewhere are not given. More details about construction and maintenance of the PTIS would have helped, and the number of PIT tags needed for the study could have been provided, based on the adult escapement into Trout Creek and the estimated smolt production from screw-trap sampling in recent years. Although the ISRP does not find a particularly good fit between the proposal and the overall objectives of the innovative solicitation, we reiterate that this is a worthwhile project that deserves to be funded.

## 200754700 - The Natural Tag - TNT

**Sponsor:** Biopar, LLC**FY08-09 budget:** \$229,288**Short description:** An automated, non-invasive, individual identification technology, applicable to both commonly tagged species (such as fish) and difficult-to-tag species, such as amphibians, insects, crustaceans, and other indicator species.[\(View full proposal online\)](#)**Recommendation:** Unranked

The proposed biometric technology is described by the sponsors as new, while at the same time described as "developed in 1985." Apparently, the innovation is that the technology has not been used in the Columbia River Basin. However, a demonstration project is already underway (pictures of fish to be transferred from an ODFW hatchery to NOAA Manchester) for the ongoing Captive Brood Stock program for Catherine Creek, Lostine, and Grande Ronde Rivers. The technical background is vague with no citations to published scientific or technical literature. Given that the technology was developed in 1985, the lack of citations to publications is troubling. A National Science Foundation grant is cited by number, but background information on the results of this grant is insufficient.

The proposal addresses a general need to accurately identify individual organisms with non-invasive technology but does not present a convincing case as to how the work will further the goals of the 2000 Fish and Wildlife Program, subbasin plans, or other plans. No specific problem is identified. The sponsors would like to collaborate with numerous agencies in the Columbia River Basin and have established relationships with groups ranging from high school biology classes to government hatcheries. Details of imaging technology and data analysis and evaluation methods are insufficient to judge the scientific or technological merit of the six proposed demonstration projects. The technology might be useful as a method for scientific research proposals that address a specific issue, where there is a need to identify individual organisms without invasive procedures.

The sponsors do not present a convincing case that their proposed demonstration projects, objectives, methods, and products will provide any direct improvements in the survival or productivity of Columbia River fish or wildlife species. Although the sponsors claim successful application of their technology to fish (especially grayling), there are no peer-reviewed citations in their CVs. It is not clear why a lawyer is included as a co-investigator on this project. If the results of the demonstration projects were published in a peer-reviewed journal, the findings would have some long-term benefits to numerous focal species. They might be especially relevant to rare and endangered species where there are actually only a few hundred living animals.

200754800 - The use of cDNA microarrays to develop biomarkers of environmental stress in salmonids and other fishes

**Sponsor:** US Geological Survey - Cook

**FY08-09 budget:** \$572,352

**Short description:** This project will use cDNA microarrays to identify molecular biomarkers of environmental stress, such as exposure to high temperatures or toxicants, in fish. Our goal is to develop a tool for use in ecophysiological monitoring, research, and management.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proposed project is essentially a methodological research project rather than an on-the-ground and innovative application to directly improve focal species populations. The proposal describes an ambitious effort to find expressed functional genetic markers for various stresses experienced widely by Columbia Basin focal species (thermal, contaminant, anoxia, physical, and so on). The microarray approach is relatively novel and offers great promise in such gene discovery efforts. That said, it is not clear what problem this effort will eventually solve. Ultimately, the outcome of the research effort will be increased basic information on stress response in salmon and lamprey, and additional tools for screening fish to detect a stressed state. There are likely to be benefits to fish from improved understanding of stressors and improved screening protocols. These benefits are unlikely to be realized as an immediate follow-up to the project.

A unique component of this study is the sponsor's intent to design and produce a DNA microarray for pacific lamprey, and then use it to evaluate gene expression in lamprey in response to environmental stress. The sponsoring principal investigators appear to have the expertise to carry out this work. However, producing a DNA microarray for lamprey, and screening for stressors in a little more than a year seems intractable, and the sponsors do not provide a schedule to complete the work.

200754900 - Toppenish Creek Well Modification Project

**Sponsor:** Yakama Nation

**FY08-09 budget:** \$351,423

**Short description:** Modify wells by installing deeper grout seals to prevent the drainage of shallow groundwater to deeper aquifers and to restore shallow groundwater which formerly supported springs, streamflow and riparian habitat. Wells should not interconnect aquifers.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

Although the objectives of the project seem worthwhile, this proposal was reviewed by the ISRP in an earlier iteration (FY 2007-09 solicitation) and the techniques involved do not seem to be sufficiently innovative to satisfy the goals of the current solicitation. The proposal provides some background for the problem and does give an example from Arizona where well grouting has helped restore surface flows, but the identification of the

most significant wells potentially contributing to shallow aquifer water loss is vague, and it is not clear if all the well owners have agreed to the modifications if the project is funded.

A greater problem is that insufficient information is presented to demonstrate that leakage around the well casings is actually the cause of subsurface flows in Toppenish Creek. Rather than attempting to re-grout each well in the area, it would seem prudent to first estimate how much shallow ground water is actually being lost around wells and which of the wells are the major culprits. It may be that eliminating the leakage at a few key wells may substantially correct the problem. Until some basic information on the extent and nature of this problem has been collected, applying the proposed corrective measures in a blanket fashion may be premature. The monitoring component of the project is not explained in very much detail. The proposal gives reasons why surface runoff would be a poor indicator of project success, but groundwater monitoring details are generally lacking.

200755000 - Toxics as a limiting factor for salmon recovery throughout the Columbia River Basin: understanding the enhanced toxicity of pesticide mixtures

**Sponsor:** Northwest Fisheries Science Center

**FY08-09 budget:** \$199,244

**Short description:** Evaluate the extent that exposure to environmental levels of pesticide mixtures impacts neurological function as well as swimming and feeding behavior of juvenile salmon.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This is an important proposal but does not fit this solicitation because it is research and not on-the-ground. The proposal would be more appropriate for a standard project solicitation or an RFP on this subject area. This project must be conducted under laboratory conditions (not in the Columbia River basin) because it is the only approach that can be used to understand the subtle, but perhaps serious consequences of salmon exposure to mixtures of current use pesticides that inhibit cholinesterase activity. The objectives appear reasonable and straight-forward and address the important issue of the impacts of chemical interactions. The problem that toxic substances may pose to salmon is a potentially serious issue that needs to be addressed. The proposal calls for an evaluation of realistic pesticide mixtures that have been reported in water from the Columbia River (USGS NAWQA Program data). The sponsors clearly document the presence of modern pesticides, sometimes at high concentrations, as a major source of uncertainty with respect to habitat quality for salmon that may represent a major limiting factor. While studies of pesticide interactions have been conducted, the sponsors state that no studies of interaction have been conducted at concentrations that commonly occur in the rivers of the Columbia Basin. Anti-cholinesterase pesticides began being used in Columbia Basin agriculture lands in the 1950s but have become more important as less toxic but more persistent organochlorine (DDT, heptachlor, dieldrin, etc.) pesticides were banned. Some of these pesticides alone have been shown in laboratory studies to reduce

growth and survival of salmon at low concentrations, and the question of mixtures (which are often present in the waters) pose additional complications which are quite well addressed in this proposal. The personnel and facilities are exceptional, and the sponsors have an excellent record of publication and likely will publish the results in peer reviewed scientific journals. The project could also benefit non-focal species that may be sensitive to toxic substances.

200755100 - Use of a novel technique to compare of Pre-and Post-migratory energy storage and use in upriver coho salmon: How much change can occur with intense selective pressure.

**Sponsor:** Yakama Nation

**FY08-09 budget:** \$49,245

**Short description:** We intent to compare changes in energy allocation between the developing Wenatchee River coho population to data collected from the previous generation and the founding population.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This is a scientific research proposal to use a commercially-marketed, non-invasive probe (fat meter) to measure lipid reserves of lower Columbia River coho salmon naturalized to the Wenatchee River, lower Columbia River coho released in the Wenatchee (but of recent hatchery introduction, i.e., "reprogrammed"), and coho salmon returning to Bonneville hatchery. From this experiment the sponsors wish to make inferences about natural selection for improved energy reserves in individuals that have successfully naturalized in the Wenatchee River.

While this proposal addresses an interesting scientific research question, it does not appear to be a pilot study or demonstration which if successful will contribute to direct improvements in the survival or productivity of Columbia River Basin coho salmon. It will only establish a potential explanatory mechanism for the current observations on limited success of coho salmon reintroduction. The sponsors link their proposed project to work throughout the basin at a very general level. The proposal would benefit from a concise description of how the data/results from the proposed project would be used in the other projects (at least potentially).

Methods would be improved by a short discussion on potential problems and limits of the fat meter for studies of live fish. Is holding the fish out of water for two minutes a problem? Which body parts of the fish will be measured by the fat meter? What variation in lipid measurements is expected? The sponsors do not indicate whether they have any experience using the fat meter. It is uncertain how intensive the effort must be to recapture fish at multiple points with staff available and with a single (?) fat meter. This effort and mobility of equipment deserves some additional description. The sponsors' plans for information transfer would be improved if results were to be published in a peer-reviewed scientific or technical journal. Potential lethal effects on coho salmon from use of anesthetics and holding fish out of water are not discussed. A positive aspect of

this project is that it could potentially lead to selection of an appropriate stock or locally adapted donor stock for reintroduction programs in the Wenatchee Subbasin. The proposed methods could potentially provide a useful tool for monitoring the success of other reintroduction programs, as well as the general patterns of energy store usage by migrating salmon. Perhaps, this proposal could be revised and resubmitted under a future solicitation for scientific research proposals.

200755200 - Use of LA-ICPMS and fin ray microchemistry to examine historic and present movement patterns in Upper Columbia River white sturgeon

**Sponsor:** Ministry of Environment

**FY08-09 budget:** \$75,525

**Short description:** We will determine whether LA-ICPMS techniques are able to discern movement patterns in Columbia River mainstem areas with high tributary inflows, and potential changes in movement patterns associated with completion of the Keenleyside Dam (1969).

[\(View full proposal online\)](#)

**Recommendation:** Unranked

The proponents thoroughly describe the pros and cons of the elemental analysis as a tool in fish ecology and have related the methods to other techniques such as genetics. Elemental analysis has been applied previously for studies of white sturgeon in the Columbia River Basin, so this project does not meet the innovative criterion. Improvements in our ability to identify migration patterns using the method will not contribute to direct improvements in the survival or productivity of white sturgeon in Columbia River Basin. Therefore the project is not on-the-ground.

If this research project was funded, results would provide baseline data on elements in white sturgeon fin rays which could lead to formulation of specific hypotheses about movements of the species. There would be a valued added component if it was conducted in collaboration with another project proposed for downriver white sturgeon, as suggested by the proponents. If the method were used as a technique in a broad scale, comprehensive program to identify limiting factors for white sturgeon, it would have merit.

A fundamental problem with this project is that the methods to determine the spatial and temporal variation in elemental signatures in the Columbia River Basin are not well explained. For example, the rationale for choosing certain sites for water collection needs to be explained. There is an ambitious program of field sampling of water, sediments, and white sturgeon described. It is unlikely that all the work could be done, analyzed, and reported in 18 months. Details of the proposed Bayesian analysis are insufficient. No information on facilities, equipment, and personnel involved in water chemistry analysis is provided.



200755300 - Using acoustic telemetry to evaluate the behavior, habitat use, and survival of tagged juvenile salmonids in the John Day Reservoir

**Sponsor:** US Geological Survey - Cook

**FY08-09 budget:** \$977,335

**Short description:** Large numbers of tagged juvenile salmonids are being released as part of behavior and survival research at mainstem dams. We propose to assess the feasibility of extending the use of these fish to better assess reservoir habitat use, behavior, and survival

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This proposal describes a pilot research study which will be linked to a major action in the hydrosystem, (drawdown of John Day Reservoir to MOP) which is a very uncertain action and will need major regional approvals before it is implemented. The project will use an existing tool (acoustic telemetry) to accomplish its objectives and is somewhat innovative in that acoustic telemetry has not been used in this way before.

The proposal is somewhat incomplete. The problems that this proposal is attempting to address (migratory delays and mortality in specific habitats) are not even specifically documented and are assumed. The objectives are not clearly stated and are described as a plan to develop a plan for evaluating an uncertain future hydrosystem action. Monitoring and evaluation are not specifically identified, but this entire study is basically a monitoring and evaluation study.

This proposal would address a high priority need in the future, if John Day drawdown becomes a likely hydrosystem action.

200755500 - Using otolith microchemistry and microstructure to assess the causes and consequences of alternative life history strategies for Snake River fall Chinook

**Sponsor:** Northwest Fisheries Science Center

**FY08-09 budget:** \$573,252

**Recommendation:** Unranked

This is a scientific research proposal that addresses basic biological phenomenon, i.e., alternative life history strategies of Snake River fall Chinook salmon and the effects of environmental conditions on their growth and relative productivity. The proposed technology (otolith microchemistry analysis) has been used in other Columbia River Basin projects. The sponsors do not address the assumptions and potential problems in the use of otolith microchemistry to reconstruct fish life history, e.g., see Elsdon and Gillandes (2003; Reviews in Fish Biology and Fisheries 13(3):217-235. Relations of the proposed project to seven ongoing projects are described, although information provided is insufficient to adequately assess the level of collaboration. The objectives are stated as tasks, e.g., "Collect otolith and water samples" and "Analyze microstructure of otoliths"



rather than as desired outcomes. The project involves more than one year of field work, and it is likely that the project would not be completed in the proposed time frame.

Information transfer would be improved by publication of important scientific results in a peer-reviewed journal. The sponsors do not present a convincing case for direct benefits to survival or productivity of Snake River fall Chinook salmon. This was one of a number of proposals to use otolith microchemistry techniques to reconstruct Columbia Basin fish life-histories. The ISRP encourages collaboration among Columbia River Basin otolith microchemistry researchers to establish water chemistry baseline data, which are a necessary precursor to successful completion of these projects. While this proposal is not innovative, it does address an important uncertainty in the Columbia River Basin. Perhaps, this proposal could be revised and resubmitted under a future solicitation for research proposals.

200755600 - Water Stargrass Demonstration and Management in the lower Yakima River for Spawning Habitat, Water Quality and Beneficial Uses (WiSDoM)

**Sponsor:** Benton Conservation District

**FY08-09 budget:** \$372,450

**Short description:** Water stargrass (*Heteranthera dubia*) threatens lower Yakima River salmon spawning habitat, water quality and beneficial uses. *H. dubia* will be harvested to restore these functions. *H. dubia* will be evaluated as a livestock feed to mitigate disposal cost.

[\(View full proposal online\)](#)

**Recommendation:** Unranked

This proposal describes an approach to solve a serious problem (stargrass proliferation) in the Yakima River, but the proposal is not quite well enough developed. The most innovative portion is using stargrass as a livestock feed to partially defray the harvest cost. It would seem that some preliminary work could be conducted regarding the nutrient value of the stargrass. We encourage the project sponsors to resubmit this proposal when a suitable riverine harvesting method is identified and a monitoring program is developed that can track removal effectiveness and post-harvest stargrass regrowth. Also, the actual cause of the stargrass irruption in recent years is not clear and deserves attention so that the root cause can be understood and addressed long term.

**200755800 - Willamette Mitigation****Sponsor:** The Nature Conservancy**FY08-09 budget:** \$277,644**Recommendation:** Unranked

This project proposes to evaluate projected conservation returns from alternative wildlife mitigation investment strategies in the Willamette subbasin, i.e., evaluate “return on investment.” Three investment approaches would be used in the comparison: (1) acquisition of fee interests and mitigation easements, (2) “working” land easements (restricting only development rights and following best practices), and (3) incentives and technical assistance with no long-term use restrictions. The concept sounds interesting and potentially could be extremely useful in capturing conservation opportunities that might otherwise soon be lost. The decision analysis tool is not in general innovative, although this particular application could be considered innovative in the Columbia River basin. This is not on-the-ground. This is an assessment exercise.

However, apparently little upfront work has been completed to determine the types or amounts of data available for evaluation, or sites obtained under different investment strategies (with associated biological data) that could be used in this analysis. The methods are not well enough developed to justify the project. There is insufficient detail about the rule sets that will be developed by a panel of wildlife biologists. These rule sets should be developed prior to submittal of the proposal. Also, perhaps focal species could be chosen for each of the six focal habitats. More information on the points above needs to be presented. Although the concepts are presented, and sound intriguing, details on the project are lacking.