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

of

Fiscal Year 2003 Mainstem and Systemwide Proposals

ISRP 2002-13
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Review Team

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ISRP Preliminary Review of Fiscal Year 2003 Mainstem and Systemwide Proposals

Table of Contents

Index of Mainstem and Systemwide Proposals by Project ID

ProjectID	Title	Sponsor	FY03 Request	5YR Estimate	Response Needed	Page
35015	Replicated stream system for the evaluation of hatchery and wild juvenile salmonid interaction and development of innovative culture technologies	UI/CRITFC	$300,114	$2,392,840	Yes	52
35016	A Pilot Study to Test Links Between Land Use / Land Cover Tier 1 Monitoring Data and Tier 2 and 3 Monitoring Data	NWFSC	$436,000	$2,582,000	No, Not Fundable	113
35017	Inventory and Synthesis of Physical Process Models and Methods to Supplement Habitat Conditions Analysis and Subbasin Planning	KWA and Golder	$769,609	$1,730,082	No, Not Fundable	118
35018	Evaluate recreational and commercial mark-selective fisheries.	WDFW; UI	$797,420	$2,292,260	Yes	126
35019	Develop and Implement a Pilot Status and Trend Monitoring Program for Salmonids and their Habitat in the Wenatchee and Grande Ronde River Basins	NMFS-NWFSC	$270,000	$2,350,000	Yes	114
35020	Regional Project Effectiveness Monitoring Program for Columbia River Basin Listed Anadromous Salmonids.	NMFS-NWFSC	$475,000	$2,010,000	Yes	116
35021	Purchase And Evaluation of Automated Marking and Tagging Systems (MATS)	ODFW	$843,396	$2,564,454	No, Not Fundable	138
35022	Habitat Mitigation Tracking System	Steward & Assoc.	$462,131	$1,372,107	Yes	120
35023	Establish Relationship between Fish Passage Survival and Turbine Operating Efficiency	Norman-deau Assoc.	$3,887,500	$11,932,468	No, Not Fundable	97
35024	Evaluating the sublethal impacts of current use pesticides on the environmental health of salmonids in the Columbia River Basin.	NMFS	$364,105	$1,053,975	Yes	78
35025	Optimization of FCRPS Impacts on Juvenile Salmonids: Restoration of Lower-Estuary and Plume Habitats	OHSU	$435,192	$1,206,325	Yes	25
35026	On-line Subbasin Planning/Watershed Newsletter	Inter-mountain Comm.	$115,200	$635,903	No, Fundable	145
35027	Evaluation of Two Captive Rearing Methods for Assisting with Recovery of Naturally Spawning Populations of Steelhead and Coho Salmon	USFWS	$472,941	$2,046,091	Yes	54

ProjectID	Title	Sponsor	FY03 Request	5YR Estimate	Response Needed	Page
35028	Evaluate White Sturgeon Nutritional Needs & Contaminant Effects Influenced by the Hydroelectric System	PSU	$456,241	$1,064,326	Yes	10
35029	Transfer IHN virus genetic strain typing technology to fish health managers	WFRC	$116,479	$470,486	Yes	65
35030	Evaluate potential to enhance spawning of summer/fall chinook salmon in the tailrace of Chief Joseph Dam, Columbia River	PNNL and CCT	$134,220	$539,984	Yes	68
35031	Tagging Study Technical Committee	BPA	$150,000	$850,000	No, Not Fundable	88
35032	Assess the Feasibility of Reducing Predation on Juvenile Salmonids in the Columbia River Through Operation of the Hydropower System	USGS, CRRL; ODFW	$509,671	$2,394,540	Yes	23
35033	Collaborative, Systemwide Monitoring and Evaluation Program.	CBFWA	$998,763	$2,996,293	Yes	111
35034	Fish Behavioral Guidance Through Water Velocity Modification PHASE ONE	Natural Solutions	$285,020	$1,104,596	Yes	99
35035	Incorporating Pit Tag Technology to Evaluate and Monitor the Reintroduction Effort for Anadromous Salmonids in the Upper Cowlitz Watershed	WDFW	$203,740	$619,182	Yes	33
35036	Identify the mechanisms of stranding of juvenile fall chinook salmon in the Hanford Reach	USGS-CRRL; USFWS	$278,132	$786,000	Yes	69
35037	Measuring the potential for domestication selection of spawn timing in chinook captive and supplementation programs; implications for recovery.	UW and NMFS	$129,498	$718,893	Yes	61
35038	Develop Computational Fluid Dynamics Model to Predict Total Dissolved Gas Below Spillways	ENSR	$604,998	$604,998	Yes	76
35039	The influence of hatcheries and their products on the health and physiology of naturally rearing fish	USGS, CRRL	$303,448	$2,375,918	Yes	60
35040	Determination of post-release survival of spring chinook salmon in a mark-selective sport fishery	PNNL	$268,745	$844,795	Yes	129

ProjectID	Title	Sponsor	FY03 Request	5YR Estimate	Response Needed	Page
35041	Monitoring the reproductive success of naturally spawning hatchery and natural spring chinook salmon in the Wenatchee, Tucannon, and Kalama Rivers	WDFW, NMFS	$1,079,140	$5,619,585	Yes	63
35042	Evaluate the Effects of Prey Availability on Recruitment of White Sturgeon in the Columbia River	USGS, CRRL	$248,445	$1,295,445	No, Fundable	7
35043	Monitoring and Models for Adaptive Management of White Sturgeon	USGS, CRRL	$176,000	$626,000	No, Fundable	8
35044	Determine Effects of Contaminants on White Sturgeon Reproduction and Parental Transfer of Contaminants to Embryos in the Columbia River Basin	OSU	$652,376	$1,755,005	Yes	8
35045	Modeling and Information Management System to Assess Effectiveness of Alternative Actions	PNNL	$500,000	$1,500,000	Yes	122
35046	Estimate juvenile salmon residence in the Columbia River Plume using micro-acoustic transmitters.	NMFS	$2,595,600	$17,172,100	Yes	27
35047	Evaluate Delayed (Extra) Mortality Associated with Passage of Yearling Chinook Salmon Smolts through Snake River Dams	NMFS	$1,083,900	$4,946,100	Yes	93
35048	NWFSC Salmon Data Management, Analysis, and Access for Research Monitoring and Evaluation Programs	NMFS-NWFSC	$763,150	$3,463,150	Yes	107
35049	A multiscale evaluation of steelhead supplementation in the West Fork Elochoman River	NMFS	$683,324	$3,278,533	Yes	49
35050	UW Offsite Habitat and Fish Survival Effectiveness Monitoring	UW	$177,048	$1,074,065	No, Not Fundable	122
35051	Evaluate Feasibility of a System-wide Multi-Agency Fish, Wildlife & Habitat Conservation Enforcement Web-Based Data Center	Steven Vigg & Company	$41,347	$41,347	Yes	143
35052	Conservation Enforcement to Enhance and Restore Fish & Wildlife Resources of the Upper Columbia River under Jurisdiction of the Colville Tribes	CCT	$245,636	$1,357,294	Yes	142

ProjectID	Title	Sponsor	FY03 Request	5YR Estimate	Response Needed	Page
35053	Biological Feasibility of Reintroducing Fishwheels in the Columbia River System [change data]	Steward & Assoc.	$236,260	$292,770	Yes	131
35054	Engaging the Public in Watershed Planning; A Tool Box for Cultural Shift	CBFWA	$278,391	$941,612	No, Not Fundable	148
35055	Role of Bacteria as Indicator Organisms for Watershed Assessment and in Determining Fish Pathogen Relationships with Fauna of Abernathy Creek	USFWS	$76,000	$196,600	Yes	31
35056	Develop Human Resources Necessary to Exercise Co-Management Responsibilities	CRITFC	$405,024	$2,217,111	No, Not Fundable	147
35057	Habitat Condition and Restoration Potential of Columbia River Flood Plains: A Critical, Missing Element of Fisheries Recovery Science and Policy	UM	$1,200,000	$4,692,124	Yes	71
35058	Evaluation of food availability and juvenile salmonid growth rates under differing thermal and sediment regimes.	CRITFC	$218,885	$672,409	No, Not Fundable	80
35059	Rapid Detection of White Sturgeon Iridovirus in Spawning Fluids, Eggs and Juvenile Tissues of White Sturgeon	USFWS	$97,452	$191,306	No, Not Fundable	11
35060	Instream evaluation of populations, migration, individual adult return and wild-hatchery interactions of naturally produced salmonids	USFWS	$229,606	$964,645	No, Fundable	57
35061	Prophylactic Treatments for White Sturgeon Infected with the White Sturgeon Iridovirus (WSIV)	USFWS	$69,681	$127,661	No, Not Fundable	12
35062	Impacts of Flow Regulation on Riparian Cottonwood Ecosystems in the Columbia River Basin	University of Idaho	$382,024	$1,043,918	Yes	71
35063	Compare Bacterial Fish Pathogen Populations in Hatchery Water and in Adjacent Creek Water and Evaluate Possibile Disease Transfer Between Them.	USFWS	$71,678	$106,165	No, Not Fundable	58
195505500	Umatilla Tribal Fish & Wildlife Enforcement	CTUIR	$178,073	$983,829	Yes	142
198201301	Coded-Wire Tag Recovery Program	PSMFC	$2,989,812	$16,132,108	Yes	132

ProjectID	Title	Sponsor	FY03 Request	5YR Estimate	Response Needed	Page
198201302	Annual Stock Assessment - Coded Wire Tag Program (ODFW)	ODFW	$218,132	$1,157,132	Yes	136
198201304	Annual Stock Assessment - Coded Wire Tag Program (WDFW)	WDFW	$334,412	$1,793,273	Yes	137
198331900	New Marking and Monitoring Techniques for Fish	NMFS	$878,000	$2,886,900	Yes	89
198605000	White Sturgeon Mitigation and Restoration in the Columbia and Snake Rivers Upstream from Bonneville Dam	ODFW	$2,041,140	$10,248,476	Yes	6
198712700	Smolt Monitoring by Federal and Non-Federal Agencies	PSMFC	$2,481,100	$13,493,183	Yes	84
198740100	Assessment of Smolt Condition: Biological and Environmental Interactions	USGS, CRRL	$256,000	$1,781,050	Yes	59
198810804	StreamNet	PSMFC	$4,211,435	$24,027,308	Yes	100
198906201	Fish and Wildlife Program Implementation	CBFWA	$2,217,415	$11,744,354	NA	148
198906500	Annual Stock Assessment - CWT (USFWS)	USFWS	$119,268	$672,288	Yes	137
198907201	Independent Scientific Advisory Board Support	DOE/ ORNL	$100,027	$300,027	NA	150
198909600	Monitor and evaluate genetic characteristics of supplemented salmon and steelhead	NMFS	$593,900	$2,548,570	No, Fundable	39
198910700	Statistical Support for Salmonid Survival Studies	UW	$265,850	$1,409,650	Yes	94
199007700	Northern Pikeminnow Management Program	PSMFC	$2,957,438	$16,520,975	Yes	17
199008000	Columbia Basin Pit Tag Information System	PSMFC	$2,532,711	$13,717,975	Yes	87
199009300	Genetic Analysis of Oncorhynchus nerka (modified to include chinook salmon)	U of I	$126,436	$518,756	Yes	51
199105100	Monitoring and Evaluation Statistical Support	UW	$394,655	$2,137,255	Yes	95
199105500	Natural Rearing Enhancement Systems (NATURES)	NMFS	$1,158,969	$5,711,234	Yes	41
199302900	Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers	NMFS	$1,884,200	$9,192,200	No, Fundable	90
199305600	Assessment of Captive Broodstock Technologies	NMFS	$1,498,981	$8,282,813	Yes	44
199403300	The Fish Passage Center	PSMFC	$1,316,323	$7,257,504	Yes	82
199600500	Independent Scientific Advisory Board	CBFWF	$681,876	$3,649,876	NA	149
199601900	Second-Tier Database Support	UW	$275,111	$1,379,983	Yes	104

ProjectID	Title	Sponsor	FY03 Request	5YR Estimate	Response Needed	Page
199602000	Comparative Survival Rate Study (CSS) of Hatchery Pit Tagged Chinook & Comparative Survival Study Oversight Committee	PSMFC & CBFWF	$1,742,776	$9,497,683	Yes	85
199602100	Gas bubble disease research and monitoring of juvenile salmonids	USGS, CRRL	$16,885	$94,079	Yes	73
199606700	Manchester Spring Chinook Broodstock Project	NMFS	$950,000	$4,828,825	No, Fundable	46
199702400	Avian Predation on Juvenile Salmonids in the Lower Columbia River	OSU/ USGS/ CRITFC/ RTR	$713,000	$3,688,000	Yes	21
199705900	Securing Habitat Mitigation Sites - Oregon	Oregon Wildlife Caucus	$4,043,000	$23,000,731	No, Fundable (Qualified)	5
199800401	Electronic Fish and Wildlife Newsletter	Inter-mountain Comm.	$179,800	$993,511	No, Fundable	145
199800800	Regional Forum Facilitation Services	NMFS	$153,300	$766,500	NA	146
199803100	Implement Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Assessment and Restoration Plan Now	CRITFC	$314,093	$1,735,562	Yes	146
199900301	Evaluate Spawning of Fall Chinook and Chum Salmon Just Below the Four Lowermost Mainstem Dams	PSMFC, ODFW, USFWS, PNNL	$1,012,405	$5,594,177	Yes	66
200000700	Infrastructure to Complete FDA Registration of Erythromycin	UI-CNR	$166,419	$514,419	No, Fundable	53
200001700	Kelt Reconditioning: A Research Project to Enhance Iteroparity in Columbia Basin Steelhead (Oncorhynchus mykiss)	CRITFC	$633,292	$1,957,441	Yes	35
200002900	Identification and thermal requirements of larval Pacific, river, and western brook lampreys	USGS, CRRL	$186,945	$261,945	Yes	13
200005200	Upstream migration of Pacific lampreys in the John Day River: behavior, timing, and habitat use	USGS, CRRL	$250,000	$665,000	No, Fundable	14
200005500	Enhanced Conservation Enforcement for Fish & Wildlife, Watersheds of the Nez Perce	NPT-CE	$511,210	$2,824,759	Yes	141
200005600	Protect Anadromous Salmonids in the Mainstem Corridor	CRITFE	$455,787	$2,518,411	Yes	139
200100300	ISO Adult Pit Interrogation System Installations	PSMFC	$1,972,106	$4,529,506	Yes	87
200100700	Evaluate live capture selective harvest methods for commercial fisheries on the Columbia River 2001-007-00.	ODFW and WDFW	$579,039	$3,199,548	Yes	124
TOTAL REQUESTED			$75,984,805	$354,720,247		

ISRP Preliminary Review of Fiscal Year 2003 Mainstem and Systemwide Proposals

Introduction

This report provides preliminary comments and recommendations of the Independent Scientific Review Panel (ISRP) and Peer Review Groups on Mainstem and Systemwide projects submitted for Fiscal Year 2003 funding. The Mainstem and Systemwide review is the final segment of the rolling review process, which began in the spring of 2000 and covers all projects funded through the Columbia River Basin Fish and Wildlife Program. This preliminary report provides project sponsors and the public an opportunity to respond to ISRP concerns before the ISRP makes its final recommendation to the Council on October 23, 2002. This report also provides information to the Columbia Basin Fish and Wildlife Authority (CBFWA) for its use in project prioritization and the National Marine Fisheries Service (NMFS) and the Action Agencies' (U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, and the Bonneville Power Administration) Research, Monitoring and Evaluation Group in its project review and potential revision efforts.

The review process to develop these preliminary recommendations and comments included several elements. Three or more ISRP reviewers were assigned to review each proposal. During the week of July 15th 2002, proponents of each proposal gave presentations to the ISRP. Each presentation was followed by a question and answer session. Once again, the Columbia Basin Fish and Wildlife Authority and project sponsors provided a well-organized workshop with informative presentations and discussions, which were invaluable in identifying potential issues and clarifying the nature of the proposed projects. On the last day of the presentation workshop, the ISRP met on its own to discuss the proposals and reach consensus preliminary recommendations and comments on each proposal. These comments, with some general comments on sets of proposals, are provided below and are arranged by topic area.

Importantly, the Bonneville Power Administration (BPA), in coordination with the National Marine Fisheries Service and the Council, added a new review element to the rolling review process for the Mainstem and Systemwide. This revised process includes a front-end projects review by the Research, Monitoring, and Evaluation (RME) group, comprised of scientists from the Action Agencies and NMFS. For the solicitation, special emphasis was placed on requesting projects that would meet the Action Agencies' responsibilities under the National Marine Fisheries Services' FCRPS 2000 Hydro Biological Opinion (BiOp), especially those responsibilities associated with Reasonable and Prudent Alternative (RPA) actions 179-199. The purpose of the RME group review is to provide some preliminary information to the ISRP and project sponsors on the ability of proposals to meet the RME needs identified in the Biological Opinion or as further defined by the RME group efforts. This process is intended to aid in the development, selection, and funding of a suite of integrated projects that will meet the intent of these BiOp RPA actions in the most effective, economic way possible.

For its review, the RME group identified a set of proposals (43 of the 104 submitted) that potentially addressed implementation of the RME BiOp RPA action items. For these proposals, the RME group provided written comments that describe how well the proposed project would meet the RME requirements of the BiOp. Some of the comments identify shortcomings in the proposal relative to BiOp requirements and/or how the proposals might be modified to more directly meet the intentions of the RPA actions. The RME group comments were first released to the ISRP and the project sponsors during the week of July 22 and are included in this report with

the relevant proposal following the ISRP comments. See the RME group comments at: www.cbfwa.org/files/province/systemwide/RME%20Proposal%20Comments%207-19-jrg.pdf)

Among initial concerns with this approach was that the RME group and the ISRP would provide inconsistent comments requesting divergent approaches from the project sponsors in the response loop; consequently, the ISRP agreed to review the RME group comments for consistency with the ISRP review team comments. In this preliminary report, the ISRP remarks on the RME group comments are provided with the 43 projects the RME group commented on. For the most part, the ISRP and RME group comments are consistent or address different criteria and are not in disagreement.

Unlike most ISRP rolling review reports, this preliminary report does not include a programmatic section with identification of general issues that have systemwide implications; however, the final report will likely include a programmatic section bringing mainstem and systemwide issues into the set of issues discussed in recent ISRP provincial reviews (see www.nwcouncil.org/library/isrp/isrp2002-11.htm). The ISRP is especially interested in providing feedback on this first round of rolling reviews and the future review process. In addition, the ISRP intends to update its previous comments on efforts to establish regional research, monitoring, and evaluation programs and protocols.

Response Instructions

This preliminary report marks the completion of the first step in the project selection process. As stated above, project proponents and the public have the opportunity to respond to this report. Responses should focus on the technical comments, answer all review questions, and clarify uncertain information. Responses should be formatted to address ISRP comments point by point, clearly identifying or repeating each concern/question and providing a response. In addition, project sponsors should provide their responses to the RME group comments and describe changes or planned changes to their project resulting from interactions with the RME group.

The title and project number of the proposal should be displayed prominently on the front page of the response. Electronic documents should be named using the project ID number; e.g. "350--response.doc" and email messages should contain the project ID number in the subject line.

Important: If the response includes any change in the budget, the project sponsors must resubmit Part I of the proposal form with a revised budget section.

Responses and comments must be received at the Northwest Power Planning Council no later than 5 p.m., August 23, 2002. Please email responses and comments to jhertz@nwppc.org. Attachments should be in Microsoft Word or Excel (for tables).

If email is not available, please mail the response and diskette/CD to:
Northwest Power Planning Council
Attention: Judi Hertz
Response to ISRP
851 SW 6th Avenue, Suite 1100
Portland, OR 97204

The Council staff will verify that responses were received and successfully downloaded via email. If you have any questions regarding the response process or ISRP comments please contact Erik Merrill at the Northwest Power Planning Council at (503) 222-5161 or 1-800-452-5161, or

by email: emerrill@nwppc.org. For RME group comments, sponsors should contact Chris Jordan, NMFS, Chris.Jordan@NOAA.gov. If you need assistance incorporating graphs or maps in your response, please contact Eric Schrepel at the Council or by email: eschrepel@nwppc.org.

Concurrently, CBFWA, with the ISRP and RME Group's technical reviews in hand, will generate a list of projects recommended for funding and finalize the program summaries as part of its draft annual implementation work plan. The work plan is scheduled for release October 9, 2002. For more details on the CBFWA process and province reviews in general see www.cbfwa.org.

The ISRP will then review the responses and CBFWA's recommended list of projects and provide a second and final report to the Northwest Power Planning Council by October 23, 2002. Thereafter, the Council will make its funding recommendations to Bonneville. It is anticipated that the Council's funding recommendations will be made in December 2002.

Recommendation Categories: Who Needs to Respond?

Preliminary recommendations and comments are provided for each of the 104 proposals submitted. These recommendations are split into three basic categories: 1) fundable, further ISRP response review is not needed (14 proposals); 2) a response review is needed (71 proposals); and 3) do not fund, a response is not warranted (14 proposals). Five proposals were considered not amenable to the ISRP's technical review.

Proposals receiving "a response is needed" will be recommended as "fundable" by the ISRP only if a response is provided that adequately addresses reviewer comments. Although the ISRP will not review responses to those proposals that received a "do not fund, a response is not warranted," project sponsors are welcome to provide comments to the Council.

ISRP recommendation categories are based on the criteria provided in the 1996 amendment to the Northwest Power Act. The amended Act directs the ISRP to review projects in the context of the Council's program and in regard to whether they:

1. are based on sound science principles;
2. benefit fish and wildlife;
3. have clearly defined objectives and outcomes; and
4. have provisions for monitoring and evaluation of results.

Pursuant to the 1996 amendment, the Council fully considers the ISRP recommendations when making its recommendations regarding funding, and provides an explanation in writing where its recommendations diverge from those of the ISRP.

In its final report, the ISRP uses "fundable," "not fundable," and variations to summarize the extent to which a proposal meets the ISRP review criteria and to capture the level of ISRP confidence in a proposal. After its Fiscal Year 1999 review, the ISRP began using "fundable" rather than "adequate proposal," because funding recommendations are the common currency between the Council, CBFWA, and BPA. As such, the "fundable" categories enable a ready comparison with CBFWA's recommendations, which is part of the ISRP review.

Fundable is assigned to a proposal that substantially meets each of the ISRP criteria. Each proposal does not have to contain tasks that independently meet each of the criteria but can be an integral part of a program that provides the necessary elements. For example, a habitat restoration proposal may use data from a separate monitoring and evaluation proposal to measure results. The proposal must demonstrate this integration. Some "fundable" proposals may require

minor clarifications and adjustments to methods and objectives by the sponsor in consultation with the Council and BPA in the final project selection process. "Fundable" is not an ISRP endorsement to fund the project or an opinion on the proposal's priority.

Fundable in Part is assigned to a proposal that includes work that is scientifically supported, but also work that is not. In this case, the ISRP specifies which objectives or tasks are not scientifically sound and recommends that these parts of the proposal not be funded. Examples are proposals that include objectives that are not scientifically supported, for instance a proposal for both background assessment work and concurrent major on-the-ground implementation that could not be supported before results of the assessment were known, and proposals that included use of unsound methods to meet a particular objective.

Not Fundable is assigned to a proposal that is significantly deficient in one or more of the ISRP review criteria. One example is a research proposal that is technically sound but does not offer benefits to fish and wildlife because it substantially duplicates past efforts and does not offer new insights. Another example is a proposal for an ongoing project that may offer benefits to fish but does not include provisions for monitoring and evaluation or report past results. Usually a deficiency in one area is a symptom of overall deficiency in the proposal. In most cases, proposals that receive "Not Fundable" recommendations lack detailed methods, provision for monitoring and evaluation, or have the potential for deleterious effects on native populations. The ISRP notes that numerous projects rated "not fundable" propose needed actions or are an integral part of a watershed effort, but the proposed methods, tasks or objectives are not scientifically sound. The ISRP comments are intended to indicate areas where serious remedial effort, such as significant revision and review, is needed before funding continues. In some cases, an RFP is warranted to address the needed action.

Within these categories, some recommendations are "qualified," meaning that the proposal needs to meet certain conditions or address outstanding concerns before the project is funded. Some of these conditions may call for additional ISRP review, but most require minor clarifications and adjustments to methods and objectives by the sponsor in consultation with the Council and BPA in the final project selection process.

ISRP comments also include observations on budgetary, *in lieu*, and other issues that are not central to the scientific review. These observations do not dictate whether a project will receive a "fundable" or "not fundable" recommendation. Instead, these comments are intended to flag issues for the Council, BPA, CBFWA, and the public that require further inquiry.

ISRP Preliminary Comments and Recommendations on Each Proposal

Proposals are arranged by topic area, project sponsor, and project ID. Topics include and follow the order listed here: Wildlife, Lamprey, Avian and Fish Predation of Juvenile Salmonids, Estuary/Plume and Lower Columbia, Artificial Production Related, Mainstem Habitat, Water Quality, Juvenile and Adult Fish Passage, Data Management, Monitoring and Evaluation: Systemwide and Habitat Action Effectiveness, Harvest, Coded Wire Tag Monitoring Program, Conservation Enforcement, and Fish and Wildlife Program Coordination, Analysis, and Communication. See the table of contents for page starts of topic areas and the index of proposals for the page that specific proposal comments are on.

Wildlife

ProjectID: 199705900

Securing Habitat Mitigation Sites - Oregon
Sponsor: Oregon Wildlife Caucus
FY03 Request: $4,043,000
5YR Estimate: $23,000,731
Short Description: Protect, restore, enhance, and maintain NWPPC target habitat types and associated species in all Oregon subbasins within the Columbia River Basin to mitigate for impacts caused by hydroelectric facilities.
Response Needed? No, Fundable (Qualified)
ISRP Preliminary Comments:
Fundable, but the monitoring and evaluation plan needs to be further developed. This project continues to be a good example of an umbrella proposal for acquisition of land to satisfy mitigation requirements of BPA. This proposal describes Oregon mitigation activities related to coordination and planning between Oregon wildlife managers and the implementation of projects. It contains a general description of the approach to mitigate for Habitat Units (HUs) lost as a result of the construction and operation of the Columbia Basin hydropower system. Oregon acquires wildlife mitigation sites according to a prioritized list following well-formulated criteria. Criteria used to rank sites are listed.

The proponents comment that they have already adopted portions of the Draft M&E Plan for the Albeni Falls Wildlife project to use in similar cover types found at the Burlington Bottoms and Ladd Marsh WA Addition project sites. They propose to use the M&E Plan for the Albeni Falls Wildlife Mitigation project as a template for the Oregon M&E plan and state that ties will be made to national databases as well. However, the M&E program is not presented in the proposal. The proponents should have included and more completely developed the plans for monitoring and evaluation that were developed by the Albeni Falls Workgroup and reviewed by the ISRP in the addendum to report ISRP 2001-4 “Review of Draft Albeni Falls M&E Plan.”

The ISRP notes that a similar effort to expand the Albeni Falls Wildlife monitoring plan, which is more appropriate for riparian habitat, to upland and more terrestrial wildlife habitat is underway in the Upper and Middle Snake Province. We suggest that the proponents of this project contact the IDFG, e.g., Project 199505701 in the Upper and Middle Snake Province, and continue to

work to ensure that common and compatible methods are developed within the Columbia Basin for M&E.

The proposal is clearly connected to regional programs and to other habitat acquisition and restoration projects. However, given the current importance of the BiOp to FWP funding, it would help this proposal to include the specific RPAs that the proposed habitat projects might address.

White Sturgeon

ProjectID: 198605000

White Sturgeon Mitigation and Restoration in the Columbia and Snake Rivers Upstream from Bonneville Dam
Sponsor: ODFW
FY03 Request: $2,041,140
5YR Estimate: $10,248,476
Short Description: Restore and mitigate for hydrosystem-caused loss of white sturgeon productivity through intensive fisheries management, supplementation, and modified hydropower system operation. Assess success of mitigation and restoration efforts.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal represents a culmination of nearly ten years of work on white sturgeon biology and management in the Columbia River reservoirs. The project has progressed logically from research on the population status, life history, and habitat requirements of sturgeon through development and implementation of mitigation, management, and monitoring actions based on the research. The accomplishments of the project to date are documented in the proposal (pages 9-11) and in the draft White Sturgeon Program Summary dated February 22, 2002. The researchers have also published numerous papers in well-respected, peer-reviewed fisheries journals (pages 17-19).

In their 2000 review of this project, the ISRP recommended that the sponsors develop an umbrella proposal for all sturgeon research in the basin and a long-term strategy and plan indicating how the sponsors are moving toward their objectives. The draft Program Summary appears to fulfill this recommendation. However, the ISRP also called for a peer-reviewed synthesis of the state of the science on Columbia River white sturgeon. This is a highly desirable activity and a description of progress toward this goal or an explanation of why the synthesis has not occurred would be helpful. We do note, however, that the sponsors have published numerous peer-reviewed journal articles and are contributing two chapters to a book on North American sturgeon.

The proposal lays out a clear description of accomplishments to date and provides a logical plan for completing the research objectives, evaluating mitigation actions, and monitoring population status through 2005. Long-term goals beyond 2005 are not presented.

The sponsors need to respond to the following ISRP questions:

1. Both harvest restrictions and transplantation of juveniles from downriver stocks into mainstem reservoirs is occurring simultaneously. What were the harvest restrictions that were implemented? How do the sponsors plan to sort out the effects of each of these

mitigation activities sturgeon population dynamics? The sponsors indicate that since implementation of the more intensive harvest management growth of fish has slowed, perhaps indicating a density-dependent effect. How is this phenomenon being addressed? Will transplantation contribute further slowing of growth?

2. Under Objective 1, Task 1b, Phase 2 of monitoring the sponsors propose to estimate survival and recruitment. Specifically, how will this be accomplished?
3. Objective 2 purports to recommend actions that involve changes to the hydrosystem to optimize physical habitat. A much more comprehensive description of how the sponsors plan to accomplish this objective is needed. What information is available and how will it be utilized to produce the recommendations. Task 2a pertains only to completion of the USGS portion of the work, but this work alone is insufficient to provide recommendations for power system changes.

ProjectID: 35042

Evaluate the Effects of Prey Availability on Recruitment of White Sturgeon in the Columbia River
Sponsor: USGS, CRRL
FY03 Request: $248,445
5YR Estimate: $1,295,445
Short Description: Ascertain how forage influences recruitment by investigating the influence of food deprivation at the onset of exogenous feeding, compare prey availability among areas with differing recruitment, and determine growth rate potential among areas.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable. This is a research proposal to investigate the influence of early feeding and food availability on survival and growth of juvenile white sturgeon (under the premise that juvenile survival establishes recruitment). The research would include laboratory studies of feeding behavior at the time feeding begins and shortly thereafter and survival/growth studies under starvation and various feeding levels. Prey availability in the field would be compared among three Columbia River zones with contrasting white sturgeon recruitment to see if differing prey availability matches differing recruitment: Lower Columbia (good recruitment), John Day pool (moderate and variable recruitment), and the Priest Rapids Dam pool (poor to no recruitment). A white sturgeon bioenergetic growth model would be constructed that would include spatial differences in order to predict the growth potential for juvenile white sturgeon throughout the region (where food availability information is available). The proposal recognizes that BPA's long-standing white sturgeon project (198605000) has moved away from research and into implementation, as was planned in the early 1980s. Thus, further research requires a new project.

The well-written proposal meets ISRP review criteria. The background section provides a scientifically sound rationale for the work, with abundant citations of relevant papers. There is an excellent discussion of regional rationale and significance of the proposed research, with citations and discussion of the goals of the Action Agencies' 5-year Implementation Plan for listed species, the Council's Fish and Wildlife Program (with which the proposal is consistent), and the white sturgeon program summary for the Mainstem/Systemwide province. Other white sturgeon projects are discussed including those funded by BPA in the basin and Canada and by non-federal organizations in the basin. The need for a new research project is persuasively presented, based on the planned evolution of the main BPA project (198605000) to implementation of management strategies designed to compensate for poor natural recruitment in much of the basin. The objectives, tasks, and methods are presented clearly and completely. The staff is well

qualified. The research is one of monitoring and evaluation, and thus no separate function is needed (although this might have been discussed). A minor criticism of the proposal is its emphasis on main channel ecology, whereas the ISG in Return to the River indicated that off-channel and riparian habitats may be especially important for food production and juvenile feeding (the development of riparian vegetation also follows a gradient paralleling white sturgeon recruitment, with high and nearly normative conditions in the lower Columbia and little, if any, riparian development in Priest Rapids pool).

This proposal was not selected by the Action Agency/NMFS RME Work Group for further review.

ProjectID: 35043

Monitoring and Models for Adaptive Management of White Sturgeon
Sponsor: USGS, CRRL
FY03 Request: $176,000
5YR Estimate: $626,000
Short Description: Develop a quantitative tool for adaptive management that allows feedback from monitoring data and adjust policies related to harvest translocation, and stocking.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable. No response is needed. This is a worthwhile project with well-qualified investigators. The project provides a much needed modeling component to complement sturgeon research and management in the basin. The model would be a refinement and expansion of the Snake River model developed by the PI. This project builds upon the Snake River study funded by EPRI and Idaho Power. The project plans to integrate basinwide sturgeon information, and then to develop a Columbia River basin model (including building in supplementation efforts). The model will then be used to identify adaptive policies. The plan is to use the model and simulations to identify critical uncertainties. Management decisions or actions that could come out of the model simulations might include migration (transplants, upstream passage of adults), supplementation (population augmentation via hatchery technology), harvest, etc.

ProjectID: 35044

Determine Effects of Contaminants on White Sturgeon Reproduction and Parental Transfer of Contaminants to Embryos in the Columbia River Basin
Sponsor: OSU
FY03 Request: $652,376
5YR Estimate: $1,755,005
Short Description: Determine contaminant load in mature sturgeon and the effects of parental transfer of contaminants on non-specific immune factors and offspring fitness. Develop a nondestructive tool to monitor sturgeon contaminant load.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This is a research project to test the hypothesis that contaminant loading, particularly of reproductive tissue, is a major factor in poor recruitment of white sturgeon in the Columbia River basin. If it is, then mitigative measures could be taken to lessen contaminant loading of the environment, with benefits to recruitment of white sturgeon. The project would sample adult white sturgeon at several sites in the basin ranging from the tributaries (e.g.,

Kootenai River) to the lower mainstem (in collaboration with other studies) and assay them for a range of potential contaminants and contaminant-indicating physiological parameters. A non-invasive method of assay would be developed (most likely a blood analysis) although initial assays would be destructive. Eggs and sperm would also be assayed to quantify transfer of contaminants and parentally derived immune factors (that might be lower from contaminated adults) to young. The developmental survival and fitness of young would be determined and related to parental contaminant load. Exposures of fish in the laboratory to selected contaminants would establish dose-response relationships for uptake and certain other effects.

The proposal is exhaustively thorough in both background and tasks/methods, with a long list of cited references. The proposal is clearly based on sound contaminant science. Consistency with the Council's Fish and Wildlife Program is well demonstrated, as is relevance to regional programs such as the Action Agencies' Implementation Plan and the Mainstem/Systemwide program summary for white sturgeon. There are clearly defined objectives with anticipated outcomes, and appropriate tasks and methods for each. The project is presented as a monitoring and evaluation project, so no explicit discussion of that ISRP criterion is given (although it would have been helpful).

The ISRP has, however, a question about the benefit to fish and wildlife, which should be addressed in a response. The proposal does not persuasively justify the extensive amount of proposed work based on the geographic distribution of contaminants and problems with white sturgeon recruitment. The ISRP understands that recruitment is good in the lower Columbia River, is moderate to annually variable in the middle river (e.g., John Day pool) and is poor to non-existent in the Priest Rapids pool. In addition, recruitment in the Kootenai River is also poor to non-existent. One might suspect that the contaminant loading of the Columbia River basin would be the reverse, that is, more contaminants in the lower river than in the upper reaches (with the exception of localized contaminant sources in headwaters affected by industries such as mining). The proposal usually does not indicate location when it cites literature as demonstration of contamination (with the exception of Bonneville pool). For this research to be funded as more than an exploratory sampling, the proposal needs to give more convincing evidence from existing literature that contamination and white sturgeon recruitment problems are geographically linked or that there is another persuasive rationale.

The ISRP also questions whether extant contaminant levels cited are within the ranges believed to be biologically significant (for any species). That is, is there evidence that such levels in the lower river actually can lead to reduction of population output in biomass? Such evidence should be provided in a response. Also, a response should discuss how we can know that the site the fish is captured and the toxin locations are the same (sturgeon move around a lot).

A key issue for management is: What can we do about positive results? If we hold the line on further contamination, will nature heal this problem? Should we be concentrating on hot spot removal (Superfund)? Could contaminated sediments used by sturgeon be buried by clean sediment? These questions are not answerable at this time without results from the research, but should guide the perspective of the study.

This project was not selected by the Action Agency/NMFS RME Work Group for further examination.

ProjectID: 35028

Evaluate White Sturgeon Nutritional Needs & Contaminant Effects Influenced by the Hydroelectric System
Sponsor: PSU
FY03 Request: $456,241
5YR Estimate: $1,064,326
Short Description: Evaluate the effects of the hydroelectric system on white sturgeon nutritional needs and contaminant effects that would be used in white sturgeon management decisions for the mitigation and restoration of Columbia River white sturgeon populations.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This is a basic research study to try to unravel the mystery of why white sturgeon recruitment is low to non-existent in Columbia River reservoirs. Earlier studies have indicated potential impacts of certain contaminants on fish condition and certain physiological indicators that could suggest adverse effects on growth and reproduction of white sturgeon in Bonneville Pool. The proposal seeks to build upon this work by determining if food consumed by sturgeon is meeting their nutritional needs and if immature fish are being adversely affected by contaminants, particularly in their food.

This is a thorough, basic research proposal that generally meets the ISRP review criteria, although there are several technical questions that need elaboration in a response (see below). The topic is of regional interest, and the proposal shows how it is included in the FWP, Action Agencies' Implementation Plan, Mainstem Solicitation, and the Sturgeon Program Summary. The background section gives up-to-date details of prior work on the subject, including data. The objectives and tasks are fairly clear, and the planned methods (including sample sizes) are laid out in detail. There is a qualified staff, and they have demonstrated their capability to do the work with prior studies funded elsewhere. The study is highly contaminant oriented, and food and feeding are given attention mainly through analysis of stomach contents. There might have been a more ecological flavor.

There are two general difficulties with this sort of work. First, knowing with some certainty that changes in physiological and biochemical indicators will translate into biologically meaningful reductions in growth and reproduction and second, knowing with some certainty that the changes in physiological and biochemical indices that are observed are a direct consequence of exposure to contaminants and not a result of some other environmental factors (e.g., changes in flow regime, temperature) or a density-related phenomenon. The sponsors need a better justification of the ecological consequences of the research if it is to be useful to managers. The proposal also lacks clear, mechanistic hypotheses and methods for data analysis that are specific to testing these hypotheses. Several elements of the proposal need to be expanded. For example, objective 1, Task 1a purports to determine if food consumed by sturgeon are meeting their nutritional needs. Stomach contents and caloric value of the stomach contents will be assessed. Exactly how will the information gained from stomach contents and caloric value be used to determine if the nutritional needs are being met? How will nutritional status be assessed? How will the "relationship between stomach contents, caloric content, and nutritional status" (page 13) be assessed and what will it mean?

Objective 2 purports to measure contaminant levels in sediments, stomach contents, and fish tissues and to use this information to assess the association between nutritional status and contaminant concentration, and to use sediment and water chemistry to evaluate locational differences and associations with tissue chemistry. How will this be done? What type of analysis

will be employed? Task 2b asserts that biological endpoints (e.g., CF, GSI) indicative of adverse effects will be measured. A better justification of the validity of these endpoints as indicators of adverse effects is needed. For example, what is an "adverse effect" and how much does an endpoint such as CF or GSI need to be reduced before an adverse effect occurs? How will the information gathered in this research be used to assess adverse effects on maturing sturgeon? Overall, most of the methods lack sufficient conceptual detail to convince a reviewer that the research will accomplish what it proposes. It is unclear how much new knowledge relevant to restoration and protection of sturgeon will be generated by this research beyond what is already known from past studies. These difficulties need to be addressed in a response.

This project was not selected by the Action Agency/NMFS RME Work Group for additional review.

ProjectID: 35059

Rapid Detection of White Sturgeon Iridovirus in Spawning Fluids, Eggs and Juvenile Tissues of White Sturgeon
Sponsor: USFWS
FY03 Request: $97,452
5YR Estimate: $191,306
Short Description: Develop a rapid nested PCR assay for the detection of White Sturgeon Iridovirus from reproductive fluids, eggs and tissues of infected fish. Utilize the assay to determine viral prevalence and geographic distribution within the Columbia River Basin.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not Fundable. The proposal is technically inadequate. The proposal lacked clarity and adequate methodological detail. The proposal had poorly stated objectives (none at all really). There was just a list of tasks. The real objective of determining the prevalence of the virus in the basin was given in the narrative of background. The PI's brief CV and listed references suggest competence in the development and application of genetic-based disease assays, but neither the proposal nor the presentation provided adequate detail on laboratory or genetic assay methods to provide reviewers confidence that the project's goals are likely to be realized. The PI talked about PCR as a new technique. While PCR has clearly revolutionized many genetic-based analyses, it has been around for nearly a decade and is routine business in any genetic laboratory. The PI could have shown slides that quickly and clearly showed the non-geneticists in the audience how PCR worked, how primer sets are generated for new applications, and how the presence / absence ELIZA-type tests are performed to determine.

ProjectID: 35061

Prophylactic Treatments for White Sturgeon Infected with the White Sturgeon Iridovirus (WSIV)
Sponsor: USFWS
FY03 Request: $69,681
5YR Estimate: $127,661
Short Description: This project looks at a number of different prophylactic treatments targeting secondary pathogens found in outbreaks of the White Sturgeon Iridovirus in order to minimize total mortalities.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not Fundable. The proposal was inadequate. This is a very short proposal to do routine screening of prophylactics for their efficacy in treating secondary bacterial and fungal infections of white sturgeon undergoing effects of a viral infection. Such checking of prophylactics doesn't seem to be cutting edge research. The prophylactics are commonly used on other fish for similar infections. No literature documentation is provided for this common practice.

Lamprey

ProjectID: 35008

Systemwide Lamprey Program Coordinator
Sponsor: USGS, CRRL
FY03 Request: $111,370
5YR Estimate: $496,774
Short Description: Provide coordination for the Lamprey Technical Working Group
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. The ISRP favors coordination among lamprey projects, but the sponsors need to better justify why a formal, funded coordinator position is necessary and if the approach presented in the proposal is generally supported by lamprey researchers and managers throughout the basin. One coordination task that is not specified in the proposal is integrated, basinwide planning of lamprey research and restoration projects. This would seem an appropriate task for a Coordinator position.

The proposal seems excessive and overly expensive. Most of the coordination given in the proposal is what we would expect of any PI having a lamprey project. Except for the hosting of an annual meeting, which can cost extra, all the things proposed could be done within one or more existing lamprey projects. Is there support for one focal organization among the basin researchers and managers? A newsletter could also be rotated and done as a professional activity by one of the investigators. If some extra money is needed, then a registration or subscription fee could be charged that would tap the annual budgets of each lamprey project.

The draft Columbia River Lamprey Program Summary (February 22, 2002) appears to address many of the ISRP's concerns about program level coordination. The Program Summary lists all ongoing lamprey research, describes how projects are interrelated and coordinated, and identifies critically needed research projects, major uncertainties, and future management actions. The Program Summary specifically addresses concerns raised by the ISRP during its review of lamprey projects in last year's review of the Columbia Plateau Province.

Pages 8-10 of the Program Summary lists proposed project needs and priorities for the lamprey program. It does not mention this proposal (35008) nor the need for a Systemwide Lamprey Program Coordinator to support the Lamprey Technical Working Group; thus, the ISRP is unclear of the level of support for this project from the LTWG, something that would be critical to program success if funded.

ProjectID: 200002900

Identification and thermal requirements of larval Pacific, river, and western brook lampreys
Sponsor: USGS, CRRL
FY03 Request: $186,945
5YR Estimate: $261,945
Short Description: Determine morphological and molecular characteristics that differentiate sympatric larval lampreys and evaluate thermal tolerances of larval lampreys by species
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This is a project, now (2002) in its third year, to provide basic biological data on the species of lampreys occurring together in the Columbia River basin. With anadromous Pacific lamprey populations in decline, likely because of hydrosystem effects, and mitigation measures underway, there is a strong need to be able to identify that species from other lamprey species (western brook lamprey and river lamprey) that also reside in streams during early life stages. The project has focused initially on basic morphological tools of the taxonomist for differentiating eggs and early larvae raised in the laboratory, but there are plans to expand the effort to use biochemical genetic markers of species identity. Additionally, the rearing of larvae in the laboratory has been carried out at four temperatures in order to characterize the temperature requirements for survival of these stages, which might differ. An equipment failure caused delay in some aspects of the intended schedule, so the study team proposes another two years for completion. The final years will emphasize replicated work on morphological and temperature-effect studies, preparation of manuscripts on that work, and more emphasis on the genetic differentiation techniques.

The proposal was well prepared and informative, and met the ISRP review requirements (monitoring and evaluation was not considered especially relevant). The project has yielded good results for the first years of the study that were well presented in the proposal. There is an adequately prepared rationale and justification based on the Council's Fish and Wildlife Program and the uncertainties, goals, and objectives from the Columbia River Lamprey Program Summary and the Mainstem/Systemwide solicitation (which included the relevant Biological Opinion information). The proponents demonstrated knowledge of related projects in the basin, and coordinate with them informally. There are no monitoring and evaluation aspects to the planned studies. The staff seems well qualified to do the work.

Because this is a 3-year solicitation, it was surprising that the proponents did not extend the proposal beyond the next two years. It is laudable to see a planned termination, but this may have been an oversight. The ISRP suspects there are more basic biological data needed in the early life stage development of the three species. There are likely limiting habitat factors other than temperature. Because the project's monitoring and evaluation component (essentially none) is the weakest of the ISRP evaluation criteria, field sampling to use and test the identification techniques might have been proposed. The ISRP requests a response to address such follow-up

research for the third year of the solicitation cycle (or reaffirmation that only two years of funding was intended).

This project was not selected for review by the Action Agency/NMFS RME Work Group.

ProjectID: 200005200

Upstream migration of Pacific lampreys in the John Day River: behavior, timing, and habitat use
Sponsor: USGS, CRRL
FY03 Request: $250,000
5YR Estimate: $665,000
Short Description: Determine behavior (timing and movement patterns) of upstream migrating Pacific lampreys in the John Day River Basin using radiotelemtery. Characterize overwintering and spawning habitats of Pacific lampreys in the John Day River Basin.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable. This is a proposal for continuation of a project begun in 2000 that was originally funded for a one-year duration. The ISRP noted in its favorable earlier review of the original 3-year proposal that some innovative aspects of the proposal could have application to lamprey research systemwide, and the project was funded for a first-year trial. The purpose of the initial project was, therefore, to demonstrate that Pacific lamprey could be radio-tagged and their movements, overwintering locations, and spawning habitats identified in the John Day River (the current proposal, however, chose to dwell unnecessarily on lost opportunities of the unfunded second and third years). The one-year demonstration project was successful for the summer through early spring migration and overwintering periods, as documented by data presented with this proposal and in a report to BPA. Timing of the funding cycle was not right to observe spawning. The current proposal would extend the one-year, initial effort to two more full tracking years (including the spawning component) and a data analysis/report preparation year.

The proposal was generally well prepared and informative. The ISRP review criteria were met. The work was well justified on the basis of a need to understand the biology of Pacific lamprey in the face of population declines. The Council's Fish and Wildlife Program, the regional planning documents for lamprey, subbasin plans for the John Day and Umatilla rivers, and other regional documents were cited, as well as previous ISRP reviews. Results from the one-year study were presented in detail, and persuasively demonstrated the feasibility and utility of this work. There are clearly defined hypotheses, objectives, tasks (and even activities under tasks), which responded to earlier ISRP comments. The work as a whole is of a monitoring and evaluation nature. There will be clear benefits to lamprey from the greater understanding that this project has developed and will develop.

The geographic bound of the proposal is limited, but there is purported systemwide relevance for the results. The John Day River is clearly the focus of the study, but the proposal claims that this work will aid lamprey studies in general and restoration work on the Umatilla River in particular. The ISRP suggests that a proposed study of lamprey in the Willamette River (35009) would also be benefited. The project would also participate actively in basinwide coordination of lamprey research.

This project was not selected by the Action Agency/NMFS RME Work Group for further examination.

ProjectID: 35006

Use of Mainstem Habitats by Juvenile Pacific Lamprey (Lampetra tridentata)
Sponsor: PNNL
FY03 Request: $100,985
5YR Estimate: $333,366
Short Description: Characterize the use of mainstem Columbia and lower Snake River habitats by juvenile Pacific lamprey and identify river reaches with high potential for restoration or expanded use.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. The sponsors propose to investigate utilization of shoreline habitats in riverine sections of the mainstem Columbia and Snake Rivers by juvenile lamprey and use this information to extrapolate habitat use and restoration potential to larger spatial scales. The ISRP believes this research is fundamental to lamprey recovery in the basin. The proposal is well prepared and reflects the input of previous reviews by the working group on lamprey and the previous submission to the FWP. The sponsors are particularly well suited to conduct the research.

The research is worthwhile, but more methodological detail is needed. What specific habitat criteria will be used to classify habitats as having high, medium, or low potential for lamprey rearing and spawning (page 6)? How will spawning habitat and its use by adult lamprey be quantified? How large of an area will be sampled at each sampling site? To what water depth will sampling occur? How will abundance be quantified? Describe in more detail how ANOVA will be used to assess relationships between habitat and abundance. Is a multiple regression approach suitable for defining these relationships? Will stratified random sampling be incorporated into the study and, if so, what will be the sampling design?

More detail is needed in characterizing how the landscape scale evaluation will be accomplished. For example, how will the site-specific information gathered in this work be scaled up or linked to the channel and reach level characteristics such as channel form, gradient, and discharge? What are the “geologic features” that will be used to in the landscape-scale extrapolation? How will historical habitats be identified?

ProjectID: 35009

Evaluate Status of Pacific Lamprey in the Willamette River Subbasin
Sponsor: ODFW
FY03 Request: $129,991
5YR Estimate: $977,991
Short Description: Determine distribution and population status of Pacific lamprey in the Willamette River subbasin. Evaluate system-wide implications of trends in distribution and abundance of Willamette subbasin Pacific lamprey.
Response Needed? Yes
ISRP Preliminary Comments:
A worthwhile project that will improve understanding of lamprey abundance and distribution in the Willamette River, possibly the major production area for lamprey within the Columbia Basin. The sponsors need to address the following issues in the response loop:
1. In sampling nearshore habitats in the lower Willamette, what is the justification for transects 10m in length? Has a backpack electroshocker been tested for effectiveness in sampling lamprey in these habitats?
2. The sponsors propose to radio tag 40 adult lamprey below Willamette Falls in summer 2002 and monitor movement during the subsequent year. Based on tag detections the previous year, the ISRP is concerned that 40 tagged fish will be an insufficient number to provide reliable information on movement and to meet the proposed objectives. The sponsors should decide how many tags are necessary to provide reliable information on movement and revise the proposal and budget appropriately.

Bull Trout

ProjectID: 35002

Determine origin, movements and relative abundance of bull trout in Bonneville Reservoir.
Sponsor: WDFW, YN
FY03 Request: $379,601
5YR Estimate: $1,525,101
Short Description: Determine the abundance of bull trout in Bonneville Reservoir. Monitor movements into Hood River and Klickitat River.
Response Needed? No, Fundable (Qualified)
ISRP Preliminary Comments:
The ISRP suggests one year funding to explore feasibility of capturing bull trout in Bonneville Reservoir with subsequent funding contingent upon demonstration of the efficacy of capture techniques.

Utilization of Bonneville Pool by migratory bull trout is poorly understood. This proposal seeks to improve understanding of the stream of origin and migratory patterns of bull trout found in Bonneville Pool. The work is consistent with the USFWS's 2000 Biological Opinion. The proposed work would develop methods for effectively sampling bull trout in the reservoir, install a fish trap to monitor movement in the Klickitat, radio tag fish from the reservoir to monitor movements from the reservoir into tributary rivers, and conduct genetic analyses to determine river of origin.

The project hinges on the ability of the sponsors to effectively capture bull trout in the reservoir. There is considerable uncertainty associated with this objective because bull trout apparently are rare and difficult to capture in the mainstem Columbia. Without an effective method of capture the essential parts of the proposed work could not be accomplished.

Avian and Fish Predation on Juvenile Salmonids

ProjectID: 199007700

Northern Pikeminnow Management Program
Sponsor: PSMFC
FY03 Request: $2,957,438
5YR Estimate: $16,520,975
Short Description: Reduce predation on juvenile salmonids by implementing fisheries to harvest northern pikeminnow in the mainstem Columbia and Snake rivers. Monitor effects of fisheries on predation by northern pikeminnow and other resident fish.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. Based on this review and the previous ISRP comments, this 12-year old program may be due for an in-depth cost-benefit or economic analysis with consideration of alternative methods of predator control or alternative strategies of deliveries. This year's review was largely influenced by the previous independent review by Hankin and Richards, contracted by the Council to conduct a review after the ISRP review - see http://www.nwcouncil.org/library/2000/2000-16. This long-term program has met many goals, but cost-effectiveness appears to be on a downward trajectory. Possibly this is because of the success of the program in depressing northern pikeminnow populations. There is likely a net benefit to adult salmon returns, but those numbers are likely declining and costs of the program are going up in both direct dollars and value per unit dollar spent.

Specific Comments on the Proposal:

This is a well-written proposal to continue 12 years of northern pikeminnow harvest. The project has become more evaluative over time with the exception of economic considerations. Neither monitoring nor evaluation contains an economic component, but economics, including cost-effectiveness monitoring, should be a core part of the project's evaluation. This is an expensive project and there is an opportunity cost of funding this project at $3 million rather than other projects.

"Success" of the benefits to salmon is measured strictly in numbers of pikeminnow caught. There is no analysis of the cost-effectiveness of the pikeminnow removal on salmon or any economic tradeoffs embedded in conducting this program in its current form.

The Hankin and Richards report reviewing the program two years ago contained recommendations for improving the efficiency of the program. Two such recommendations not yet implemented are to conduct further study of the tiered reward system and to explore possibilities to increase rewards by decreasing promotion costs. A trained economist (not a biologist) should be subcontracted to conduct these analyses. Even more desirable would be an economic evaluation of the entire program. Additionally, we note that in the two years since that review, the catch per unit effort has dropped significantly, especially in site specific and dam

fishing but also in the entire program. The total numbers, size and biomass of the program seems to have dropped by more than 50% since implementation in 1991, by the programs own numbers. The program does not seem to have presented a downward modified smolt consumption index related to the smaller 200 mm fish now considered a substantial part of the harvest. We recognize that removal of this smaller size fish was recommended in the Hankin and Richards review. The rationale that these fish contribute to future benefits is reasonable, but nonetheless, the reality is that actual smolts saved by removing non-predatory northern pikeminnow cannot be "counted twice", once for what they might have eaten this year and what they might have consumed next year.

Early feasibility analysis indicated the potential for commercial "rough fish" harvest and processing into minced product. However, implementation of a commercial fishery (other than the tribal long-line experiment) was precluded by policy decisions at ODFW and WDFW to use northern pikeminnow as a recreational fishing opportunity to compensate for diminished salmon fishing opportunities.

Catch targets are cited for the sport-reward fishery, but none are cited for the dam angling fishery or the site-specific fishery. The dam fishery caught 2751 fish in 2001. A total of $49,692 is budgeted for this fishery in 2003. If the numbers caught in the dam fishery continue at the 2001 level this fishery will cost about $18 per fish removed. The site-specific fishery caught 518 fish in 2001. $38,605 is budgeted for this fishery in 2003. If the numbers caught in the site-specific fishery continue at the 2001 level this fishery will cost about $74 per fish removed. The conversion of these costs to adult salmon returns will be several magnitudes larger. The reality is there is a downward trend in Catch Per Unit Effort for all portions of the fishery. The proponents should provide an economic and efficiency evaluation of these fisheries with justification for their continuation.

Past recommendations from ISRP indicated that future submissions of this program should endeavor to better describe the budget for the reward system and the $1 million personnel costs. A concern about current work is whether the investigators are continuing to do verification on the captured pikeminnows to confirm assumptions of predation rates on salmon. There are some questions that the "live" smolt index is accurate today given the new size removal index and the declining number caught per unit effort. Another previous concern not addressed was the request to address alternative approaches and their evaluation. None of these three recommendations has been followed. Some previous comments calling for new approaches include the following:

Due to the high annual cost in this project, reviewers suggest that it may be time to creatively re-think how this program could be delivered. Given that northern pikeminnow are long-lived and slow growing, and that the number of northern pikeminnow that are being removed appears to be declining in recent years, a cost/benefit analyses should be conducted to assess alternative predator control strategies. Running the predator removal program every second or third year may be equally effective; or less expensive designs could be developed for a variety of strategies, including running the program in alternate years but offering increased incentives for fishing (e.g. double or higher the current reward offered for each fish). The recruitment relationship for northern pikeminnow should also be determined and the size of fish for which rewards are offered should be tied directly to this recruitment (growth rate and size-at-age) relationship. The attractiveness and spin-off benefits (e.g. increased tourism) of other types of rewards, incentives and approaches (e.g. major international squawfish derby every year with large prizes for capture of tagged squawfish) could be investigated as a way to maintain effectiveness and control costs. Should we spend even numbered years capturing predators and alternate years salmon?

At the presentation workshop, the question was posed about how many adult salmon might be returning because of the predator management program. It may be possible to obtain some insights into this question. The following is a heuristic example but more detail could yield insights. Predators eat an estimated 16 million smolts out of 200 million. This is about 8% of the hatchery fish and possibly 5% or less of the total run. How do these losses compare to other sources of mortality? The northern pikeminnow program claims a 25% reduction in predation losses. This is a savings of 4 or 5 million smolts. Assuming a 1% SAR (adult return rate) 5 million smolts provides a net value of returning adults is 50,000 adults. A program cost of $3 million/year, or $60 per fish. This may be comparable to the costs incurred for other programs and can be compared once more actual numbers are obtained.

Some other key questions:

1. Page 2 Para 2 and 4. Lab results show that northern pikeminnow prefer "dead" smolts to live ones. Yet evidence provided suggests that only 22% of the prey were "dead" experimental fish in stomachs sampled. How did the researchers know whether some of the unmarked stomach contents were not from dead but unmarked fish?

2. Considering that turbine mortality is estimated at about 10%, cumulative numbers suggest that even if half of juveniles are transported, there are over 60 million stunned or killed smolts in the river below the dams. What percent of these are eaten by other fish? By Northern Pikeminnow? Can we assume that the 1-2 million adult northern pikeminnows (calculated by dividing number harvested by % of population given on Table Page 9) are consuming all of these? If so, each fish must consume 30-60 smolts. How many more live fish would they consume? Do we have consumption rates? This would help characterize total losses in the system from northern pikeminnow and other predators and help determine how much more cropping of predators would be effective in the future.

3. What are the current regulations on the take of smallmouth bass, channel catfish and walleye? If these have limits, and they are exotic predators of smolts, why don't we lift all restrictions on their sport harvest? Are harvests on these species restricted?

4. Inflation is one factor, but the northern pikeminnow program is now paying about double the rate to capture fish in 2000-2001 compared to 1990? What is the CPUE in 1990 versus 2000?

5. What is the cost to capture 500 NPM at dams and at site-specific locations? These represent less than 5% of the total population removed during the last 5 years? Compare cost per fish here versus cost per sport harvest fish? The use of a tiered bounty system might encourage collectives to artificially increase bounty and cost without increase in level of fishing effort. Is this a likely significant cost factor? Or should other payment schemes be investigated?

6. Does the northern pikeminnow program corroborate the actual location of fish harvested? What would be the consequence of inaccurate data?

7. Assuming that dead smolts will feed existing northern pikeminnow as well as live ones, has any attempt been made to artificially feed the northern pikeminnow with dead fish during the juvenile salmon migration? The concept would be to bait an area, like a tailrace with an abundance of dead fish to sate the predators. Would this have the benefit of attracting larger numbers of northern pikeminnow to a site-specific location and make them more vulnerable to harvest. How are the captive northern pikeminnow used? Can they be cut up and fed to northern

pikeminnow? Will northern pikeminnow eat flesh of other northern pikeminnow? If so, these could be stockpiled to bait northern pikeminnow.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- This proposal addresses RPA Action 100, which is not explicitly linked to BO RME RPAs 179-199. However, the RME Planning Group suggested we offer commentary on it.

This proposal is for the continuation of the Northern Pikeminnow Management Program, which is the primary thrust of RPA 100. This is an implementation project to directly improve juvenile salmonid survival within the FCRPS through the reduction of predation mortality; as such, it contributes directly to the hydrosystem juvenile reach survival performance standard. Integral to this project is a biological evaluation component to evaluate the effectiveness of removal fisheries. Results of biological evaluation indicate that annual predation losses have decreased approximately 25% when compared to pre-program levels and that there is no evidence of either inter- or intra-specific compensation. The management program and exploitation monitoring are implemented annually; the biological evaluation component is implemented in a 3-5 year cycle with the next evaluation in 2004. The RME group generally considers this project to be adequate for addressing northern pikeminnow predation.

The RME group also notes that the other component of RPA 100, evaluation of methods to control predation by non-indigenous fishes, is not addressed by this project. While this project includes evaluation of the effect of northern pikeminnow removals on predation, growth, and reproduction of smallmouth bass, walleye, and channel catfish, it does not include potential methods to reduce predation mortality by these fishes. This component of the RPA is outside the scope of the Northern Pikeminnow Management Program.

A new proposal is referenced, titled Assess the Feasibility of Reducing Predation on Juvenile Salmonids in the Columbia River through Operation of the Hydropower System" (Proposal No. 35032) that attempts to address the second component of RPA 100. Specifically, the proposal entails review of existing data and evaluation of components of the riverine habitat that might be manipulated through operations to reduce the number of predators and associated predation losses. Sponsors propose to initially focus on areas downstream of Bonneville Dam, with some work in the lower Columbia and eventually in the lower Snake rivers. We note several areas of concern that may reduce the immediate priority of this proposal. Based on the proposal, there is too limited information on the location and timing of spawning of smallmouth bass and walleye for determining the feasibility of operational management alternatives; substantial resources may need to be devoted to obtain this information before any direct evaluation of operations to reduce predation might be feasible. This may be true, but we question if general information on spawning of smallmouth bass and walleye (e.g., timing, conditions, etc.) may not provide sufficient basis for developing an operation scenario for evaluation. Also, the proposal is for the river reach below Bonneville Dam where water elevation is largely a result of river flow (and to a lesser extent tidal influence). Reservoirs in the lower Columbia or Snake rivers upstream of Bonneville Dam afford considerably greater flexibility for operations across a range of flow conditions that would be more conducive for evaluating the feasibility of operational control of these predators. Conditions below Bonneville, on the other hand, are largely subject to river flow and not easily manipulated for such control measures. We also want to note that control of non-native species may be in direct conflict with regional fishery management objectives; this has important policy implications that must be addressed for this approach to be feasible.

ISRP Remarks on RME Group Comments:
The ISRP elicited more concern about the cost:benefits and economic efficiencies of the northern pikeminnow program than those from the RME group. We share the RME group's concern regarding management of exotic predators.

ProjectID: 199702400

Avian Predation on Juvenile Salmonids in the Lower Columbia River
Sponsor: OSU/USGS/CRITFC/RTR
FY03 Request: $713,000
5YR Estimate: $3,688,000
Short Description: Determine predation rates by waterbirds on juvenile salmonids, evaluate the efficacy of management initiatives to reduce avian predation, and assist resource managers in the development of plans for long-term management of avian predation, as warranted.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This is a well-prepared proposal. The ISRP review criteria are met. The proponents have given a good summary of past results. A major shortcoming identified in previous years was the lack of peer-reviewed publications, a factor now taken care of with the latest crop of publications. Another previous shortcoming was the need for a more in-depth review of the program. This has been accomplished externally via the intensive court case led by the Audubon Society, through which the study has been thoroughly reviewed (one might say raked through the coals). Although this proposal does not dwell on the court case, there was impetus from it toward the directions this proposal now takes for looking at other bird predators of salmonids (to put terns into better context) and other potential nesting sites for research and management attention (upriver and coastal). The budget expanded along with the court-mandated tasks, as described in Part 1. Why BPA should have to pay for these studies is unclear.

The experimental design is good. A key question however is the continued relevance and value of the program to the goals of saving salmon in the FCRPS. This five-year program is clearly in its mature if not senescent stages as far as benefits to the FCRPS system. Enormous amounts of information have been gathered about tern biology and feeding behavior to the credit of the avian research team. Key recommendations have been to move (if not eliminate breeding habitat). And this has been successful. Much of the future work however appears aimed more at preserving terns (see court comment above) than at preventing further degradation of salmonids due to predation. Additionally, it is less clear how details about bioenergetics of tern diet, stable isotope ratios studies, fatty acid signatures, and contaminant levels may be valuable to reducing tern impact on salmon. As elaborated in a previous ISRP Review two years ago in 2000, we agree with the previous review that:

" ...an in-depth independent peer-review be conducted to evaluate the results and conclusions generated from this project before proceeding with what would be potentially a very costly expansion of this work." Like northern pikeminnow management, it would be good to know about more direct consequences and cost:benefits of the program on adult return rates.

Several important questions that seem relevant to the FCRPS are the relationship of predation loss to juveniles that (1) migrated in river or (2) were transported near the estuary in a barge. Since PIT tags usually contain this information, a study of existing PIT tag data seems in order. Thus far, NMFS studies have shown that SAR's (adult returns) from transported smolts exceeds SAR's of juveniles that migrate through the FCRPS. One important strategy that could reduce tern

predation is the timing, location and release patterns of smolts from barges in the estuary. For example, if terns are daylight feeding birds, would release at night improve predator avoidance? Or, would release closer to the ocean reduce bird predation without other impacts to the SAR rate.

The authors suggest there are differences between hatchery and wild fish losses. The NATURES artificial production program has a goal to produce fish with more wild like phenotypes, genotypes and behaviors. Experiments that test predator avoidance fitness values in different types of new NATURES program fish may also be worthwhile endeavors for future research of both the artificial hatchery improvement program and avian predator program. Research in the future should be more focused on experiments that would primarily assist salmonid recovery in the FCRPS.

Questions about cause and effect of the tern population also concern the ISRP. Could the recent upsurge in bird predators be a result of the overwhelming preponderance of hatchery-raised smolts (which seem to be more susceptible)? Could one response to supplementation in the basin and outright hatchery releases be the creation of behaviors conducive to being eaten by birds, even after the long in-river journey? Is it the result of barging and mass releases? Is there something we're doing to enhance fish passage at dams that is making fish less fit farther downstream (delayed mortality)? Does less predation by northern pikeminnow because of the pikeminnow control program just mean more weak fish left for birds? Could the use of terns in hatcheries make hatchery fish more fit as far as predator avoidance is a learned response? This project would be more valuable to the FCRPS with more focus on the salmon aspect of the problem.

Some general questions. Why are tern populations expanding inland? Is new habitat being created? Will moving terns to new locations create a burden for other forage species? How much of the predation problem is a function of a fish hatchery system that artificially concentrates tens of thousands of smolts in the river? Should we rethink the artificial production and release strategy rather than predator removal strategy? Is there a correlation between the tern relocation effort and this year's return rate of steelhead?

Summary

The past five years of research conducted has been good and has provided ample information about the impacts of terns to salmon. The obvious management actions are now in progress to the extent courts are allowing it (moving or reducing tern populations). Some further management options and experiments that relate to how transported fish are released from barges (where, when, etc) may be useful to the FCRPS. These have not been proposed but should be done.

Much of the proposed new tern research is aimed at assisting the growth, development and monitoring of new tern colonies elsewhere, which seems counterproductive to salmon recovery. Other parts of the monitoring and research proposal tasks seem to be on details and data not directly useful or have large payoffs for the FCRPS management objectives. Their value to science is not questioned, but in a world of limited funding, projects with the greatest benefit to the recovery of salmon deserve the highest priorities. One program option would be to alter the project (and reduce funding) to refine how better to manage improvement of smolt production, transport and release programs as they relate to avian predation and other factors of smolt survival.

Action Agency/NMFS RME Group Comments:
OCEAN AND ESTUARY SUBGROUP -- Action items addressed - 49; 101; 103; 104; 186; 195. This project is complete enough for funding.

ISRP Remarks on RME Group Comments:
The ISRP comments are focused on the relevance (benefits to salmon) more than the quality of the science in this proposal. The scientific design aspects are good and thus consistent with the RME group's evaluation of the acceptability of the program.

ProjectID: 35032

Assess the Feasibility of Reducing Predation on Juvenile Salmonids in the Columbia River Through Operation of the Hydropower System
Sponsor: USGS, CRRL; ODFW
FY03 Request: $509,671
5YR Estimate: $2,394,540
Short Description: Evaluate components of riverine habitat that might be manipulated to limit predators and predation loss. Examine and collate existing information, evaluate methods to estimate effects on predator populations, and collect additional information needed.
Response Needed? Yes
ISRP Preliminary Comments:
Substantial questions exist and responses are needed.

Synopsis of the Proposal. The proposal intends to build upon current methods of harvest to control predators. The basic concept is that by changing depths and velocities of the river via hydro operations, spawning, rearing or other critical life history requirements of predators will be disrupted. In the presentation, the authors acknowledged that physical habitat modifications might also be possible. This concept presented is a generalized idea, but needs specific hypotheses. The study might take a decade or more and result in much data that can't be well coordinated. Evidence needs to be given that specific actions have realistic management applications. The predators discussed all have different life histories. The study doesn't show that it is in the realm of hydraulic possibility. There are two major concerns and a host of minor issues that need to be addressed.

First, the hydropower system management actions that are foreseen are not clearly presented. This leaves the question whether all this work might lead to some options that are infeasible or otherwise undesirable (such as artificially low springtime flows).

Second, there is insufficient evidence concerning the exact mechanisms of life history disruption. The proposal seems to ask for funding to discover such possibilities. Such efforts could take a very long time. We know that hydropower operations such as reservoir pool fluctuation and peaking flows can disrupt fisheries and aquatic life. This is primarily by dewatering redds/eggs after spawning, changes in velocities or depths thus altering physical habitat or changing water quality such as temperature, DO, TDG etc. The emphasis on early life stages may ignore some other potential management actions other than hydropower changes such as shoreline habitat restoration. As an example, adult smallmouth bass do well in rip-rapped shorelines as habitat. Rip-rap is generally harmful to salmonids. Elimination of rip-rap may be more effective than trying to change depth and velocity. The latter hydraulic changes may not get the desired outcome and even if it does, changes that have a negative affect on predators, may also negatively affect salmonids. More specifics such as this would be helpful.

Some other specific concerns are:

A key target area of the proposal is downstream of Bonneville Dam. The ability of the system to control depth and velocity in this area will be limited. Demonstration with hydraulic data that hydro operational changes could possibly have the desired effect would be helpful. Is it possible to define the desired effect? For example, northern pike minnow spawn as deep as 5 m (p. 17). Can the tailwaters of Bonneville Dam sustain 5 m fluctuations for periods needed to create a desired effect? Is there any specific evidence for depth, location and density of northern pike minnow habitat at the intended location? If so, the proposal could offer more specific approaches such as: draw tailwater down 2.5 m for 24 hours to dessicate 50% of known target eggs (or strand juveniles) in specific areas between June 15 and 30. Then, hydraulic models could be examined to see if this were feasible. Bonneville tailwaters are subject to tidal influence, further complicating the system. To dewater the tailwater area would require significant retention of storage and complicate water levels, flows and upstream operations that would likely have unidentified significant impacts on fish, wildlife and human uses upstream, not to mention constraining the power system normal operations. Discussion of the ramifications of such operations seem to be a vital component of the research to know that it could be feasible because of the possible negative consequences of changing system operations.

In addition to depth changes, the authors suggest velocity changes might also disrupt target predators. What mechanism or hydraulic targets cold provide the desired outcome? Key questions include: (1) what is the range of existing fluctuations of depth and velocity in the Bonneville tailwaters from both natural and man-made operations? (2) What evidence is there that it will be possible to superimpose a more drastic set of fluctuations? And (3) are these likely to have the desired effect on the target species but not cause impacts to salmon?

Years have been spent fine-tuning the operations of the spillways, turbines and ladders to maximize adult salmon passage and to direct juveniles to areas of highest passage survival. These and other possible conflicts should be addressed in the proposal.

Likewise this holds for system operation impacts. What potential consequences to power generation might emerge? Changes in flows of the magnitudes needed might have repercussions for storage in Grand Coulee and even Canada. These concerns need to be addressed.

In summary, the ideas in this proposal are intriguing but not sufficiently developed. As presented, the goals seem unattainable in any reasonable time frame. Direct impacts to salmonids and the hydropower system seem as likely if not more probable than the intended goal of predator elimination and thus diminish the potential of finding workable solutions to the idea.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- From comments on 199007700 -- A new proposal is referenced, titled Assess the Feasibility of Reducing Predation on Juvenile Salmonids in the Columbia River through Operation of the Hydropower System" (Proposal No. 35032) that attempts to address the second component of RPA 100. Specifically, the proposal entails review of existing data and evaluation of components of the riverine habitat that might be manipulated through operations to reduce the number of predators and associated predation losses. Sponsors propose to initially focus on areas downstream of Bonneville Dam, with some work in the lower Columbia and eventually in the lower Snake rivers. We note several areas of concern that may reduce the immediate priority of this proposal. Based on the proposal, there is too limited information on the location and timing of spawning of smallmouth bass and walleye for determining the feasibility

of operational management alternatives; substantial resources may need to be devoted to obtain this information before any direct evaluation of operations to reduce predation might be feasible. This may be true, but we question if general information on spawning of smallmouth bass and walleye (e.g., timing, conditions, etc.) may not provide sufficient basis for developing an operation scenario for evaluation. Also, the proposal is for the river reach below Bonneville Dam where water elevation is largely a result of river flow (and to a lesser extent tidal influence). Reservoirs in the lower Columbia or Snake rivers upstream of Bonneville Dam afford considerably greater flexibility for operations across a range of flow conditions that would be more conducive for evaluating the feasibility of operational control of these predators. Conditions below Bonneville, on the other hand, are largely subject to river flow and not easily manipulated for such control measures. We also want to note that control of non-native species may be in direct conflict with regional fishery management objectives; this has important policy implications that must be addressed for this approach to be feasible.

ISRP Remarks on RME Group Comments:
The RME group comments above are in general agreement with those of the ISRP.

Estuary/Plume and Lower Columbia

With the exception of proposal 35046, these proposals were submitted for the Estuary and Lower Columbia River Province Reviews. The Council is still deliberating on those provincial reviews.

ProjectID: 35025

Optimization of FCRPS Impacts on Juvenile Salmonids: Restoration of Lower-Estuary and Plume Habitats
Sponsor: OHSU
FY03 Request: $435,192
5YR Estimate: $1,206,325
Short Description: Restore Columbia River estuary and plume juvenile salmonid habitats and optimize FCRPS impacts on the plume through improved understanding of estuary and plume physical processes and definition of possible future management scenarios
Response Needed? Yes
ISRP Preliminary Comments:
A response is requested. This proposal makes a very strong case for the integration of flow management with the needs of salmonids in the lower Columbia River, estuary, and plume environments. Dr. Jay has assembled a very strong research group and has obviously tried to more clearly enunciate the value of this project to Columbia River salmonids and impacts of future climate scenarios. The BPA RME comments below strengthen our support for this work and the need for mutual consideration of flow and fish. The purpose of this program (section 9, page 24, Tasks and Methods) is "to optimize the interactions of the FCRPS with juvenile salmonids in the lower-estuary and plume."

The project emphasizes the need for understanding and dialogue but does not presume that the FCRPS would immediately be modified to meet only 'habitat opportunity' needs of the fish. The intent of the program is clearly to examine if fish needs can be incorporated into the water management planning cycle, and to explore how modifications of flow could benefit salmon while remaining within the limits imposed by other requirements. Further, if agreements could not be reached on how to respond to specific scenarios, then the models and sampling programs

developed provide an ideal opportunity to design a truly adaptive management approach to understanding the "integration of flow management with the needs of salmonids in the lower Columbia River, estuary, and plume environments."

The technical background in this proposal is thorough and reasonable but we must still acknowledge that the importance of the plume environment to salmon survival remains unquantified or tested. With the current developments in the micro-tags and extensive studies in the lower river, estuary, and plume, we may have answers to these questions in the near future. Consequently, and after further consideration of this proposal, the ISRP supports our recommendation presented June 7, 2002 (below).

However, we believe there is an obvious need to initiate dialogue with the FCRPS managers so that an understanding of the proposed research and process is begun. If FCRPS managers are not prepared to consider possible alterations in flow plans or how to respond to different climate conditions or random opportunities (annual deviations in weather), then there are a number of extensive programs that may not need to be funded at all. The costs and benefits of all recovery opportunities need to be considered, none should be excluded particularly given the investment made in science within the Columbia River basin.

The proposal still could benefit from a more detailed description of the use of management science to articulate management scenarios. How will managers' expectations and response to uncertainty be investigated? For example, the proposal includes some statements about different languages and time horizons among managers, researchers, and policymakers. This is a very general statement that will apply to varying degrees within the FCRPS. It would be helpful to be more explicit about its particular application within the FCRPS, how large a problem it is, and potential remedies. The proposal describes the general problem as if it is a complete lack of understanding by one entity of all other entities.

Since the proponents have comments on the ISRP recommendations very recently, they may not have further response to these comments. The ISRP is providing for a response to our comments and those of the Action Agency/NMFS RME group if they chose to.

> Past ISRP Review Comments:
> June 7, 2002 Province Review - Fundable in part (disagree with CBFWA … to some extent), initially fund at a reduced amount and increase funding over 3 to 4 year period as information from the other projects increases and need for integration increases. The ISRP does agree that it is important to begin dialogue with the system managers on how to incorporate the lower river, estuary, and plume environments into their considerations.
>
> It is difficult to argue with the statement that the ultimate goal of the plume and estuary studies are to link these to management of the water system (FCRPS) for the improved survival and production of salmonids in the Basin. Therefore, since we see nothing fundamentally wrong with this proposal's presentation, we recommend funding. However, we also believe that this proposal is a couple of years ahead of its useful time and that it could be deferred if funding limitations required. To prompt development of the integration of the lower river and estuary programs with FCRPS and system managers, we are recommending a revised approach to be developed by the contract managers and involving a phasing in of the proposal over the next few years.
>
> Further, the ISRP continues to be concerned with the reference to "habitat opportunity" metrics and the very limited definition of what this means, and that the area defined for

this proposal does not include the inner estuary or river up to Bonneville dam. The response continues to refer to the outer estuary but then other parts of the proposal refer more generally to the estuary proposal and FCRPS interest that clearly involves the river below Bonneville Dam and into the plume region. Finally, the response would have been strengthened with a clearer description of the use of management science to articulate management scenarios.

CBFWA Review Comments:
Project would provide information to managers regarding the effects of flow on % habitat available (i.e., what % of habitat would be lost/gained during different flows below Bonneville Dam). Project could lead to the development of management schemes. NMFS has identified this project as a BiOp project.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- This proposal establishes the need to link FCRPS river management to plume dynamics and productivity and ultimately salmon survival. Clearly there is a need to understand the contribution of early ocean conditions to salmon survival. The additional premise that the FCRPS might be managed to improve those conditions is less obvious. The river system is already being managed for multiple purposes; flood control, hydropower, irrigation, recreation and optimization of inriver smolt survival. To suggest that the system can be substantively altered further would require considerable reprioritization of existing river uses. This is not to diminish the importance of studying and understanding plume dynamics, but to be realistic with respect to expectations regarding the flexibility of the FCRPS.

OCEAN AND ESTUARY SUBGROUP -- Action items addressed - 158, 194; 161, 187,196. Doesn't clearly address all the RPAs proposed by authors. Focus is on physical aspects of estuary and plume. Compliments projects 199801400 and 30001 (estuary province numbers), so the project will be linked to understanding biological aspects of the estuary. This project is complete enough for current funding.

ISRP Remarks on RME Group Comments:
See ISRP preliminary comments above.

ProjectID: 35046

Estimate juvenile salmon residence in the Columbia River Plume using micro-acoustic transmitters.
Sponsor: NMFS
FY03 Request: $2,595,600
5YR Estimate: $17,172,100
Short Description: Estimate juvenile chinook salmon residence time and areas of utilization within the Columbia River plume.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal is to complete development of micro-acoustic tag methodology, and to assess residence of salmonids in the Columbia River plume by deployment of fixed and mobile receiver arrays. The goal of the project is to answer the critical uncertainty about temporal and spatial use of the plume habitat by juvenile salmon (see past ISRP comments on NMFS project 199801400). The project will compare the residence times of different life history types (stream and ocean) of chinook salmon, timing of outmigration (early versus late),

size and age, to determine how they vary by season. It also proposes to assess the nature of juvenile distribution within the plume. The ultimate goal of this and companion project 199801400 is to understand the importance of the Columbia River plume to survival of juvenile salmon.

The approach taken by the project will be to characterize the acoustic environment of the plume, model signal propagation (to adjust for noise in the plume environment), design the detection system, set tag criteria and design, conduct prototype tests, then proceed to full-scale monitoring. Risks identified by the proponents are the difficulties of obtaining adequate sample sizes, the fixed array design, cost, and limited detection range due to phase shift encoding. The number of uniquely identifiable tags was originally noted as a limiting factor, but the authors noted that the use of phase-shifts has effectively eliminated that concern.

The technical background is well written and complete. The rationale for the importance of understanding juvenile use and survival in the plume is clearly significant to regional programs. Also, the project is most closely related to a companion NMFS project (BPA 199801400) and to some USACE projects on estuarine physical dynamics. The tasks and methods are described in appropriate detail. A very strong development and research team has been organized for this proposal.

The objectives are to determine plume residence times of ocean and stream type salmon, characterize fine-scale spatial use of the plume by these two types, and integrate results with the companion NMFS project to build a biophysical model relating Columbia River plume conditions to the growth, distribution and survival of juvenile salmonids.

The ISRP wishes to complement these investigators for their substantial progress on the micro-tag to date. We have previously noted the essential need to study salmonid residency and use of the Columbia River estuary and plume, and this tag now offers the potential to achieve this. However, we have two major concerns with the receiver arrays. First, we note that the development of the fixed and mobile arrays apparently doubles the costs for this portion of the work. Secondly, we are familiar with the work of Dr. David Welch (CDFO, Pacific Biological Station, project proposal #30007, Estuary province), and BPA has previously support his research. Dr. Welch has put a substantial investment of time into designing fixed arrays, their deployment, and how to retrieve the data received. Since this must be a very small group of researchers in this field, we were concerned by the evident lack of collaboration? Are there valid technical reasons for not collaborating or is the intention of these investigators to develop totally different receivers and array systems?

Concerning the arrays, we request the proponent to consider a phased development plan for the two systems (if both are needed) and provide justification for the choice of array. From the perspective the ISRP, development of the fixed arrays would seem to best address Regional priorities at this time. The issue of residence time and habitat use for downstream migrating smolts actually begins below Bonneville Dam. Questions about their rate of migration and estuary residence are equally as important to the estuary studies and could also be assessed with this technology. Concerning research in the ocean plume environment, our first priority is to determine the duration of use and overall survival. The detailed micro-habitat use by salmonids clearly addresses mechanisms effecting growth, survival, etc. but are finer scale questions that can be phased in over time.

Further, when the ISRP consider the development proposals by Dr. Welch, we proposed supporting a prototype or “proof of principle” scale program initially, followed by expansion if

successful. In the development of this large-scale program that clearly has analogies, we request these researchers to consider a smaller scale demonstration project when the tag and detection systems are "developed". The second year of the current proposal requests over $6 million, which we consider an unreasonable risk without adequate proof of performance.

Action Agency/NMFS RME Group Comments:
OCEAN AND ESTUARY SUBGROUP -- Action items addressed - 193; 195; 197. This project is complementary to the KinTama Proposal 30007, submitted under the Estuary Province. The tag being developed by NMFS is an important addition to the work completed under the KinTama innovative project. The smaller tags will fill a data need for NMFS' estuary/plume work, and as they are further developed, may be used for longer term studies on the shelf. The KinTama acoustic array feasibility study was funded as the ISRP's top ranked Innovative Project in 2000 and is now complete. An appropriate scaled back deployment involving both contractors might include the estuary and plume and an array covering the shelf at the northern end of Vancouver Island. There is also a need to coordinate with studies funded by Portland District of the Corps.

ISRP Remarks on RME Group Comments:
The ISRP generally agrees with the BPA RME comments for this proposal. A collaboration between Dr. Welch (Kintama Research) and these authors may lead to useful developments in receiver arrays and methods for retrieving data from these arrays.

Kintama Proposal Submitted in the Estuary Province:
30007
An Acoustic Tracking Array for Studying Ocean Survival and Movements of Columbia River Salmon
Sponsor: Kintama Research Corporation
Province and Subbasin: Columbia Estuary
FY03 Request: $2,930,535
5YR Estimate: $7,345,735
Short Description: Development of a skeleton acoustic array to demonstrate an approach to tracking movements of individual fish through the river and along the West Coast of North America. The project will initially be focused on salmon, but has much wider application.
ISRP Final Recommendation: Fundable in Part
CBFWA Category: Do Not Fund
ISRP Comparison with CBFWA: Disagree - Fundable in Part
ISRP Final Review Comments:
Fundable but at a reduced level of support, disagree with CBFWA. Development of the final design for the acoustic arrays is high priority. This is an innovative but expensive research project but could provide new and important insights into the early sea-life of salmonids and their use of the ocean environment. However, as we have noted in previous reviews, the funding for proposals in this province will be very competitive. The ISRP suggests though that it would be a reasonable process to discuss the final array design with the proponents and to develop an incremental budget over the next few years.

This proposal continues to be technically innovative and the investigators have essentially completed the Innovative Project (#200008000) tasks. These results are presented and relevance to the FWP is well described. The purpose of this proposal is "to expand research on the acoustic tag and develop a prototype array which will allow demonstrating the capabilities of the technology to establish both river and ocean movements of chinook salmon (page 5)." The author

states that the basic technology is now commercially available and the efficiency of its components has been tested. However, he does also note that,
"the logistics of deploying the equipment and gathering the data from fish tagged at various locations will require extensive effort over a wide geographic area. Deployment of equipment in the ocean will require significant R&D design effort (in particular, we intend to place the entire array sub-surface so that surface floats vulnerable to vessel traffic, fishing activities, and "curious" individuals are eliminated). Designs have been developed and partially field-tested for deploying the equipment on a semi-permanent basis to withstand the severe conditions that may be encountered at various sampling sites."

The importance of this technology is that it provides a means to actually measure migration rates (not necessarily migration paths, they will be inferred between two points), residency time in an area (e.g., within the Columbia River plume), and mortality rates.

In general, fairly comprehensive responses were provided for most of the ISRP concerns. The author noted that he will comply with the requirements of the Innovative proposal and that the work was now complete. He noted that there do remain issues with the deployment of the acoustic detection arrays but also noted the recent success of deployments in the Atlantic Ocean. There was an additional discussion concerning an interaction with the NMFS Plume project to assist in the assessment of residence times and mortality rates. However, this would be an additional task that was not included in the Plume response and is not relevant for our consideration. The major issue of concern is how to scale the development of these acoustic arrays. The authors have proposed a deployment plan and argued that a critical mass of receivers are required and that the preferred strategy is multiple array lines (compared to fewer lines with more receivers per line). The authors provide adequate justification for this strategy but a minimum number of line arrays were not specified (although a proposed number was suggested).

The ISRP concerns regarding dedicated time of the investigators were addressed and the PI suggested that if the project was supported that he would likely request a three-year leave from his current position. The other budget issue noted was that an allowance for 20% loss of the receivers per year was added to the annual budgets. The budget was re-profiled over time but, in total, it increased.

A remaining limitation of these studies is the size of the acoustic tag. The tag may be suitable for juvenile spring chinook and steelhead (and likely coho), but not for smaller juvenile salmonids. While this may be a limitation for some in-river studies or plume studies for fall Chinook, it is not likely a reason to delay testing of the receiver arrays that can be tested with the larger tag.

ProjectID: 35001

Habitat Monitoring and Restoration Program for the Lower Columbia River and Columbia River Estuary
Sponsor: LCREP
FY03 Request: $220,000
5YR Estimate: $1,720,000
Short Description: Establish ecosystem-based program to identify, prioritize and implement habitat restoration projects and implement pilot project to develop habitat monitoring protocols for monitoring and evaluation of habitat protection and restoration projects.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable, the likely benefits to fish and wildlife appear to be high.

The technical background to this proposal is detailed and complete. The proposal is well connected to the regional program and to 3 BiOp RPAs. This is a new project, but a history of lower river and estuary habitat restoration is provided to establish some context for this proposal.

The work in this project will build on work done with CREST under CWA Section 319. This group (LCREP/CREST) has a good track record with coordination, resulting in high quality products: habitat maps of the lower river, multiparty habitat workshop that developed criteria for habitat projects, list of habitat projects and RFP for research on these.

Action Agency/NMFS RME Group Comments:
OCEAN AND ESTUARY SUBGROUP -- Action items addressed - RM&E - 161; 162. Also supports 158; 159; 160; 163. This project has been coordinated with BPA as part of the LCREP Science workgroup. The monitoring protocols proposed are supposed to integrate with the larger RM&E focus for the basin. Future direction on RM&E should be communicated to the project applicant to further refine this proposal in accordance with that direction.

ISRP Remarks on RME Group Comments:
The ISRP comments are consistent with the Action Agency/NMFS comments.

ProjectID: 35055

Role of Bacteria as Indicator Organisms for Watershed Assessment and in Determining Fish Pathogen Relationships with Fauna of Abernathy Creek
Sponsor: USFWS
FY03 Request: $76,000
5YR Estimate: $196,600
Short Description: The purpose of this project is to develop techniques to assess watershed health and fish health using bacteria as system indicator organisms.
Response Needed? Yes
ISRP Preliminary Comments:
The objective of this project is to identify bacterial fish pathogens as indicator species for fish and watershed health. This proposal will use polymerase chain reaction (PCR) and species-specific primers to show the presence of aquatic bacteria in water and tissues of living organisms to determine their relationships to aquatic life. The idea is to identify bacteria species that can serve as indicators of aquatic ecosystem health. The technical background to this problem is adequate,

as is the relationship to regional programs and other projects. It would help the project to place this work in the context of RPAs under the FCRPS BiOp: the presentation had these listed; they should be added to the proposal?

Tasks and methods to meet these objectives are described in a fair amount of detail. However, detail about the sample design is absent. What is the reason for sampling in 10 locations? How did you derive this number of sites? The project proponents will consult with a biostatistician regarding data analysis: this consultation should be done in advance of sampling to ensure that the resulting data analysis has the appropriate statistical power. This comment also applies to the choice of the number of sample sites, which appears to already have been determined to be 10. How many samples will be taken from the ten sample sites, over which period of time?

The proposal could be clearer on how presence of bacteria types will be linked to the level of ecosystem health. Without a control, this work will be limited to establishing a description of the presence of ecosystem conditions in association with certain groups of bacteria, but the study will not generate understanding of processes by which these bacteria/conditions associations work.

The ISRP completed a review of this proposal very recently under the Lower Columbia/Estuary province (June 7, 2002 below). We note that the investigator did not provide further evidence of progress on development of the statistical design; consequently, we again request a response describing a statistically sound study design. This design needs to be in place before the project is started because the design will effect selection of sampling sites.

> June 7, 2002 Province Review - ProjectID: 30013
> Role of Bacteria as Indicator Organisms for Watershed Assessment and in Determining Fish Pathogen Relationships with Fauna of Abernathy Creek
> Sponsor: USFWS
> Province: Columbia Estuary
> Subbasin: Elochoman
> FY03 Request: $71,100
> 5YR Estimate: $189,690
> Short Description: The purpose of this project is to develop techniques to assess watershed health and fish health using bacteria as system indicator organisms.
> ISRP Final Recommendation: Fundable (Qualified - see comments)
> CBFWA Category: Recommended Action
> ISRP Comparison with CBFWA: Agree - Fundable (Qualified)
> ISRP Final Review Comments: Fundable
> The research is interesting and the question is important in regard to non-point source pollution, but the proposal has a strong personal development aspect to its benefits. The ISRP had a number of comments that the author did try to address and did seek the statistical advice suggested. Our principal concern was that the PI did not have the statistical background required by this investigation but the PI has sought consultation on this issue. A requirement of funding for this project should be that the PI is required to submit a completed experimental design developed with full collaboration of a statistician and agreed with by more senior USFWS staff. A design developed in advance of the sampling will assist in interpretation of results and will likely reveal sampling issues before the project begins. The ISRP acknowledges that the idea being examined in this proposal is both different and challenging but we are also recommending funding as a developmental step for a young researcher who impressed the review committee with his presentations and abilities to answer our questions.

CBFWA Review Comments:
This project should be considered under the innovative category (or in the Mainstem and Systemwide Province).

ProjectID: 35035

Incorporating Pit Tag Technology to Evaluate and Monitor the Reintroduction Effort for Anadromous Salmonids in the Upper Cowlitz Watershed
Sponsor: WDFW
FY03 Request: $203,740
5YR Estimate: $619,182
Short Description: We propose to update pit tag system to basin ISO standards at the Cowlitz Falls Dam and Fish Facility and use pit tags to monitor and measure collection, collection efficiency, smolt production, and a prototype surface collector entrance.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed to up-date the ISRP on progress towards a comprehensive study design in the upper Cowlitz River watershed. No further questions on this proposal. The ISRP recently reviewed this proposal and project # 31005 (Incorporating Pit Tag Technology to Evaluate and Monitor the Reintroduction Effort for Anadromous Salmonids in the Upper Cowlitz Watershed, WDFW) under the Lower Columbia/Estuary province. The committee was supportive of the upgrading of the PIT detectors to be consistent with downstream detectors, but we strongly noted the unique opportunities for important research in the upper Cowlitz River tributaries. We noted that the real value to the Basin in this upgrade it the monitoring and evaluation capability that could be incorporated into this research. This proposal did not comment on develops of such a research program but an organizational group was noted during the presentation. The ISRP has concluded that they must remain consistent with its recent recommendation:

"Defer decision until an appropriate experimental design is developed. Funding of #31005 could proceed independent of #31017 but the value of that investment would be significantly reduced without the full development of the potential studies in the upper Cowlitz River (project #31017)." (see below)

We should note, however, that this proposal has very strong BPA cost sharing already in-place and that costs in this proposal are distributed over a couple of years. Proceeding with the upgrade would be advisable in order to be prepared for future studies. If a research program did not subsequently develop, then the benefit of this investment would be much more localized. There would still be value in the assessment of Cowlitz salmon production.

Past ISRP Review Comments:
June 7, 2002 Province Review -
Province: Lower Columbia
Subbasin: Cowlitz
FY03 Request: $257,130
5YR Estimate: $971,730
Short Description: We propose to update pit tag system to basin ISO standards at the Cowlitz Falls Dam and Fish Facility and use pit tags to monitor and measure collection, collection efficiency, smolt production, and a prototype surface collector entrance.
ISRP Final Recommendation: Not fundable (Qualified - see comments)
CBFWA Category: Recommended Action

ISRP Comparison with CBFWA: Disagree - Not fundable (Qualified)
ISRP Final Review Comments:
See comments on project #31017.

CBFWA Review Comments:
This project should be considered under the Mainstem and Systemwide Province. The data collected would contribute to a larger database for evaluating populations. NMFS has identified that this project is a BiOp project.

ProjectID: 31017
Monitor and evaluate the success of hatchery salmonid reproduction for reintroduction of anadromous salmonids to the upper Cowlitz Basin
Sponsor: WDFW
Province: Lower Columbia
Subbasin: Cowlitz
FY03 Request: $183,661
5YR Estimate: $1,100,161
Short Description: Monitor the success of the reintroduction of anadromous salmonids to the upper Cowlitz Basin, including distribution, timing and success of reproduction of hatchery adults and success of upper basin seeding.
ISRP Final Recommendation: Not fundable (Qualified - see comments)
CBFWA Category: High Priority
ISRP Comparison with CBFWA: Disagree - Not fundable (Qualified)
ISRP Final Review Comments:
Defer decision until an appropriate experimental design is developed. Funding of #31005 could proceed independent of #31017 but the value of that investment would be significantly reduced without the full development of the potential studies in the upper Cowlitz River (project #31017).

The Basin has witnessed other unique opportunities to learn from new programs, that promised to develop appropriate experimental designs, but results have been less than expected. The upper Cowlitz offers one of the best environments and research opportunity but must be conducted under an appropriate design. At present the project is not conceived of as an experiment and appropriate hypotheses have not been developed. The response included three hypotheses (top page 5) but these only describe hypotheses that are implicit in the reintroduction program, rather than outlining an experimental design that would enable testing of hypotheses and methods for testing them. The study design is not adequate and does not provide any confidence that valuable results will be gained from the project. Based on the responses for projects #31005 and #31017, the ISRP is inclined to recommend Do Not Fund.

The ISRP has clearly indicated their support for the development of these two projects into a potentially important study for the Basin.

“BPA has already invested heavily in the Cowlitz watershed by building the Fish Facility ($22 million) but this proposal has good cost sharing and local support. There is an opportunity for exciting and informative research programs concerning salmon restoration, role of nutrients in the ecosystem, and hatchery versus wild comparisons in the upper Cowlitz watershed.”

We continue to support the development of these projects and consequently recommend that a limited time (e.g. six months) be allowed for the development of an appropriate design before a final decision is made on these two projects. There are numerous important questions in the Basin that could be studied in this environment, but the proponents do not seem to be aware of the opportunity presented. An advisory committee could be developed to assistant in the timely development of this design and execution of these projects.

Further, the responses to questions about recreational harvest focus on the regulation allowing targeting of marked hatchery fish and does not directly address the potential problem of incidental catch and release mortality. Discussion of the design should also consider the appropriateness of a recreational fishery in the upper Cowlitz. Can the fishery be relocated or limited to areas to minimize impacts?

CBFWA Review Comments:
This project is considered part of the base for the Biological Opinion by NMFS.

Artificial Production Related Projects

ProjectID: 200001700

Kelt Reconditioning: A Research Project to Enhance Iteroparity in Columbia Basin Steelhead (Oncorhynchus mykiss)
Sponsor: CRITFC
FY03 Request: $633,292
5YR Estimate: $1,957,441
Short Description: Continue to test and evaluate methods to recondition steelhead kelts and/or transport them around the hydrosystem, generate science-based management recommendations, and assist in their implementation to rebuild wild steelhead populations throughout the Basin
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. The proposal is well written and presents a logical and justified approach to examining uncertainties associated with kelt reconditioning. The proposal builds on work in this area over the last 2-3 years by the Yakama Nation and the US Army Corps. The proposal also addresses concerns expressed by the ISRP in its FY00 review of this ongoing project.

Strengths of the proposal include a systematic investigation of various reconditioning and transportation strategies, collaboration with other projects to expand the PIT tag and radio-tag information that can be collected, and a series of replicated treatments. This is a strong proposal that merits funding support due to its solid design and to the important information it may provide on enhancing steelhead populations. Another advantage of this study, as compared to the supplementation projects, is the 1-3 year timeframe for data collection, rather than the 5-6 years required in supplementation studies due to generation time. There is good cost sharing associated with this proposal, so apparently there is strong user support for the work.

Is there adequate scientific basis for the expansion of this project from a research-oriented activity to a production prototype? The initial research does show interesting promise in development but does the degree of "unanticipated success in the early years" justify the extent and cost of expansion in 2003? The project would expand from a research-oriented program to a production

prototype activity, which may simply be ahead of the research at this time. Data presented suggest an increase in rematuration efficiency of kelts over the three years of study conducted (~15% 1st yr; ~30% 2nd yr; ~80% 3rd yr). These data probably do show increases in efficiency of rematuration due to learning during the three years of the study; however, the last value is skewed as all kelts were included in the first two year's attempts at rematuration, while only those judged capable of rematuration (based on the 1st two years observation) were entered into the rematuration attempt on year 3.

Another concern is coordination between this study and the large-scale kelt reconditioning program being operated by the USACE at Lower Granite Dam. In recent years, as many as 15,000 kelts have been collected at Lower Granite Dam. This large number of kelts represents a potential resource for both experimental investigation and for population rebuilding of depressed upper basin steelhead stocks. The focus of this proposed project is on natural origin kelts only, whereas the large reconditioning and release effort by the USACE uses both natural and hatchery origin steelhead. Reconditioning work and research objectives need to be coordinated between upper basin kelt reconditioning projects, so that larger-scale questions about recovery of upper basin steelhead stocks can be addressed in a coordinated manner.

Additional questions concerning the methods are:

1. The allocation of kelts captured is uncertain in the various objectives (Section 9f). Task 1.3 refers to using the first 200 kelts for immediate transport and release, but then task 2.3 establishes allocations of the kelts based on the number captured (i.e., > or < 200 kelts). If less than 200 kelts are captured then all are used for long term monitoring … why this bias in the study?
2. Task 3.4 suggests that from 2003-2005 a minimum of 20 kelts and 20 virgin spawners would be radio-tagged and released and monitored upstream of the most adjacent downstream hydroelectric facility. Why would these fish be transported downsteam with the inherent risk of mortality as opposed to being released into the river of origin directly? Reviewers understand the value of tracking these reconditioned animals to the spawning grounds, but not the displacement downstream.
3. Task 4 is a little difficult to understand. The ISRP's understanding is that 40 virgin females will be collected and transported to the CRITFC/UI Collaborative Center for Applied Fish Science. This research will be performed as part of an MS degree research program under the supervision of salmon reproductive biologist Dr. Joseph Cloud at the University of Idaho. The females would be fertilized with cryopreserved sperm but the source of the sperm is not stated and why would cryopreserved sperm be required? If the intention is to avoid transporting males then sperm could be collected from males maintained at a local hatchery or from natural spawners. Further, in the spawning of the reconditioned female kelts, will the same males be used with each female?

The proponents might also reconsider the issue of genetically effective population size with repeat spawners. These animals will increase the census population and could change the generation length (if they were a significant portion of the population), but they are likely to decrease the Ne value due to the increased contribution from a small sample of the original parental stock. This issue may come down to a trade-off between demographic risk versus genetic but the actual effect/value of kelt reconditioning should at least recognize this potential.

Note: the ISRP has not reviewed the 3-Step submittal, but hopes to provide any additional review comments by mid-August.

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? It has no application to RPA 182, since hatchery/wild reproductive success is not evaluated as a part of the proposal.

With respect to RPA 184, it has very limited application, since its goal is to simply use hatchery facilities as a means to "improve" the usefulness wild steelhead often found in juvenile collection facilities associated with hydro operations. This proposal fails to specifically address how conservation hatcheries can contribute to recovery. The proposal doesn't develop an argument as to kelt reconditioning constitutes a hatchery reform.

Opposing view. This could be a reform, if, for instance, a hatchery program live spawned fish and released them below Bonneville Dam or reconditioned them. Proposal may have relevance to RPA184, if it is characterized as a conservation hatchery strategy to replace current strategies.

Scope? [ESU's covered, Transferability, Species covered] Proposal targets steelhead, and may have application to steelhead throughout Columbia River system.

Study design adequate, as is, or as may be modified? Uncertain at this time.

HYDRO SUBGROUP -- Elements of this proposal involve assessing the effectiveness of certain treatments relative to hydro passage experience by kelts. For example, some kelts will be transported to below Bonneville Dam in order to evaluate potential benefits of this passage option. This type of study would be classified as action effectiveness research in the RME-vernacular of the BO. It would be instructive if the authors provided additional detail regarding projected sample sizes and the ability to detect meaningful differences in adult returns, between hydro passage options (transport vs. not).

ISRP Remarks on RME Group Comments:
The RME group comments on 200001700 are consistent with the ISRP's review comments. The RME group comments regarding the proposal's failure to develop an argument about how kelt reconditioning could constitute a hatchery reform and the need for the authors to provide additional detail regarding projected sample sizes and the ability to detect meaningful differences in adult returns, between hydro passage options (transport vs. not) are worth addressing in the project sponsor's response to the ISRP.

ProjectID: 35014

Measurement of Quantitative Genetic Variation Among Columbia River Basin Chinook Propagation Programs
Sponsor: CRITFC
FY03 Request: $313,855
5YR Estimate: $914,623
Short Description: To investigate the existence of genotype-environment interactions in salmon, the building block of local adaptation, and thus refine the concept of conservation units.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal involves the application of quantitative genetic and molecular genetic methods in the "search for significant genotype x environment interaction and stock effects. The presence of such effects would presumably denote different distributions of

quantitative variation among life history types and geographic regions spanning the range of chinook salmon within the Columbia River Basin." The proposal is well presented and would provide one of the very few studies assessing the quantitative genetic basis to phenotypic variation in life history traits in the basin. In particular, the research proposes a study (involving a half-sib breeding design) to assess Genotype x Environment (GxE) interactions in traits associated with early development, coupled with DNA analyses to assess genotypic changes between the family parentages and the surviving progeny. If GxE interactions were strong, then selection for genotypes in different environments would be predicted. However, if GxE interactions are insignificant, then one or a few genotypes may be best in all environments.

The ISRP agrees with the importance of studies like this and strongly supports the integration of genetic methods in this study, however there are aspects of the design that should be reconsidered:
1) The selection of 6 hatchery stocks and 3 treatments receives little justification. In the initial years of these studies the number of stocks could be limited (see comments in b) and pre-study tests of the treatments could be conducted before assuming that these treatments will result in the "stress" expected, or that the stress does not simply kill all the fish. What preliminary studies have been conducted?
2) We are uncertain about a number of aspects of the proposed half-sib breeding design.
a) Half-sib designs assume all males are independent; therefore, at least twice the number of males as females are needed.
b) The design as described cannot directly estimate GxE interactions. For Task 2a, how do you expect to partition the GxE effect?
c) There will likely be maternal effects that cannot be accounted for and there is no treatment replication within stock x family x treatment (i.e., no rearing container controls). Revising the design is likely to require more rearing containers and/or dropping some stocks to provide more containers.
3) What is the value of maintaining the run-timing component within stocks?
4) The budget implies three years of study but the text does not make any such reference (other than a reference to using rainbow trout later). What is the expected duration of these studies?
5) Reliance on early development traits may not be appropriate. Phenotypic traits with strong relations to fitness (such as egg survival) may have very limited genetic variation. In which case, the outcome of this study may relate more to these specific traits than to a general feature of adaptive genetic variation. To minimize such a risk, it may be advisable to maintain the progeny during early growth stages and examine additional traits less associated with immediate survival.
6) There are issues in measuring GxE. First, the genotype being referred to is actually the family that will be composed of multiple genotypes. Here is where the real value of the molecular genetic studies could be used, but this aspect is not highlighted in the proposal. Second, if quantitative genetic methods are to be used to assess GxE interactions then there are specific breeding studies in multiple environments that can be used to estimate the interaction. Coupling these with the molecular genetic work could be a very original piece of research!
7) Task 4 seems to imply that the results of these detailed studies will be compared with the production history of the source hatcheries. The inherent assumption that past production history would relate to present genetic composition is weak and we question the utility of this part of the study.
8) A final point for clarification is the authors' use of 'drift'. On page 9 Section 9, in the section on Genetic analysis of chinook salmon, the authors state "Differential success among family lines to environmental challenges will also be assessed by examining for changes in offspring genotype from that of the parents. Equalized familial representation across treatments will allow for the removal of variance associated with familial lines and variance due to drift." It is not clear how these statements relate to the methods to be used and how genetic (presumably) drift relates to

these analyses. Unless survival is very poor and/or highly variable between families, why does drift receive the profile it does in the proposal and why would equal family size control it? The proposal should clarify who is actually conducting this research and the references cited in Section 2 should be completed.

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? No. More relevant to RPA 179. The proposal does not attempt to address hatchery/wild reproductive success in RPA 182. With respect to RPA 184, it neither addresses the topic of hatchery reform, nor address whether conservation hatcheries contribute to recovery. Too far removed from practical application and not adequately linked to specific reform under RPA 184.

Opposing view. Relevant to RPA 184. Will examine genotype-environment interactions and will attempt to determine if incubation performance of a stock is related to life history performance and if incubation success could be used as a predictor of expected performance through the adult stage. Results of study may provide guidance in identifying and prioritizing populations for conservation activities.

Scope? [ESU's covered, Transferability, Species covered] Would address listed chinook. Results not transferable between species, ESUs, or populations, due to site- specific artificial selection regimes at experimental location.

Study design adequate, as is, or as may be modified?

No comment at this time.

ISRP Remarks on RME Group Comments:
The ISRP generally agrees with the RME group comments, siding more with the 'opposing view' but having concern about the study design.

ProjectID: 198909600

Monitor and evaluate genetic characteristics of supplemented salmon and steelhead
Sponsor: NMFS
FY03 Request: $593,900
5YR Estimate: $2,548,570
Short Description: Direct and indirect estimates for reproductive success. Estimate selection gradients in hatchery and wild. Monitor changes in hatchery, natural (supplemented), and wild (unsupplemented) populations. Evaluate effectiveness of hatchery supplementation.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable, no response needed. This is an excellent, important, and well-written proposal. Summary statements of findings were provided showing significant progress over the history of the project. Several papers based on the results have been published in peer-reviewed journals, which indicate acceptance of the work by the scientific community. The study continues to make an important contribution to the understanding of the genetic structure of Columbia River anadromous salmonids.

Expansion of the budget is explained and justified. It includes both an actual expansion of the data collection and lab analysis to the Lostine River, Catherine Creek, and Little Sheep Creek

steelhead, as well as expanding the project to include the development of pedigree analysis and a strategy shift to increasing reliance on microsatellite DNA analysis rather than allozyme analysis. In particular, the latter change is justified and warranted. Shifting to the pedigree/paternity analysis is needed in order to investigate the more subtle effects of hatchery/wild fish interactions through supplementation to which the allozyme results were relatively insensitive. Microsatellite DNA pedigree analysis should be insightful for this purpose. At the same time, continuing the allozyme data collection at a base level is warranted in order to retain continuity of data over time (nearing two decades).

This proposal is well written and the researchers have maintained a very high level of scientific productivity. We would like the project sponsors to consider the following few comments:

1. Our most basic concern is for the scope and size of this one project. The proposal provides very little in terms of numbers of samples taken, capability for timely processing of these samples, and technical basis of the sample sizes. The tier 2 sample sizes seem particularly small, but no basis for the determinations of these samples was provided.

2. Section 9, page 16, Methods states that the captive brood chinook will not be sampled for DNA "because family-specific success data are already available through segregated rearing, marking, and enumeration." It is not evident from this statement whether that family-success is based on breeding programs or a different DNA sampling task? If these fish have not been sampled for DNA and are released into Catherine and Lostine rivers they could not be included in the pedigree analyses. This point should be clarified to ensure there is no oversight.

3. Section 9, page 12 Objective 1 Assumption. The authors suggest only partial sampling of potential parents can be compensated for by increasing samples sizes of offspring or the number of loci used. Increased sample size could improve precision, but we do not see how sample size alone can compensate for unknown parental genotypes? Increasing the number of loci sampled may assist if there are differences detected that are useful, but they also may not. The intention of this comment should be clarified.

4. Two major cost items included were a new ABI 3100 capillary electrophoresis unit ($150k, one-time cost, FY03 only) and the provision of an additional smolt weir in the Imnaha system ($115K). There is essentially no justification for these major expenses, what are the consequences of not funding? Is the smolt trapping coordinated (and agreed) with by others in the basin and why is it essential?

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? Relevant to both RPAs. The proposal applies to RPA 182, since it includes the study of reproductive success. Little Sheep steelhead portion addresses this RPA well.

The proposal applies to RPA 184, as well. It relates to conservation hatcheries as a recovery tool (and the extent to which it might contribute). Some hatchery reforms are directed at reducing gene flow from hatchery fish to wild fish.

Scope? [ESU's covered, Transferability, Species covered] Target species are chinook salmon and steelhead. It covers most of an ESU and two listed species. Results should be broadly applicable.

Study design adequate, as is, or as may be modified? Regarding Sheep Creek, the data presented at the captive brood workshop showed limited success at assigning parentage, an issue that

requires further discussion with investigators. This may be exacerbated for steelhead, where the genetic exchange with resident fish may be fluid, and where precocial and resident males are likely to contribute genetically. In general, good use of techniques available to determine contribution at this time. Incorporates latest genetic technology plus parentage analysis. This may provide the most powerful insight to relative fitness of hatchery vs. wild spawners.

It resembles some of the M&E programs addressing genetic effects from hatcheries – it describes basic genetic metrics (Ne, Fst, etc.), then tracks change over time. Continues long genetic data set, giving this special monitoring/evaluation value. For chinook, good monitoring for supplemented versus unsupplemented areas in the Grande Ronde (although straying into unsupplemented areas has occurred, and will cloud results).

ISRP Remarks on RME Group Comments:
The RME group comments on 198909600 are consistent with the ISRP's review comments. The BPA comments regarding Sheep Creek and the data presented at the captive brood workshop which showed limited success at assigning parentage, may be an issue that requires further consideration by the investigators. As noted in the RME group comments, the issue may be exacerbated for steelhead, where the genetic exchange with resident fish may be fluid, and where precocial and resident males are likely to contribute genetically.

ProjectID: 199105500

Natural Rearing Enhancement Systems (NATURES)
Sponsor: NMFS
FY03 Request: $1,158,969
5YR Estimate: $5,711,234
Short Description: Evaluate NATURES effects on salmonid behavior, morphology, physiology, post-release survival, and ecological interactions.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal would continue evaluations of NATURES effects (semi-natural rearing of fish in hatcheries) on salmonid behavior, morphology, physiology, post release survival, of these hatchery fish and their ecological interactions with wild fish.

The current proposal has two major foci. Objectives 1 and 2 test NATURES rearing habitat components (cover, structure, and substrate) at production hatchery scale and to determine interaction effects between rearing habitat variables assessed based on smolt-to-adult survival (design to detect a 20% difference between treatments with 80% power), and secondly to investigate benefits of predator conditioning to juvenile migratory and adult survival (same power). Research under Objectives 3 and 4 is intended to help determine ecological risks and benefits of release of NATURES reared under yearling steelhead to cohabit stream environments with wild cohorts (steelhead and spring Chinook). The latter studies to be conducted in experimental channels and observation flumes already available at NMFS facilities.

The proposal presents results of past studies and suggests that in-stream post-release survival of fish reared in these special habitats is significantly greater than that of their counterparts reared conventionally. These statements, however, are based on relative survival of NATURES reared-fish compared to conventionally reared hatchery fish and have not yet compared survival to adult returns. The studies in 1997-2000 included components to evaluate survival to adult returns.

While we acknowledge the efforts in these past studies, the ISRP believes it is important to keep these past results in proper perspective. In the summarized studies, the average improvement in survival (NATURES vs. conventional) is +18% (range +1% to 50%, n = 7 years). Given that smolt-to-adult survival for hatchery fish has frequently been <1%, these improvements (based on short-term smolt survival only to-date) are inadequate to provide the substantial improvement in survival needed for recovery or improved economical value of these hatchery fish. It is essential then that these 1997-2000 studies be reported as the data is available in order that any improved benefits to the adult stage may be accounted for.

The ISRP is also concerned about the publication record of these studies. The authors note a good publication list but upon inspection of those publications there are really 4 papers in recognized primary journals (4 of 32 listed). There does not seem to be any primary paper actually on the NATURES rearing studies? In their response the proposers should provide any available information about smolt to adult survival of NATURES-reared fish.

Since the ISRP has extensively reviewed the designs to Objectives 1 and 2 in the past, we do not have significant questions on those portions. The proposers have responded to previous review by incorporating study of the interaction between natures-reared and wild salmon. Concerning the sampling design for Objective 1 though, the proposed design includes monthly sampling of 100 animals per replicate/treatment group. In large raceways with various levels of structure (NATURES treatments) we question that this is adequate to estimate the variance or size distribution in each treatment (likely is for mean size). The authors might re-consider their design by initially evaluating how variance decreases with increasing sample sizes. Further, in Objectives 1 and 2, all fish will be coded-wire tagged, but will they be mass-marked to indicate presence of the tag. Given that mass-mark selective fisheries for spring Chinook are commencing, the mark identification could influence the return of these tags.

However, a major question related to Objectives 1 and 2 is not really technical in nature. It is whether the Council's FWP can support an additional 5-10 years of research into the NATURES components. Modified elements of NATURES are already being incorporated into facilities. Data collected so far on juvenile survival immediately post-release show small increments of greater survival by NATURES reared juveniles (above); but when translated into adult returns, the likely benefits could be small.

In Objective 3 and 4, the authors refer to density in the treatment, but the reviewers' reading is that this is the density at release into the artificial channels. How are the numbers of animals released determined and at what density are the animals reared? Reviewers suggest that the initial rearing density may be influential on the behavior of these fish even before they are released.

The project requests a large budget:
Objective 1 $624,300 Carson Hatchery NATURES study
Objective 2 $163,000 Carson Hatchery predator avoidance study
Objective 3 $173,284 Stream-channel rearing studies
Objective 4 $169,285 Behavior studies in observation flume
Objective 5 $ 29,100 Technology transfer
Total $1,158,969 increases for 5+ years in proposal (9-10 years for total study)

Unfortunately there is essential no information in the budget description about how these values were estimated, what labor is involved and what charge-out rates were used. For example, Section 8 includes costs for Indirect but also includes costs for utilities, rents, communications,

printing under Other. What is the basis of these Other items that seem to be costs appropriate for Indirect cost accounting?

At present, the ISRP is inclined to recommend completion of the project after 3 brood years of the factorial study of NATURES components now underway at Carson NFH (the reduction from 5 brood years would probably not entail an important loss of experimental power), and then a shift to evaluation studies at production facilities in the basin that are employing NATURES techniques. Oversight by the proposers could standardize experimental rearing approaches among the various facilities and coordinate data collection and analysis (as proposed in Objective 5). Adaptive development of NATURES techniques could proceed at the various production facilities.

The ISRP is open to the proponent's response to this suggestion in their reply.

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? Not relevant to RPA 182. Proposal has nothing to do with reproductive success of hatchery fish. Only juvenile survival effects are examined.

Relevant to RPA 184. By looking at effects of NATURES rearing on survival, and the ecological risk/benefits of NATURES fish released into wild, the project addresses both major issues associated with transforming (reforming) hatcheries to conservation tools, thus very pertinent to 184. Conservation hatcheries may eventually employ NATURES rearing techniques to increase juvenile survival.

It also has potential application to evaluating hatchery reforms under RPA 184. Hatchery reform includes changes in rearing techniques, including the use of NATURES rearing, which deserve testing before universal application.

Scope? [ESU's covered, Transferability, Species covered] Target species include steelhead, chinook salmon, sockeye salmon and coho salmon. Results may be transferable to other hatcheries.

Study design adequate, as is, or as may be modified? This is a continuation of the research on the effectiveness of NATURES hatchery rearing techniques. Adequate study design. No other comment at this time.

ISRP Remarks on RME Group Comments:
Our perception is somewhat different than the RME group; the proposal does have to do with reproductive success of hatchery fish in that it will study effects of NATURES components on smolt to adult survival. The ISRP agrees that the components of NATURES rearing should be tested before universal application, and in fact are concerned that the techniques are being applied universally without rigorous testing. The ISRP generally agrees that the design is good but we have some specific comments. The RME and ISRP apparently disagree in that the ISRP is concerned about the size of the budget and the justification for it.

ProjectID: 199305600

Assessment of Captive Broodstock Technologies
Sponsor: NMFS
FY03 Request: $1,498,981
5YR Estimate: $8,282,813
Short Description: Develops technologies to improve genetic integrity, inculture survival, maturation, and reintroduction success of ESA-listed salmon captive broodstocks. Applies research on physiology, behavior, genetics, ecology, microbiology, and nutrition.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. After the ISRP's FY00 review, this project was funded for a one-year duration with subsequent funding contingent on inclusion of better details on organization, coordination, and subcontractors in the next proposal. The ISRP suggested that investigators structure this as an umbrella-type proposal with subsections related to: 1) growth and diet, 2) health, 3) reintroduction strategies, and 4) genetic consequences. A detailed description of the overall organization and coordination structure should be included in the proposal. The present proposal is organized as the ISRP recommended, containing substantial detail on methods and organization.

This complex multi-faceted proposal represents a disciplined aggressive attack on many of the key uncertainties associated with captive broodstock use. The proposers responded carefully to previous ISRP concerns and review comments. The proposal contains extensive documentation from the general fisheries literature, as well as relevant Columbia River basin grey literature. The proposal also contains substantial methodological detail. This ongoing FWP project has an impressive list of accomplishments since 1994 and may be one of the better FWP projects in terms of publication of results in peer-reviewed scientific journals.

Nevertheless, the ISRP has several concerns with this large complex project. While the proposal is a substantial improvement over its predecessor, it is very large and needs clarification or restructuring so that the individual studies can be thoroughly reviewed. The scope of this program and importance of the work to the conservation of these stocks might justify a more in-depth scientific review of this one project alone, not as one of 104 projects in this Provincial review.

This proposal continues the development of technologies to improve genetic integrity, in-culture survival, maturation, and reintroduction success of ESA-listed salmon captive brood stocks. Research is conducted on physiology, behavior, genetics, ecology, microbiology, and nutrition and the captive brood fish and their re-introduction to the natural environments (from authors' short description).

The five objectives of the project are as follows

1. Improve reintroduction success
2. Improve olfactory imprinting and homing
3. Improve physiological development and maturation
4. Improve in-culture survival through prevention and treatment of disease
5. Evaluate effects of inbreeding and inbreeding depression

Each of these is a relevant and necessary aspect of the captive brood technology, and the authors have an excellent scientific record of publication on these works (28 primary publications based on past work).

We are concerned about the idea that adults produced through the captive brood program can be released to reproduce with wild fish in natural streams (Idaho stocks only). Our concern is that as a means to re-introduce these stocks to the natural environment, the approach is far too high risk given the value of these fish and perhaps inappropriate. Given the extent of assessments conducted-to-date and reported in this proposal, we would recommend an immediate stop to this activity (except on a small research scale) until it can be proven that the strategy has any merit. The only merit we can see to this approach is allowing the animals to participate in mate selection and hopefully to interbreed with other conspecifics. However, a much more responsible approach may have been to develop controlled flow environments (artificial or natural sections of streams) where the animals could be protected. Re-introduction of captive brood fish is a major issue associated with this rearing strategy but there should be some minimum standard of care taken given the importance of these fish and the investment made by the Basin!

The other issue is minor and concerns the wording involved in the inbreeding study. The authors refer to "progeny of mates chosen at random – the control". However, our reading of the design would indicate that simply a random selection of returning adults (which would seem to ignore the use of the DNA pedigree data) would include some level of inbreeding accumulating in the control line. Is this correct or did the authors mean that their control would be composed of non-sibling relationships only? In these lines, these may be better described as an out-bred line, which would be an appropriate basis for comparison or control.

Another area where the authors could further contribute to resolving critical uncertainties in the use of captive broodstock and supplementation technology is in the modeling of the timeframe and scale of incurring inbreeding effects via supplementation and captive broodstock programs (decrease in fitness) versus the potentially counterbalancing "cleansing" effect of natural selection on hatchery-produced fish as they become part of a naturally spawning population. Fitness impacts on populations can occur quickly in the hatchery environment (as documented in the literature), however, little information is available on how quickly the accumulated genetic load can be shed by salmon populations as they spawn naturally and local adaptation occurs. The balance between these two processes, including the magnitude of genetic (fitness) change and the timeframes over which they occur, may be the fulcrum upon which the long-term success or failure of these programs hinges. Thus, a major uncertainty is on what timescale can this "readaptation" occur? Is it compatible with our goals for recovery / rebuilding or does the readaptation process occur so slowly that it represents a constraint on how captive brood and supplementation programs can be used?

The budget description is again quite limited and includes two points for clarification: what is the 19% Leave surcharge and why are there costs under Other that again seem to be Indirect charges? The labor charges and cost sharing with NMFS needs clarification as this issue occurs in a few proposals.

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? It has limited application to RPA 182, since it does not compare hatchery/wild reproductive success. Some of the proposed captive rearing evaluations compare the performance of hatchery fish to wild fish. Other evaluations in the proposal do not.

Proposal is applicable to RPA 184. The use of captive broodstock as a conservation hatchery technique is contemplated in the BiOp. Proposal may be useful to determining the potential of one type of conservation hatchery action to contribute to recovery.

Scope? [ESU's covered, Transferability, Species covered] Proposal will target chinook salmon and sockeye salmon. Results should be broadly applicable to most captive brood programs using these species/ESUs.

Study design adequate, as is, or as may be modified? Yes. Generally, this proposal is for continued development/refinement of captive broodstock technology, focusing on a number of parameters that will ultimately affect success. However, some of the individual studies listed in the proposal do not fit under either RPA.

ISRP Remarks on RME Group Comments:
While there is no inconsistency between the ISRP's comments on 199305600 and the RME group comments, there is also little relation. The ISRP's comments focus on the technical soundness of the proposed integrated research program toward improving captive broodstock technologies and make several additional comments for further consideration and improvement of the project. The RME group comments note the degree to which the project relates to several RPAs and that the proposed research is likely to have broad application to most captive brood programs. The RME group comments will be useful in documenting the relationship of the project to the RPAs and BiOp.

ProjectID: 199606700

Manchester Spring Chinook Broodstock Project
Sponsor: NMFS
FY03 Request: $950,000
5YR Estimate: $4,828,825
Short Description: Smolt to adult seawater rearing of spring and summer chinook salmon broodstocks from Idaho's Salmon River and Oregon's Grande Ronde River sub-basins. Provides adult fish for spawning or direct release in recovery programs for ESA-listed stocks.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable. No response needed. This project is designed to develop and maintain captive broodstocks of chinook salmon in saltwater at Manchester, WA. It is needed to support many other projects and to meet ESA requirements on several upper basin listed stocks. The proposal is thorough with respect to hatchery procedures and describes the scientific and technical background of the problem, including a discussion of the potential risks and benefits of captive broodstock techniques. It clearly relates to a regional need and has strong connection to other projects.

This proposal continues the smolt-to-adult seawater rearing of spring and summer chinook salmon brood stocks from Idaho's Salmon River and Oregon's Grande Rhonde River subbasins. Adult Chinook are provided for spawning or direct release in recovery programs for ESA-listed stocks. The proposal includes a request for $200,000 capital for improvements to the Manchester saltwater delivery system (cost shared with NMFS). The proposal provides explanation for the increased costs relative to previous projections including the need to improve the saltwater system, but it does not provide any explanation concerning the substantial increasing costs in the operating fund through to 2007.

The proposal is generally well written and includes some data on past performance of the rearing program. The rationale and how the program relates to other Basin programs were good, and the authors are preparing written protocols for all aspects of the captive rearing programs.

However, one omission would seem to be the M&E aspects … of which there is none. Obviously there is monitoring since growth and survival of the animals in culture is being assessed however in a program with such intensive culture of such small numbers of original animals, reviewers would also be concerned about genotype x environment interactions and the survival of these fish after release into the wild. It does seem surprising that no monitoring of this aspect is being undertaken given that NMFS seems to be measuring DNA in every other salmonid in the Basin. The survival in the culture systems is quite high so people may argue there is no need to conduct such monitoring but there could be significant differences in how certain genotypes respond to the culture system and how they respond to the reintroduction to the wild. Is this being assessed by other programs or should it be implemented?

Secondly, given the difficulties being encountered in reintroducing adults into the Idaho streams (in proposal #199305600) and the known depressed state of production in the Grande Rhonde populations, is there a need to complete the "safety net" by maintaining true captive brood stocks (multiple generations) in these remote rearing sites (i.e., should live-gene back programs be established)? Why has this rather obvious step not been undertaken? Its absence suggests that a decision has been made not to do this.

Another uncertainty with the project that concerns reviewers is what are the outcomes of the project with respect to the reproductive performance of the adult fish after they are released back into natal streams for spawning. Another is whether the fish that survive to be outplanted as adults constitute a representative sample of the initial broodstock population with respect to genetics and fitness attributes.

Propagating captive brood stock as a protection measure under ESA cannot be viewed as a long-term strategy. Many problems are inherent in such propagation; a program that is not ultimately consistent with the needs of endangered species. The authors of this proposal seem to be aware of these problems and have included a discussion of several in their proposal.

ProjectID: 35012

Spatial scales of homing and the efficacy of hatchery supplementation of wild populations
Sponsor: NMFS
FY03 Request: $370,100
5YR Estimate: $1,545,100
Short Description: Determine the spatial and temporal patterns of homing and spawning by wild and hatchery-reared salmon released from supplementation facilities and examine the physiological changes in the olfactory system during imprinting.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. The project supports (and is dependent on) the Yakima Spring Chinook salmon supplementation program (Cle Elum Hatchery) and the proposed research is suggested to be useful for the biologists operating the YKFP supplementation program. In particular, this study will examine the effectiveness of supplementation and releases from satellite facilities for facilitating successful imprinting, minimizing straying and contributing to wild salmon recovery.

The specific objectives of this proposal are to:

1) identify and compare the fine spatial and temporal patterns of homing and spawning of wild and YKFP supplementation salmon relative to the Cle Elum hatchery, acclimation sites, and historical and current spawning reaches.

2) describe and compare the prespawning migratory behaviors (e.g. exploring, proving, holding) and spawning site selection of homing wild and YKFP supplementation fish from each of the acclimation sites using radiotelemetry; and

3) characterize the site-specific physiological changes that occur in the olfactory system during imprinting to different acclimation sites to assess imprinting success.

The Yakima investment in supplementation and acclimation sites has been extensive and this project could be useful in "tuning" their program to be more successful in seeding spawning habitat. The EOG work is appropriately tied into the proposal and is relatively small scale compared to the work in-river. The lab is well equipped to conduct the research and the methods to be used are well established. The use of longer-term tags (6 months) will allow useful examination of holding areas and migration behaviors, and the coordination with the YFP samplings will provide for large samples of spawners and detailed sampling of redd locations. This research is really more consistent with Yakima M&E type work, but was not included in that proposal (there is no M&E in this proposal).

Three issues need clarification in the response:

1) At how fine a spatial scale can the redd mapping be conducted, and can it be related to the depth contours of the river?

2) There seems to be a presumption that the distribution of spawners largely reflects homing or not (straying). How can homing be differentiated from simply selection of preferred spawning habitat and/or maintaining interaction with conspecifics?

3) The proposal comments on the aggregation of hatchery fish. Will this aspect of behavior be routinely monitored? Some aspects of aggregations will be lost possibly by sampling carcasses only, will it be possible to sample groups of live fish (e.g., males are unlikely to remain in a group following spawning)?

Other points for comment: The budget includes sub-contracting with Dr. T. Quinn, U of Washington and support for one MS student and one Ph.D. student, plus hourly field assistants. The subcontracting is not noted in the proposal. Who would actually be conducting this research? Section 9g Facilities does not comment on the source of the fixed radio-tag receivers?

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA?

It is relevant to RPA 184. Will provide information useful for planning/implementation of hatchery reform measures to increase homing fidelity and reduce straying of hatchery fish.

With respect to RPA 182, a straying study may help determine the specific origin of hatchery fish spawning in the wild (some of whom are likely to be strays and should be so identified).

A portion of the proposal, the study of site-specific olfactory changes during imprinting, does not directly address either RPA 184 or 182.

Scope? [ESU's covered, Transferability, Species covered] The proposal does not address multiple listed species. The study offers no broader application than to the Yakima spring chinook population. Could the scope of this proposal be broadened to include other species, e.g. steelhead?

Study design adequate, as is, or as may be modified? Yes. For RPA 184, the proposal will suffice to determine the spatial and temporal patterns of homing and spawning by wild and hatchery-reared salmon released from supplementation facilities (and to examine the physiological changes in the olfactory system during imprinting).

ISRP Remarks on RME Group Comments:
The ISRP's comments are consistent with the RME group comments about the potential value of this study. The RME group comments will be useful in documenting the relationship of the project to the RPAs and BiOp.

ProjectID: 35049

A multiscale evaluation of steelhead supplementation in the West Fork Elochoman River
Sponsor: NMFS
FY03 Request: $683,324
5YR Estimate: $3,278,533
Short Description: Evaluate the effects of the release of hatchery-reared steelhead on the growth, survival, movement, and behavior of wild salmonids in the West Fork Elochoman River.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal would evaluate the effects of the release of hatchery-reared steelhead (early summer release of yearlings) on the growth, survival, movement, and behavior of wild salmonids in the West Fork Elochoman River. Should this be an evaluation on wild steelhead or on salmonids generally? The text focuses on the former.

While we believe this investigation under natural conditions would be useful, there are three critical issues to consider:

1) The release of parr in early summer is not a typical strategy and draws into question the appropriateness of this design as a study of steelhead supplementation. Releases of large parr in the fall or as smolts would be more typical. This does not negate the value of this study but it should likely be considered a fishery research project more than a production or supplementation assessment.
2) The use of the North Fork as a comparative base is not well justified. How do the streams compare in productivity, habitats, etc. Further, the likelihood of visual redd surveys, as an adequate assessment of adult returns and the value of supplementation is very risky and inadequate in the ISRP's assessment. There will be a substantial amount of information and effort relying on the final assessment of adult returns and the proposed monitoring of adult returns seems inadequate. Without addressing this issue, reviewers believe the project is severely compromised.
3) There is no information on the hatchery rearing of the fish to be outplanted. How large will hatchery parr be, at what density will they be reared, how many will be tagged, and

how will they be released? What is the basis of the 3000 parr to be outplanted? Is there a statistical basis for this value or is it based on some other criteria?

Other concerns related to the above are more specific points.

a) Monitoring of growth and survival will be quarterly and based on "night seining". The proposal suggests the performance of the parr will be related to "their location within the site will be recorded." How is this possible with night seining?
b) Will the movement of parr downstream be monitored year round? If large numbers of parr are displaced (hatchery or wild) it would be necessary to know their fate within the tributaries. Presumably, some could move downstream of the final site and out of the tributary.
c) Is it feasible to tag smolts or fall parr in the North Fork tributary to provide a marked population? This could provide a means or mark-recapture for smolt production and total adult census if a remote tag detection system was incorporated into this design.
d) After this first out planting in 2004 there maybe "residual" fish holding into the next year when the outplanting occurs. Has this been considered and how will these fish be treated?

We support the development of individual-based models and think they could provide a useful tool in assessing supplementation and generally about the salmonid production in streams. However, there is no comment on how to validate the model. How will this be incorporated into the development steps?

It is very likely that a five-year study of steelhead in natural systems will have setbacks due to weather, etc. However, this is the type of study that is needed to fully assess the utility of supplementation. There is clearly a modest risk that natural variability will limit what is learned from such an investigation but these are the risks we need to take.

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? 182- Poor fit. Mostly juvenile work. Since it does not study reproductive success or compare hatchery/wild spawning success, it does not address RPA 182

Possibly relevant to RPA 184. It could be tied to reducing effects of juvenile hatchery fish, particularly competition after release in target stream. Some hatchery reforms target the ecological effects to listed fish from hatchery/wild interactions during the juvenile stage. But, it is not clear whether this part of the study is related to any particular hatchery reform that has been effectuated or is being considered.

Scope? [ESU's covered, Transferability, Species covered] Target species include steelhead, coho salmon and cutthroat trout. Uncertain transferability, i.e., uncertain to what degree the conclusions would be transferable to Upper Columbia.

Study design adequate, as is, or as may be modified? This proposal could be revised in order to specifically relate it to a particular hatchery reform and tying the results to a metric for reducing extinction risk under RPA 184.

OCEAN AND ESTUARY SUBGROUP -- Does not address action items in BO related to the estuary. Focus is on hatchery fish interaction. There was a question whether this would be considered estuary or tributary during initial review.

ISRP Remarks on RME Group Comments:
The RME group comments are not inconsistent with the ISRP's comments; however the RME group comments are clearly made through the lens of the RPA obligations and are useful in documenting the relationship of the project to the RPAs and BiOp. The narrow focus (and interpretation?) of the RPAs largely ignores the important contribution this study could make to better understanding interactions among wild and hatchery reared juvenile steelhead, which, in turn, could lead to more informed hatchery practices or release strategies that lessen the impacts of hatchery-reared juveniles on wild juveniles.

ProjectID: 199009300

Genetic Analysis of Oncorhynchus nerka (modified to include chinook salmon)
Sponsor: U of I
FY03 Request: $126,436
5YR Estimate: $518,756
Short Description: This ongoing project provides genetic information to assess immediate and long-term genetic risks to federally endangered Snake River sockeye and threatened Salmon River chinook salmon currently in artificial production programs.
Response Needed? Yes
ISRP Preliminary Comments:
A response is required. This is clearly high priority work that warrants continued funding and is overall a strong proposal. In general, the ISRP's FY00 comments remain applicable. The proposal is well written and addresses the genetic variation in Columbia River sockeye salmon, particularly in the listed stock (Redfish Lake) and its captive breeding program, plus the impact of captive rearing on three listed chinook salmon populations. These populations are severely depressed and require careful genetic monitoring to maintain the remaining genetic variation.

The ISRP's primary concern was why results of past monitoring were not presented? There are some obvious issues of concern such as what has been variation of family size in families of sockeye? Or, has mortality in the captive brood programs (sockeye or Chinook) been random among families? How has data been used to structure mating schemes? In the absence of any presentation of these data, the reviewers cannot comment on the timeliness of these analyses or adequacy of analyses.

The proposal provides additional information on reports and publications that have resulted from these studies to address some of the ISRP's FY00 comments. One hopes that with the long-term dataset that is being generated by this study that additional peer-reviewed publications will arise from the work. The proposal has a long-term monitoring component that is needed to provide consistency and insights into the Redfish Lake sockeye captive broodstock effort. This effort, while necessary, is largely routine by this time.

The most interesting aspect of the proposal, which could have been more fully described, is the more recent use of microsatellite loci analyses to develop pedigrees, identify parentage, and to set up MAI (Maximal Avoidance of Inbreeding) matrices to guide captive breeding options for severely depressed chinook populations in the East Fork of the Salmon, West Fork of the Yankee Fork, and so on. This approach has very strong applied conservation biology implications and

deserves to be better described in the proposal with respect to its methods, application, and management implications.

This project also monitors the bi-catch of sockeye salmon in a sport fishery for kokanee in Redfish Lake and has demonstrated the bi-catch of anadromous or residual sockeye. While this concern is not the responsibility of this author, it is a concern that in a lake with a listed sockeye salmon stock, at an extremely depressed population size, that a kokanee fishery would be allowed at all. What impact is allowed on sockeye in this fishery and how is it justified?

ProjectID: 35015

Replicated stream system for the evaluation of hatchery and wild juvenile salmonid interaction and development of innovative culture technologies
Sponsor: UI/CRITFC
FY03 Request: $300,114
5YR Estimate: $2,392,840
Short Description: Develop sixteen independent streams using spring water at the University of Idaho Hagerman Research Station with the goal of providing a research facility for investigating interaction between wild and hatchery salmonids and rearing technique development.
Response Needed? Yes
ISRP Preliminary Comments:
Response required. There is an important opportunity for a unique research facility, but we question the proposed initial use. While we agree that replication and use of controls could advance research on issues concerning hatchery-wild interactions in streams, the proposal does not address whether 16 "streams" could truly be constructed as replicates and what the experience in other such studies have been. Have there been ecological studies that truly accomplished replication of environments? If so reference to them would have substantially aided in the presentation of this proposal. The author did comment on the issue of scale in ecological studies and that issue would be of consideration in this application, but if scale alone were the concern, then presumably the design could be modified to compensate. What is the origin of the proposed design of 16 replicate streams? Task 1 requests substantial funding for consultation but the design and choice of species is already proposed. Will these consultations lead to new research proposals? What is the basis of fall chinook use and why would these fish come from Hanford? What fish transfer and fish disease protocols would be implemented to protect investment in the facility and the local environment?

We see little value in immediately undertaking such a demanding construction program. It would be reasonable to undertake the initial improvements as described and to distribute information on this facility; there may be substantial interest from other organizations with funds to support independent research. Unless the technical capability of constructing several replicates can be addressed more strongly (through support from the literature, etc.) and strong regional support for such an investment is provided, the ISRP does not support the immediate construction of these 16 "stream sections". We would favorably review a proposal to develop this research opportunity but leaving the construction aspects to the needs of the chosen research program that eventually is provided access to this facility. Such programs may only want a few larger stream sections or, in an alternative use, may require construction of a few spawning reaches to experiment with the re-introduction of captive brood parents into a semi-natural (and protected) stream environment.

The budget presentation should provide more information for review. For example, what does 5.7 FTE but only $94,000 actually mean?

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? No. Proposal itself is not directly responsive to either RPA. Proposal is for design and construction of 16 experimental stream channels. There is a possibility that the experimental stream facility proposed in this project could be used to investigate issues of relevance to RPA 184.

Scope? ESU's covered, Transferability, Species covered] Future research at the proposed facility would target fall chinook. No evidence in proposal of transferability to other populations, ESU's, or species.

Study design adequate, as is, or as may be modified? No comment at this time.

ISRP Remarks on RME Group Comments:
The ISRP generally agrees with the RME group comments, but the ISRP can see potentially valuable uses for the facility other than those proposed that may have significant value for endangered ESU's.

ProjectID: 200000700

Infrastructure to Complete FDA Registration of Erythromycin
Sponsor: UI-CNR
FY03 Request: $166,419
5YR Estimate: $514,419
Short Description: Continue to provide agencies and tribes access to erythromoycin feed additive while working to complete FDA approval of erythromycin feed additive, a therapeutant needed for sustained hatchery production and maintenance of captive broodstocks of salmon.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable, high priority. The tasks included are required by FDA to allow continued use of erythromycin for salmon. This proposal seems to be a comprehensive response to FDA and proposes to maintain close interaction with the FDA in completion of this work. The PI has a long productive history in this issue and has the necessary facilities and credentials to proceed. In the absence of different treatments for BKD, there is no other option but to proceed and meet the FDA requirements.

ProjectID: 35027

Evaluation of Two Captive Rearing Methods for Assisting with Recovery of Naturally Spawning Populations of Steelhead and Coho Salmon
Sponsor: USFWS
FY03 Request: $472,941
5YR Estimate: $2,046,091
Short Description: Test and evaluate two hatchery reform methodologies; Assess natural reproductive success of returning hatchery-origin adults; Establish Abernathy, Germany, and Mill creeks as a Tier 3 "monitoring and evaluation" site for anadromous salmonids.
Response Needed? Yes
ISRP Preliminary Comments:
Response Needed. After again reviewing this proposal as submitted to another provincial review, we continue to support the development of this proposal. However we are concerned that the design may not fully address the proposed objectives. The authors' propose to assess the use of juveniles, rather than adults, to initiate local brood stocks for supplementation programs. Removing juveniles would impose less of a demographic loss on a depressed population and may reduce the risk of a Ryman-Laikre effect on the genetic composition of the population (i.e. the expansion of a small sample of the population into a much larger portion of the supplemented population with associated changes in genetic variation). As proposed the project will measure the reproductive value (juvenile production) of the cultured fish using DNA assessments, but the plan includes very little assessment of the animals during culture. Consequently, assessment of this research relies on the final assessment of the juveniles produced by the cultured and natural parents, but provides little information about mechanism/effects of culture. If, for example, the cultured parents do not demonstrate reproductive value similar to the natural parents there would be no information suggesting the cause of this result. A Ryman-Laikre effect could still occur through the proposed culture of 0+ parr for (essentially) 1.5 generations, but monitoring of the culture period would be required to observe this outcome. Minor changes in the design (see attached flow chart) would allow for the monitoring of the cultured population, but would depend on the availability of single-family tanks for initial rearing of juveniles and the capability of the personnel to sample the families. We request that the proponents review these suggestions and provide appropriate practical revision to the design.

Our suggested enhancements to the study include:

a) DNA sampling the original parr collected so that genetic variation in the source population is known
b) Maintaining the families in individual rearing tanks until they are large enough to tag (CWT and/or PIT tags), sample families before pooling
c) PIT tag at least 100 individuals per family before pooling in the raceways, this will facilitate studying family responses to culture (variation of growth--task 1.d.-- cannot be observed from observations of mean size of experimental groups.)
d) Do not fin clip the fish as electronic sampling for blank wire will avoid the mortality associated with these fin clips
e) Incorporate culture regimens (diet, ration, schedules, etc.) that achieve natural growth trajectories of parr and pre-smolts rather than regimens that " Maximize...growth rate and minimize the variance in growth rate"--task 1.e. of the proposal. Physiological research on fitness of smolts (by Dickhoff and others) suggests that traditional growth-maximizing regimens may be inappropriate for supplementation programs.

f) Sample phenotypic traits of the PIT tagged fish as they are being released from the raceways as smolts including physiological assessments such as those proposed for coho smolts (task 3.c.).
g) Use the barrier fence to divert all adult steelhead through the facility and to electronically sample for CWT and PIT tagged fish.
h) Incorporate truly randomized mate-assignment protocols (task 2.a.) (Quinn and others at Forks Cr Hatchery have shown that apparently random mate assignments in steelhead broodstocks are not random with respect to phenotypic characters)
i) Consider how to sample and/or use kelts that will be produced and how to manage the barrier fence when the kelts are moving downstream.

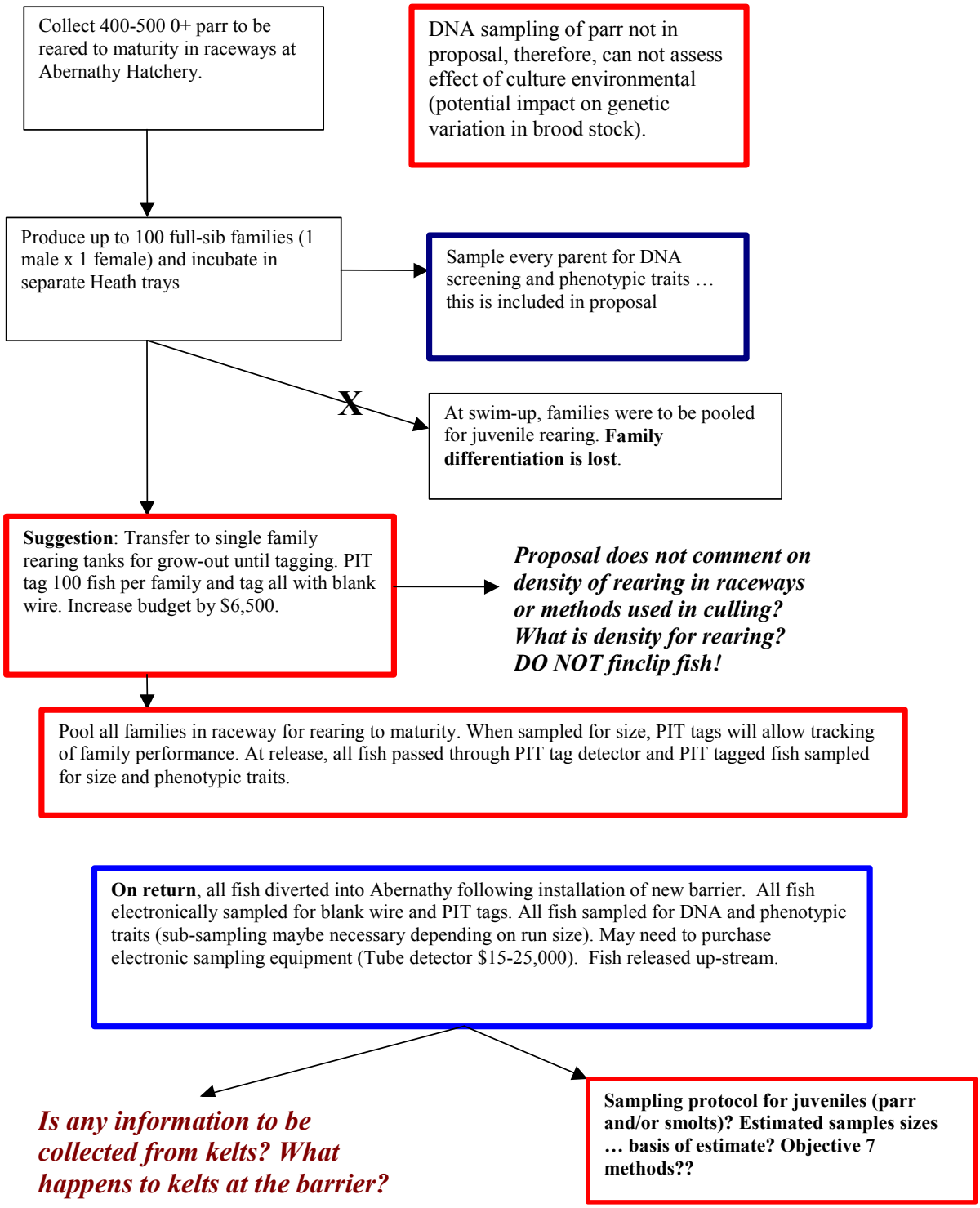
The ISRP is taking this unusual step of providing detailed suggestions as this is the third time we have considered this proposal and each time have supported it. We also note that there is a strong cost sharing aspect to the program as WDFW will provide three rotary screw traps, and USFWS is proposing to recruit additional staff and has the facilities. The design as proposed would require a substantial investment in funds, facilities, and effort but, in our opinion, would not fully investigate the objectives presented.

We also note that the proposal has four components: the steelhead brood stock study, rearing of coho salmon in the hatchery to reduce over-winter mortality, replacement of the electronic fence in Abernathy Creek, and the development of a Tier 3 Monitoring and Evaluation Site (NMFS RPA No. 183) for Lower Columbia and Southwest Washington ESUs of steelhead, coho salmon, chinook salmon, and coastal cutthroat trout.

In our assessment, the recommended priority of these activities should be:
i) Establishment of a Tier 3 Monitoring and Evaluation program complete with participation of WDFW, and replacement of the Abernathy fence through this submission. (High priority)
ii) Conducting the steelhead broodstock study as expanded in the attached flow chart (with amended budget). (High-Medium priority), and
iii) Conducting the coho over-wintering study (Low priority) What is the justification for the coho approach? Has overwinter instream survival of coho juveniles been identified as a limiting factor in the Abernathy Creek coho population?

Outline of Steelhead Research program for Project #35027 USFWS (figure - next page)

Outline of Steelhead Research program for Project #35027 USFWS



Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? Relevant to RPA 182, 184. With respect to RPA 184, the steelhead aspect of the proposal may provide a viable alternative to "broodstock mining" and genetic bottlenecks for conservation hatchery programs seeking to obtain and utilize local stocks (the thrust of many reforms).

Scope? [ESU's covered, Transferability, Species covered] Targeted species are as follows. Steelhead: Southwest Washington ESU, Coho salmon: Lower Columbia River, Southwest Washington coast ESU, Chinook salmon: Lower Columbia River ESU (naturalized population in Abernathy Creek). Proposal includes more than one listed species and ESU, and may have transferability to many others. As a side benefit, this technique, if successful, might have direct application to SNAPP (RPA 175)

Study design adequate, as is, or as may be modified? Well designed and written.

ISRP Remarks on RME Group Comments:
The ISRP generally agrees, but has some questions and suggestions regarding the study design.

ProjectID: 35060

Instream evaluation of populations, migration, individual adult return and wild-hatchery interactions of naturally produced salmonids
Sponsor: USFWS
FY03 Request: $229,606
5YR Estimate: $964,645
Short Description: Evaluate stock status, distribution, and abundance of juvenile and adult salmonids using new PIT tag techniques.
Response Needed? No, Fundable
ISRP Preliminary Comments:
No response is needed. Fundable at a medium priority. The proposed project seems like a logical extension of the previously funded innovative project.

As with proposal #35063, this is the second time we have reviewed this proposal recently. The value we see in this work is in Objective 1 to assess "abundance and natural production of juvenile, smolt and adult salmonids while developing and providing standard protocols for stock monitoring programs." If standard methods, tools, and protocols can be established for small stream assessments in the Basin, this could have significant general value outside of the immediate stream. We encourage the proponents to prioritize their work with emphasis on population assessment methods and sampling protocols.

Ms. Zydlewski has made a significant contribution through her work to develop stationary remote and portable detectors for PITs, and is now developing a proposal to utilize that technology. But in reviewing the objectives of this proposal, their Regional value seems limited to the development of sampling protocols for small stream assessments (useful), examination of tagging impacts on growth (assessed within a hatchery environment and with hatchery fish … limited value), or otherwise mostly of local value in Abernathy Creek. Her reference to life history stages is really limited to pre-migratory, at migration and following in freshwater (residualism), and at adult return. For each of these stages, population size and survivals would be estimated but the methods for estimation are not fully described.

For example, in the three stages:

i) in-river, pre-migration population size would be estimate by depletion methods (for 3 sites), but how is this sample expanded to the total stream and species;
ii) during migration, smolts population estimates would be estimated with the fixed array and/or smolts traps, but it is not clear how the fixed array provides a population estimate;
iii) at the adult stage (and assuming the new fish barrier is installed), all fish would be sampled but how would all the hatchery fish be identified (presumably associated with #35063).

In objective 2, they propose to assess frequency and magnitude of ecological interactions between hatchery-released and naturally produced salmonids. "Frequency and magnitude of individual interactions will be continually monitored at the stationary units and will be discontinuously monitored, but on a regular basis, with the portable unit." Page 13 of Section 9). However, these detections may monitor the movement and co-occurrence of these fish, but is this an adequate assessment of interactions? Objective 3 refers to novel tagging techniques but what is novel and important is not elaborated.

Action Agency/NMFS RME Group Comments:
STATUS MONITORING SUBGROUP -- This proposal seeks to evaluate stock status, distribution, and abundance of juvenile and adult salmonids using new PIT tag techniques.

The proposal does not indicate applicability to either RPA 180 or RPA 181. None of the target species in the study area belong to ESUs covered by the NMFS 2000 FCRPS BiOp. The project proposes to study, among other things, the effects of PIT-tag size on juvenile fish survival and growth, which could be considered testing of tools (i.e., PIT tags) that are widely used in some monitoring activities that do satisfy RPA 180. Therefore, while the proposal does not directly meet RPA needs, the methodological aspects of the work, as well as its potential contribution to the development of Biological Opinion status monitoring performance standards merit consideration.

ISRP Remarks on RME Group Comments:
The ISRP and RME group comments are consistent.

ProjectID: 35063

Compare Bacterial Fish Pathogen Populations in Hatchery Water and in Adjacent Creek Water and Evaluate Possible Disease Transfer Between Them.
Sponsor: USFWS
FY03 Request: $71,678
5YR Estimate: $106,165
Short Description: Determine the presence of bacterial fish pathogens within a hatchery water system and in the waters of an adjacent creek used as part of the hatchery water supply. Determine the potential for pathogen transfer between the two water systems.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
This proposal would investigate the possible exchange, between hatcheries and the environment, of two of the most serious bacterial diseases found in salmonid hatcheries of the Pacific Northwest, Bacterial Cold Water disease and Furunculosis, caused by Flavobacterium psychrophilum and Aeromonas salmonicida. Coho and steelhead are most susceptible but other

salmonid species can be infected or act as carriers. These diseases are not limited to hatchery fish but also occur among wild populations. The proposed work could complement a similar proposal (#35039, USGS-CRRL) but the content of this proposal is very limited.

The same proposal was reviewed by the ISRP recently and given a Do Not Fund recommendation. Other than the addition of a summary of the investigator's qualifications and a paragraph suggesting which textbook the statistical test may be drawn from and that an unnamed statistical consultant would be sought (but giving no sampling designs, etc.), we see very little basis for changing the past assessment. This study won't answer the question it proposes to answer.

ProjectID: 198740100

Assessment of Smolt Condition: Biological and Environmental Interactions
Sponsor: USGS, CRRL
FY03 Request: $256,000
5YR Estimate: $1,781,050
Short Description: Provide research support to regional hatchery and fishery managers to determine interactions between juvenile salmonid physiological development and the environment that affect smoltification, disease resistance and smolt-to-adult returns.
Response Needed? Yes
ISRP Preliminary Comments:
Response required, this is a technically inadequate proposal. This proposal is difficult to really understand. The research topic is interesting and the researchers have a long history of working with smolt monitoring in the basin. They are well qualified to conduct this research but the descriptions of methods and tasks are inadequate. This proposal is putatively developed from a continuing task in the basin but appears largely to be about developing a new research topic. If the proponents wish to continue to provide smolt assessments on "an as needed basis" then that should be clearly separated from a new research proposal.

The new topic is to "determine if basic water chemistry and background levels of natural immunostimulants in rearing water sources affect early development of immune response, disease resistance, and long-term survival of eggs, fry, and smolts in relation to adult returns." If during early development, biotic and abiotic characteristics of the aquatic rearing environment determine immune competence and disease resistance, then this innovative research could be very important to the basin. However, it is not possible to assess the research proposed from this proposal. The method isn't well described here--a preliminary study design is given, but no data from that study are presented. No design for statistical analysis is presented. The intention and value of the genetic screening are not clear.

Annual ongoing tasks concerning smolt condition should be clearly identified in a separate proposal. It should be designed to directly assist facility managers throughout the program.

ProjectID: 35039

The influence of hatcheries and their products on the health and physiology of naturally rearing fish
Sponsor: USGS, CRRL
FY03 Request: $303,448
5YR Estimate: $2,375,918
Short Description: This research will determine whether standard hatchery or supplementation operations influence the concentration of Renibacterium salmoninarum in streams and subsequently affects the health of naturally rearing salmonids
Response Needed? Yes
ISRP Preliminary Comments:
This is a well designed program that will address three major issues: do hatcheries amplify the presence of Rs in the wild (water and fish), do hatchery juveniles with high Rs levels pose a risk to wild juveniles (tested in artificial stream tanks), and do carcasses outplanted for nutrient supplementation pose a Rs risk to the natural environment. There are two issues to note: the methodology for detection of Rs in large water samples is uncertain (but expected to be functional within a year), and several aspects of objective 3 depend on the freezing treatment of carcasses. For the latter, if freezing does kill the Rs bacteria then the remainder of objective 3 tasks (3b-3h) will not be conducted (requiring a budget adjustment).

It is not certain that the three proposed hatchery sites meet their stated (5) criteria. Added justification of the sites should be provided and the proponents should seek Regional input regarding these sites before implementing the study.

What artificial streams would be used in objective 2? It seems that these are constructed fiberglass raceways but the point is not clearly presented in the proposal.

What will be the statistical methods of analysis?

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? Not relevant to RPA 182.

This proposal would relate to RPA 184, since hatchery reforms include protocols to reduce disease transmission. Diseased wild fish would be less likely to survive to adult, which would affect the risk of extinction for listed fish.

Relevant to RPA 184 and planning of hatchery reforms. Investigates influence of salmonid hatcheries and hatchery fish on transmission of disease to wild fish. Before the value of a reform can be assessed, the occurrence of the problem needs to be assessed.

Scope? [ESU's covered, Transferability, Species covered] Spring Chinook, steelhead, and other hatchery-reared salmonids. Results generally transferable to other hatcheries and other ESUs, but may be pathogen specific.

Study design adequate, as is, or as may be modified? Studies could also be combined with the heritability studies on disease resistance and immune function, this may also provide information on whether conservation hatchery breeding protocols may affect genetic traits for disease

resistance. This affects the degree to which conservation hatcheries may contribute to recovery, at a genetic, in addition to a demographic, level (another topic under RPA 184).

Could this proposal examine other pathogens at the same time? Proposal No. 35041 - Evaluate the relative fitness (mating success and progeny survival) of hatchery and wild spring chinook that spawn naturally in rivers

Address critical element of RPA? Designed to directly address RPA 182. It is a direct examination of reproductive success hatchery fish relative to wild fish. This project has high likelihood of shedding light, based on empirical evidence using latest genetic analytical tools, on relative spawning effectiveness of hatchery fish vs. natural fish.

The proposal may relate to a topic under RPA 184, i.e. conservation hatcheries. The issue of whether conservation hatcheries contribute to recovery depends, in part, on the reproductive success of hatchery F1s, and their progeny, spawning in the wild

Scope? [ESU's covered, Transferability, Species covered] Mainstem/system wide spring chinook. Transferability is good due to diverse experimental locations.

Study design adequate, as is, or as may be modified? Good. Biological traits are suitable as surrogates for "fitness". The inability to capture fish at Tucannon weir may weaken design for this captive stock. Significant precocious fish contribution would dilute ability to attribute progeny to hatchery or natural adult spawners. We may want to discuss with investigators ways to improve the ability to carry comparison over into the success of progeny and other possible explanations for survival differences between hatchery and wild fish

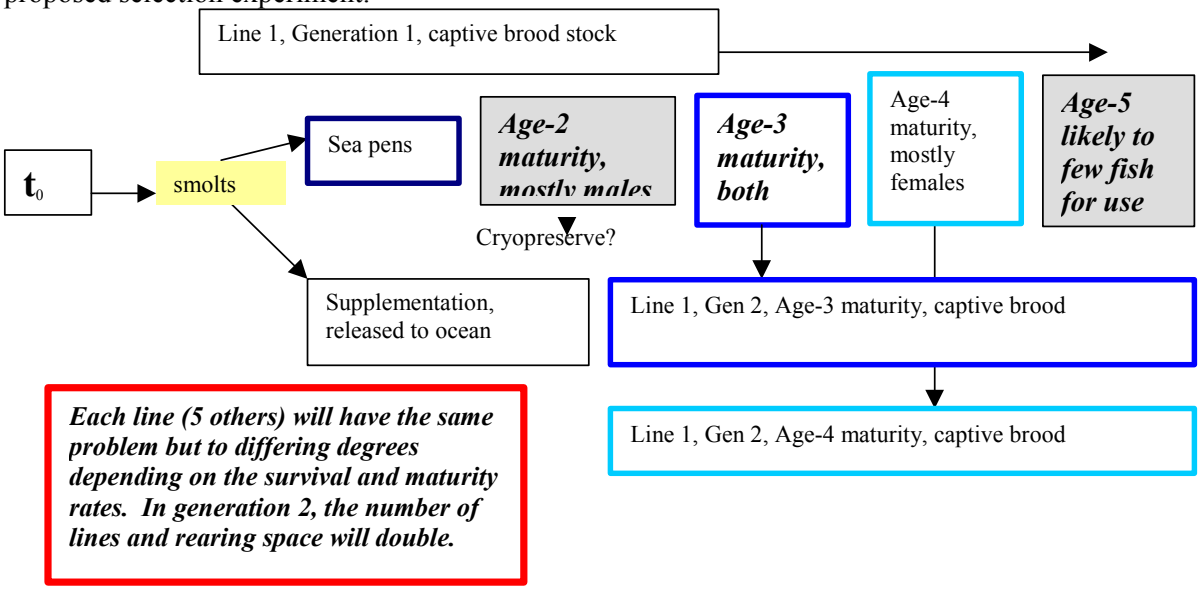
ISRP Remarks on RME Group Comments:
The ISRP generally agrees with the RME Group comments.

ProjectID: 35037

Measuring the potential for domestication selection of spawn timing in chinook captive and supplementation programs; implications for recovery.
Sponsor: UW and NMFS
FY03 Request: $129,498
5YR Estimate: $718,893
Short Description: Analyze the genetic response to (and recovery from) inadvertent domestication selection for spawn timing in supplementation and captive programs, using quantitative genetic approaches to trend analysis
Response Needed? Yes
ISRP Preliminary Comments:
The development of a quantitative genetic program in Pacific salmon is a welcomed addition, and we encourage the proponents to continue to develop their experimental design. We are uncertain about some aspects of the proposed research and are concerned about others:

The experiment would be initiated in one spawning year and the second generation selected within lines and age-class. However, in the F2, generation selection at age-3 and then age-4 will generate two separate lines; this generates a risk of causing a bottleneck within the original selection lines (-ve, control, +ve lines). Further, unless there was good survival and maturity at ages 3 and 4, to produce sufficient numbers of progeny for the next generation only a very limited

selection pressure and differential may be possible. This is a diagram of our understanding of the proposed selection experiment:



The proponents should clarify how they planned to deal with this scenario or demonstrate how their design would avoid this bottleneck. There seem to be three possible approaches:
1) Initiate each line with adequate numbers of families/individuals to minimize this risk (this would be very dependent upon the freshwater facilities available)
2) Select only one age-class for selection in the second generation, but this would have a significant effect on the desire to study correlated traits also, or
3) Initiate the study during 2 or 3 years and determine how to conduct the selection during the second generation. How would a selection differential be determined with over-lapping brood years?

Objective 5 indicates that at least 2 generations will be followed and that further generations will be followed. There's no analysis of how much response to selection may be observed in so few generations—there may be little evident response.

The proposal also refers to using DNA analysis to monitor inbreeding in the lines. While it is not stated, we presume that the "pedigrees" refer to will not be used during the selection process and only used in tracking the change of inbreeding over time. If the potential effect of domestication is to be studied, then pedigrees should not be used to direct any of the matings.

Domestication is a real concern in the use of artificial propagation and is deserving of experimental measurement and selection on return timing/spawn timing is known to be a source of domestication selection. While it's understandable to want to observe correlated changes in maturation age in selected chinook, the difficulty of this experiment and the impractically long time commitment required by the experiment suggests that an experiment on a less complex, shorter lived, salmon, e.g. coho, would be more informative and could provide useful results within ten years. Studies of correlated responses could still be conducted on other traits (e.g. size at maturity, growth rate, fecundity). Further, the space required for these species maybe more consistent with that available, and if coho salmon were used their survival rate would likely be sufficient to maintain a reasonable selection differential in the selected lines.

Action Agency/NMFS RME Group Comments:
HARVEST AND HATCHERY SUBGROUP -- Address critical element of RPA? Although this proposal does not directly address either RPA 182 or 184, it may have some relevance to both.

With respect to RPA 184, this proposal relates to hatchery reforms aimed at lessening domestication selection. The comparison of levels of domestication selection between supplementation programs and captive brood programs might provide insight on which types of conservation hatcheries have the potential to contribute to recovery, compared to their respective domestication risks

Opposing view. Of some relevance to RPA 184. Basic research, but not directly linked to what hatchery operators could apply in the real world to reform hatcheries. The problem already is "addressed," albeit imperfectly, by measures designed to minimize domestication selection.

With respect to RPA 182, a study of domestication may provide information on a potential genetic risk of hatchery fish spawning in the wild, i.e. outbreeding depression. Likewise, the inadvertent selection for altered run timing, and the transmission of those traits to wild fish via hatchery fish spawning in the wild, may be a valid biological concern.

Scope? [ESU's covered, Transferability, Species covered]Puget Sound Chinook ESU. Single species/ESU. Uncertain transferability.

Study design adequate, as is, or as may be modified? Important basic research. The data from this proposal concerning levels of inbreeding, however, might have limited , i.e. site specific, application, since the experimental populations at the UW have been under culture for several generations.

ISRP Remarks on RME Group Comments:
The ISRP generally agrees with the RME group comments but has stronger concerns about the design of the research.

ProjectID: 35041

Monitoring the reproductive success of naturally spawning hatchery and natural spring chinook salmon in the Wenatchee, Tucannon, and Kalama Rivers
Sponsor: WDFW, NMFS
FY03 Request: $1,079,140
5YR Estimate: $5,619,585
Short Description: Evaluate the relative fitness (mating success and progeny survival) of hatchery and wild spring chinook that spawn naturally in rivers
Response Needed? Yes
ISRP Preliminary Comments:
Fundable, but could be funded in part if Provincial funds are limiting. The proposal will evaluate the relative fitness (mating success and progeny survival) of hatchery and wild spring chinook that spawn naturally in rivers using DNA analyses proposed in several other projects as well. The proposal is well written and appropriate background is presented. The reviewers question whether there is any redundancy between this proposed work and the ongoing Moran and Waples work on steelhead?

The reviewers also note that the proposal is costly (10 years @ $1M per) due to conducting studies of juveniles and adults in three river systems. While we acknowledge the value of replicate studies and long-term monitoring to assess reproductive value, we question that each site is equally valuable and whether the researchers can complete the required work on all three. As the authors note, each of the sites has different attributes but the logistics of sampling is quite different in them. The Wenatchee system seems well suited to the sampling; the other two are less so.

We also question the author's comments on precocial male Chinook. "*Age 1+ precocials may migrate downstream, but generally do not reach the ocean. These fish are undesirable because of the potential for negative ecological and genetic impacts to natural fish, and because they are an undesirable fishery product*." (Page 17, Section 9). There is no doubt that hatchery rearing of spring chinook results in an abnormally high incidence of precocial development but precocity is likely associated with growth rates and an alternative male life history strategy. We strongly agree with the author's proposal to study this issue but would caution against concluding that the trait is "undesirable". It may simply be a cost associated with intensive culture of spring chinook that are grown at unnatural rates. Reviewers are also unaware of any evidence that precocial males "do not reach the ocean". This could be true, but what is the basis of this statement?

No comments were provided by the RME group on this proposal. Nevertheless, it is hard to believe that a project designed to evaluate the relative fitness (mating success and progeny survival) of hatchery and wild spring chinook that spawn naturally in rivers wouldn't relate to several RPAs. Specifically, RPA 182 states: "to establish and provide . . . funding for studies to determine the reproductive success of hatchery fish relative to wild fish ". This mandate seems a near hand-in-glove fit to the title and objectives of Project 35041.

The critical uncertainty about differences in fitness between wild and hatchery-produced fish lies at the heart of most of the ongoing and proposed research into captive brood and supplementation technology, and seemingly at the core of RPA 182 also. Indeed, understanding differences in fitness between the two groups, and whether conservation-oriented hatcheries can produce fish that can integrate into natural populations and lead to long-term sustainability (i.e., the fitness question) is the $64 million question around which much of the present recovery plan hinges.

ProjectID: 35029

Transfer IHN virus genetic strain typing technology to fish health managers
Sponsor: WFRC
FY03 Request: $116,479
5YR Estimate: $470,486
Short Description: Application of new genetic strain typing technology to epidemiology of IHN virus throughout the Columbia River basin, and transfer of technology to agency fish health laboratories.
Response Needed? Yes
ISRP Preliminary Comments:
Response required. This is a well-written proposal from scientists who demonstrate high productivity and application of current methodologies. Their proposal for technology transfer is strengthened by their past success. The model transfer of IHNV strain typing technology to fish health labs serving the basin may serve for other significant pathogens.

There are three issues for response:
1) the tasks associated with the technology transfer do not include "blind" tests of virus that the regional labs would process in order to confirm the accuracy of their work. Since several regional labs would be trained in these needed techniques, provided the necessary equipment, and then expected to contribute to the monitoring and control of the IHN M-clade, we suggest that regular testing for confirmation of methods should be incorporated.
2) The authors suggest that the overall goal of this work is to document the distribution of the M-clade and to control its spread in the Columbia basin. The proposal is not very explicit, however, in how prevention or control of the spread would result. This should be more clearly explained in the proposal.
3) We ask the proponents to consider a more active investigation of the M-clade distribution and control of its spread. The authors make a good case for the importance of this research and monitoring, but if the spread of M-clade is a threat to recovery, why not take an immediate active role in sampling and examination of the current distribution and then management of the virus? The budget could be adjusted appropriately.

We believe each of these points can be readily addressed by the authors and recommend a high priority for this proposal. The budget as presented seems very reasonable given the extent of risk presented by this virus.

Mainstem Habitat

ProjectID: 199900301

Evaluate Spawning of Fall Chinook and Chum Salmon Just Below the Four Lowermost Mainstem Dams
Sponsor: PSMFC, ODFW, USFWS, PNNL
FY03 Request: $1,012,405
5YR Estimate: $5,594,177
Short Description: Monitor, protect, and enhance the spawning populations of fall chinook and chum below Bonneville Dam. Search for evidence of fall chinook spawning below The Dalles, John Day, and McNary dams.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed; this proposal is likely fundable in part. The proposal is aimed at obtaining information needed for management of chum salmon and chinook salmon spawning below Bonneville Dam.

There is insufficient justification of the need for the effort to determine the "feasibility" of estimating the juvenile chum salmon production from the mainstem Columbia in the Ives/Pierce Island area, as proposed under Objective 2, Task 2.b. Furthermore, the proposed method, to employ a mark recapture estimation procedure, would need to be described in more detail before it could be considered to be likely to succeed. The investigators need to give more thought to the problem of meeting the necessary assumptions in employing such methods, i.e. that emigration and immigration are negligible under the circumstances to be expected with chum salmon juveniles.

The response should address the following points:

- The background statement should be enlarged to establish an understanding of the broader regional needs for flow and water management in the mainstem Columbia River. For example, it should be made clear that the investigators understand the tradeoffs that are involved in providing water to enhance spawning effectiveness in this area with use of water later to provide flow volumes to enhance outmigrations of upriver juvenile salmon.

- An enlarged background statement would help identify the key questions that need to be answered and the tradeoffs that must be addressed as more and more salmon are observed to be adapting to the FCRPS.

- It would seem to be appropriate to include in this proposal, either as background or as a specific task, exploration of the feasibility of opening up additional spawning area at the mouths of tributaries in the lower river.

- Under Task 3.b Analysis, it is said that "Regression analysis will be used to determine in a statistically rigorous manner the extent to which each habitat metric plays in predicting habitat". This statement needs to be enlarged upon for clarification and to establish credibility.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- This proposal appears to be in direct response to RPA 199, RA-2001.

That RA (2001) calls for research to collect relevant information for lower Columbia fall chinook and chum salmon spawning populations. The tasks in this proposal appear to satisfy the information requested in that RA. The Willamette Lower Columbia TRT has been developing guidelines for delineating population structure of these species. Their finding would appear to have bearing on population sampling resolution that may be required to satisfy status monitoring requirements under the BO. Presumable that RME work group will treat that matter further.

The proposal calls for the CWT implantation of Ives/Pierce Island fall chinook. It is not clear how these will be discriminate from other stocks that may move downstream and inhabit those locales. Clarifying this would be helpful.

ISRP Remarks on RME Group Comments:
The frequent use of the words "appear to" in the RME comments appear to hedge a bit. The RME technical comment on CWT implantation of fall chinook and the difficulty expected in discriminating from marked upstream stocks is a point that the proposers should address in their response.

ProjectID: 35007

Evaluate Restoration Potential of Snake River Fall Chinook Salmon Spawning Habitat
Sponsor: PNNL
FY03 Request: $315,000
5YR Estimate: $1,145,000
Short Description: The research to be conducted under this proposal will evaluate the restoration potential of mainstem habitats for fall chinook salmon, especially spawning habitat in the lower Snake River.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable. This is a proposal to identify operational alternatives for the hydrosystem that would allow enhanced spawning of endangered Snake River fall chinook salmon in tailwater and reservoir-headwater zones. This goal would be accomplished by more thoroughly characterizing the physical attributes of such zones now used successfully for spawning and contrasting these same characteristics in other such zones that are suspected of having spawning potential. Operational changes for making the potential spawning areas more suitable (by inducing more appropriate riverine processes in the zones) would be recommended. Existing spawning areas to be used to clarify habitat criteria for spawning include the Wanapum Dam tailrace and the Hanford Reach above the influence of McNary pool; the potentially enhanced spawning areas are the lower Hanford Reach at the McNary reservoir interface, the Ice Harbor Dam tailrace, and the Lower Granite Dam tailrace.

The proposal was well written and meets the ISRP review criteria. The background is concise and germane to the proposal, and demonstrates sound science principles. The rationale is well stated and significance to regional programs is described by explicit reference to the BiOp's RPA, the Council's FWP, the Mainstem/Systemwide solicitation and program summary, and relevant ISG and ISRP publications. The progression of the previous PNNL studies of spawning habitats in both the Snake and Columbia rivers to the point of developing this proposal is well presented. Previous ISRP concerns that the project would not identify management applications for restoring

habitat have been alleviated by objectives specifically oriented to identifying potential operational changes. The work has general application but the focus would be on restoring spawning for fall chinook salmon in the Snake River. The proposal seems likely to produce useable results. There is a potential for increased production of fall chinook that could be substantial. The fact that the COE is a party to the proposal and that the proposal suggests consideration of changes in reservoir elevations and other power operations indicates that it may be taken seriously. The proponents give clear hypotheses followed by good objectives, tasks, and scientifically appropriate methods to test the hypotheses. The proposal provides that there would be monitoring and evaluation of affected spawning habitats should any operational changes be implemented. There is an excellent reference list and resumes for a well-qualified staff. Facilities and equipment are available based on past work by the investigators.

The ISRP had several questions that do not require a response but which might usefully guide the research. There are legitimate questions about coordination with other PNNL proposals for related work, such as the hyporheic flow project and other proposals for habitat suitability studies (such as for below Chief Joseph Dam). Although there are differences in location and in the primary emphasis of each of the proposals/projects, the proponents should be aware of the need for coordination. Is the Priest Rapids flow agreement for the mid-Columbia a potentially good model for the lower Snake River for fall chinook spawning? The reviewers wondered if there are habitat improvement alternatives other than flow rate and water elevation that might be considered. Can the recent knowledge about complex physical characteristics beyond the usual depth, velocity, substrate, slope, etc. (such as hyporheic flow and embededness) be integrated into effective physical habitat modifications? Can the prior attempts to build artificial spawning channels be used as a guide (or alternatively, can proponents of spawning channels learn from this study)?

In summary, this is a good proposal that warrants funding based on the ISRP review criteria.

ProjectID: 35030

Evaluate potential to enhance spawning of summer/fall chinook salmon in the tailrace of Chief Joseph Dam, Columbia River
Sponsor: PNNL and CCT
FY03 Request: $134,220
5YR Estimate: $539,984
Short Description: Evaluate the potential to increase mainstem spawning habitat for summer/fall chinook salmon in the Upper Columbia
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed; generally fundable, but important background elements are missing from the proposal. These elements would demonstrate that the proposers are aware of the complexities of the water management system that forms the context of the potential for increased spawning. A response is needed.

The proposal is to explore the potential to enhance spawning of chinook in the tailrace at Chief Joseph Dam, but it needs to describe limitations to potential that are in place for other reasons. Operations at Chief Joseph Dam are already bound by the “Vernita Bar Agreement” for protection of fall chinook spawning, incubation, emergence, and now fry emigration in the Hanford Reach. The Agreement calls for stabilized flows out of Priest Rapids during those times.

Since Chief Joseph and the other mid-Columbia dams below Grand Coulee are "run-of-the-river" projects, operations of all are affected. (See for example ISG "Return to the River 2000", NWPPC Doc 2000-12, p. 451-2 for a description of effects of the Vernita Bar Agreement). In what way does the Agreement affect chinook in the Chief Joseph tailrace? The proposal should also review the work of Chapman et al. 1983 that led up to the recommendations included in the Vernita Bar Agreement. That review would provide an appropriate context for the work proposed here. (Chapman, D.C., D.E. Wietkamp, T.L. Welch, and T.H. Schadt. 1983. Effects of minimum flow regimes on fall chinook spawning at Vernita Bar 1978-82. Don Chapman Consultants, inc. Report to Grant County P.U.D. No.2, Ephrata, WA. Boise ID, 123 p.)

Description of these and other factors affecting operations and/or habitat conditions at Chief Joseph Dam should be provided in the proposal in order to establish boundaries within which potential enhancement of spawning of chinook in the tailrace at Chief Joseph Dam might be accomplished.

ProjectID: 35036

Identify the mechanisms of stranding of juvenile fall chinook salmon in the Hanford Reach
Sponsor: USGS-CRRL; USFWS
FY03 Request: $278,132
5YR Estimate: $786,000
Short Description: Predict stranding-related mortality using a GIS and statistical approach by incorporating fish behavior and ramping rate information.
Response Needed? Yes
ISRP Preliminary Comments:
Generally fundable, but a response is needed which would more adequately describe how this proposal might meet a management information need which is not available from previous studies.

The proposal focuses on "mechanisms" that might be involved in stranding of juvenile chinook in the Hanford Reach, and puts an emphasis on behavioral mechanisms of the fish that might affect rates of stranding. It appears that the proposal is in response to previous studies that have focused on features of the habitat that might lead to stranding. If this is so, then the proposal should provide more detail on shortcomings of previous studies, and more specifically identify the expected outcomes of this proposed project that might lead to improved management of flows or other measures. It appears that the previous studies, which might be termed habitat studies, may have provided a more direct approach to identifying what might be the same solution or set of solutions to the stranding problem. One of the solutions that has already been identified and adopted is provision of stabilized flows during the time of emigration of fry from the Hanford Reach. While the proposal implies that this provision has not been adequate and the proposal provides some estimates of numbers of juveniles estimated to have been stranded in the previous three-year period in support of the claim, no information is provided on corresponding patterns of flow at the time of stranding other than to state that "This [previous study] has been used by hydropower operators to liberalize fish protection programs since 1999."

The Council and NMFS's ISAB has a particular interest in this stranding issue (ISAB 99-5) and made a recommendation to the Council that a revision of the Vernita Bar Agreement be adopted to extend protection to emigrating fry. We understand that Grant County P.U.D. led in the development of a revised agreement among all of the (numerous) affected parties in 1999. In addition to studies under the Council's program, funded by BPA, Grant County P.U.D. continues

to monitor fall chinook at Vernita Bar during spawning, incubation, fry emergence, and now fry emigration. Before recommending this study for funding, the reviewers will need to be assured that the principal investigators are familiar with provisions of the Vernita Bar Agreement and its revision, including the monitoring and evaluation provisions that are ongoing.

There is a need to more fully describe the measures that are in place to stabilize flows in the Hanford Reach as a result of the "Vernita Bar Agreement", which calls for stabilized flows during spawning, incubation, fry emergence, and emigration in the Vernita Bar portion of the Hanford Reach. (See ISG 2000 "Return to the River 2000", NWPPC Doc 2000-12, p. 451-2).

The proposal does not present a convincing argument for the need to deliberately manipulate flows in order to study their effects on stranding, particularly since they are planned for times when fry are expected to be present (Task 1.a, p. 7). If on-the-ground studies are necessary, it should be possible to observe the effects on chinook fry of ramping rates and duration of flow reductions of various magnitudes during periods not encompassed by the Vernita Bar Agreement (as modified in 1999). The Agreement is not designed to protect down to the last fish. And the power operators are certain to undertake load following as soon as restrictions on operations are relaxed.

Further to this point, the proposal raised questions about the potential for extraction of further important information from existing data. This should be discussed in the proposal. From the discussion on page 2 and the oral presentation it appears that estimates of entrapment area and estimates of stranded fry were pursued somewhat independently, with the result that knowledge of the effects of hydropower operations is not sufficient to be able to predict numbers of stranded fry to be expected under various operating scenarios. The possibility of using existing data to arrive at such a capability should be discussed in the proposal. It ought to be possible to relate estimates of stranded numbers and estimates of entrapment area, each that relates to the same operating conditions, i.e. develop a table that shows a set of conditions of ramping rate, duration, and relative volume of reduction (%), and corresponding estimates of numbers of fry stranded during each such episode, and estimated area of potential entrapment. Such a table could be used to develop a regression equation to estimate numbers of fry expected to be stranded under those scenarios. If this effort should prove to be successful, the pursuit of behavioral studies to identify mechanisms involved in stranding would not be necessary.

With information already available from previous studies, it ought to be possible to identify certain areas responsible for major strandings. Has thought been given to the possibility of opening these up with a dozer or other mechanical means, deepening a downstream outlet end of the pool to facilitate emigration of fry?

ProjectID: 35057

Habitat Condition and Restoration Potential of Columbia River Flood Plains: A Critical, Missing Element of Fisheries Recovery Science and Policy
Sponsor: UM
FY03 Request: $1,200,000
5YR Estimate: $4,692,124
Short Description: Restoration of alluvial floodplains is critical if fisheries are expected to flourish. We will identify all floodplains in the Columbia River Basin and assess ecological integrity relative to human disturbance.
Response Needed? Yes
ISRP Preliminary Comments:
Generally fundable with high priority, but a response is needed on a few issues described below. This is a good long-term research project that should result in significant management actions over the next two or three decades to improve fish and wildlife habitat. The project is designed to catalog alluvial flood plains in the Columbia River Basin, assess ecological intactness of these flood plains, identify major changes in ecosystem structure of flood plains, and identify actions needed to restore, protect and sustain damaged flood plains to normative conditions. The scientific framework is consistent with river recovery theory so the results should help provide a basis for coordination of restoration activities.

A response should address how the economic, social, and regulatory factors related to existing floodplain development, or to the potential for changes in floodplain use, will be incorporated into the ranking system. These economic, property, and regulatory issues should be directly addressed during this investigation, ideally through bringing on another investigator trained in economics, or through a subcontract with an economist. The response should also include a monitoring and evaluation plan to allow determination of success of the project. A mechanism for an independent review of the resulting ranking of floodplains should be specified as part of the M&E plan.

The ISRP recommends that Council carefully review the budget during the contracting period.

ProjectID: 35062

Impacts of Flow Regulation on Riparian Cottonwood Ecosystems in the Columbia River Basin
Sponsor: University of Idaho
FY03 Request: $382,024
5YR Estimate: $1,043,918
Short Description: Research riparian cottonwoods and geomorphic responses to regulated flows in the Yakima Basin, compare responses to an unregulated reach of the Flathead River with the objective of enhancing flows to restore riparian habitats in the Columbia Basin.
Response Needed? Yes
ISRP Preliminary Comments:
This proposal builds on work begun under one-year innovative funding to examine the impact of regulation flows on riparian cottonwoods in the Yakima and Kootenai River Basins. The use of remote-sensing tools and field sampling methods for further studies of riparian cottonwoods in other alluvial reaches of the Columbia River Basin was the “proof of concept” aspect of the innovative project. This is worthwhile research project that should provide recommendations for normative changes in flow regimes in the Yakima that maximize recruitment of cottonwoods. The

scientific background is extensive and well written. The project is related to other projects and regional programs. Objectives, tasks and methods are well written and complete. The sponsors need to address the following:

1. The sponsors need to provide better evidence of the linkage of changes in flow regimes, geomorphic processes, and cottonwood recruitment to changes in stream habitat and in the aquatic community, especially the fish community. What kinds of habitat changes are to be expected from improved cottonwood recruitment? Perhaps the research needs an empirical component that specifically addresses the relationship between changes in cottonwood communities and changes in the channel and aquatic community. At a minimum a much more comprehensive discussion of the relevance and benefits of this research to fish communities is needed.
2. How do differences in surface elevations (A and B in Figure 2 and Objective 2, Task a) relate to cottonwood recruitment? What relative values of A and B are desirable and what ones are not?
3. In discussing the results of the innovative project some empirical evidence needs to be presented supporting the contention that the current flow regime disrupts recruitment processes (page 26). A more thorough and concise discussion of the kinds of flow management options that could improve recruitment would be beneficial.
4. Objective 4 related to model development needs to be expanded. What kinds of models are being considered? What are the critical parameters in the models? Exactly how will the data collected in the previous three objectives be used in model development?
5. The sponsors propose additional studies to extend research to other important reaches (with distinct flow regimes) within the Yakima. Observation of variation among reaches of the Yakima Basin is claimed to be critical to the extension of research findings to other alluvial reaches of the Columbia Basin. The sponsors claim "Since cottonwoods are a keystone species in the biodiversity of riverine corridors, our findings will be critical to a number of large flow-regulated rivers in the western United States. Hence, our results will not only be significant for managing regulated flows in the Naches and Yakima rivers, they will also be relevant where flows are regulated on alluvial reaches elsewhere in the Columbia River Basin." If additional studies are necessary to extend the research to other important reaches within the Yakima Basin is it likely that the results will be relevant elsewhere?
6. The project needs an M&E plan.

Action Agency/NMFS RME Group Comments:
HABITAT ACTION EFFECTIVENESS RESEARCH SUBGROUP -- Does the Proposal meet RPA Objectives?

They have one stated objective that suggests a potential experimental base upon which to ask the RPA 183 relevant question of action effectiveness: can regulated flows be modified to promote recovery of riparian cottonwood ecosystems? However, the sponsors do not propose to measure any listed salmonid survival rates or other variables directly relevant to 183, nor would this be possible in their Flathead control area. As such, 35062's direct relevant to 183 is very limited.

Elements the proposal is lacking.

Measurements of salmonid survival rates, variables directly relevant to 183, and site location to meet these objectives are lacking.

Means and Opportunities to Strengthen Proposal.

This is a clear, focused and well-supported proposal. The focus is on the ecology of the trees with some superficial references to how that in turn affects habitat for anadromous fish. It is unclear if this project can be modified to address questions regarding the affects of riparian improvement projects on fish.

ISRP Remarks on RME Group Comments:
The ISRP's comments, especially question 1, are consistent with RM&E comments.

Water Quality: Gas Bubble, Temperature, and Contaminants

ProjectID: 199602100

Gas bubble disease research and monitoring of juvenile salmonids
Sponsor: USGS, CRRL
FY03 Request: $16,885
5YR Estimate: $94,079
Short Description: Provide support for the Smolt Monitoring Program (SMP) monitoring juvenile salmonids for signs of gas bubble disease. Activities include (1) care and maintenance of equipment, (2) training, and (3) QA/QC
Response Needed? Yes
ISRP Preliminary Comments:
Generally fundable, but a response is needed on administration and sampling. Could this proposal be combined with another larger program for efficiency and programmatic review?

Comments from ISRP were mixed reflecting the historic value of the program but the declining needs due to mitigation being put in place and evidence that TDG levels up to 120% are not showing signs of GBD in salmonids. Also, there were and remain questions about the design of the sampling.

The FY00 ISRP recommendation was to fund for one year: "Subsequent funding would be contingent on programmatic review. Assuming the monitoring continues, this would be a candidate for a multi-year review cycle. This entire set of smolt monitoring projects needs to receive a programmatic review with one of the goals to develop and justify a program-wide design that really is capable of delivering enough data, of high enough precision, to answer specific management questions." It appears that after ten years of GBD R&D the question of how much M&E is needed in the future needs complete examination. If the Council calls for an independent review, here are some of the topics and questions that it could address regarding GBD monitoring and associated TDG causes:

1. A status report on the USACE on construction of TDG mitigation on all federal dams primarily in the form of flip lips. How have those functioned and what is the TDG duration curve at each dam under various flow scenarios?
2. FCRPS models indicate that spill can be controlled in most years through storage operations and spill in recent years is largely voluntary. There are models that predict the amount of TDG expected for various flow/spill scenarios and flood conditions. If those analyses show that TDG is highly unlikely to be violated, then this might be evidence to eliminate or modify the GBD program. Do the models have good calibration so we can depend on them?

3. GBD risk to the population of juvenile migrants is primarily contingent upon the various passage strategies employed -- transportation, spill, bypass, etc. The GBD program should be keyed into regional plans of the use of transportation and in-river paths.
4. TDG levels of up to 120% appear to be an acceptable level of risk to salmonids given potential benefits of spillway passage across dams. Thus, the need to maintain 110%, the previous standard should be re-examined for Columbia and Snake river dams.
5. During floods and emergency outages, TDG may rise unexpectedly and cause high levels of GBD even with flip lips in place. It would be interesting to hear whether a GBD SWAT team could be developed for limited but specific duty. For example in years when high flows are anticipated, uncontrolled spill and TDG's are expected to rise above 130%. This can be modeled ahead of the event. Although the Corps could maximize transportation, current JBS capture efficiency will decline on the rising limb of the hydrograph exposing higher numbers of migrants to high TDG. During emergencies, or future anticipated flood conditions, the agencies should maintain a capability to sample for GBD on short notice by having the expertise available that can mobilize to a specific site for a specific problem.

ProjectID: 35013

Species- and site-specific impacts of gas supersaturation on aquatic animals
Sponsor: CRRL
FY03 Request: $494,249
5YR Estimate: $2,731,036
Short Description: Address critical uncertainties about effects of gas supersaturation on aquatic animals
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This is a well-prepared proposal to fill some key uncertainties in the gas bubble disease story. The initial impression is there is already extensive data on effects of TDG on many migrating fish but not these species. Thus except for documenting further fish response to assure that impacts are contained within a 120% TDG limit, is the research likely to lead to alternative proposals that are already aimed at reducing gas in the river?

Much work has been done showing the problem is not as great as once supposed for salmonids, but admittedly, persuasive data are not available for the species/groups proposed here. The proponents have built upon their own work and work of others (including regional planning documents) to identify the needed next steps. There are some good objectives and study plans for approaching them. The FWP is not mentioned but should be referenced in the response. The rest of the ISRP review criteria are met. The work is of an M&E nature. An organization question is whether this project should be incorporated in the existing 199602100 (support to GBD monitoring by Smolt Monitoring Program) or vice versa (the existing project has dwindled to very small funding).

Two other factors also suggest the limited potential for new revelations about TDG as the studies are currently designed and located: (1) all three species tend to be bottom oriented and deep water species, and most TDG effects are in the upper two meters of the water surface due to hydrostatic compensation and (2) the levels of TDG are generally not excessive at either The Dalles or Bonneville. The exception might be for conditions requiring passage via ladders where shallow conditions exist in fishways. We share the concern regarding the limited numbers of bull trout at Hood River.

A location where bull trout are having problems with TDG is in Lake Pend Oreille. Annual spill from Cabinet Gorge dam in the Clarkfork River creates high TDG levels in a relatively shallow river, in the Lake and the dam blocks passage. Current efforts by AvistaCorp are aimed at improving TDG there and initiating passage. This area seems to have much greater value in archiving bull trout behavior and physiological data and would be a much more valuable laboratory as bull trout are abundant, but seriously reduced from historic levels. Unless the researchers can demonstrate a significant TDG flow duration curve at the proposed location, efforts there may be unlikely to yield the desired data due to inadequate test conditions. The low numbers of fish there also present a challenge to gathering sufficient data.

Some of the objectives and tasks do not spell out samples sizes or sampling schedules that are intended to be used, e.g. for lamprey the proposal does not specify a sampling protocol that would be used to "Conduct field studies to determine if Pacific lamprey in the wild are impacted by high TDG." Similarly, there is no information on how many adult salmon might be included under objective 4, nor at what TDG levels (page 11).

As for white sturgeon data, the population appears to be in sufficient condition to allow significant harvest. If larvae are exposed to TDG, are the impacts likely to be significant to limiting the population below Bonneville? Recruitment is occurring. What mitigation would be possible over and above what is being done with flip lips, spill control etc?

The lamprey studies seem to have more justification for study given the paucity of data and their differences from teleost fishes. However, TDG levels below BON dam may be insufficient for good data. Have the researchers examined other sites such as Willamette Falls for this study? Lamprey are abundant, easy to collect at the falls and the falls may present high TDG levels at times (this needs to be checked). The lab component of this study seems to have good merits.

The data analysis of TDG exposure to migrating adult salmon and subsequent spawning seems like a good study to complete. Some data suggest adult migrants use the deeper sections of the thalweg of LGR reservoir to migrate. Thus, successful spawning of "exposed" adults may demonstrate compensating mechanisms. The lab duplication has less value as the fish are not exposed to the other rigors of the river after a TDG exposure, but may shed some light on whether reproduction is physiologically hindered by TDG exposure.

The response should include a review of Earl Dawley's resident fish and benthic organism studies.

In summary, several elements of this study do not seem as potentially beneficial while others do.

Less justified:

· Studies of bull trout at Hood River and near TDA dam
· Studies of lamprey at BON dam

More justified :

· Studies of bull trout in Lake Pend Oreille and lower Clarkfork River
· Studies of lamprey where TDG has higher/longer frequency, Willamette Falls?
· Lab studies of lamprey exposure to TDG
· Data analysis of spawning frequency of adults exposed to TDG during migration
· Artificial propagation studies of salmon after TDG exposure.

Uncertain with Data Provided:

· Studies of sturgeon larvae in populations below BON dam

ProjectID: 35038

Develop Computational Fluid Dynamics Model to Predict Total Dissolved Gas Below Spillways
Sponsor: ENSR
FY03 Request: $604,998
5YR Estimate: $604,998
Short Description: Develop a computational fluid dynamics model to predict total dissolved gas levels below spillways that can be used to manage operation of a particular project and/or to predict benefit of proposed structural changes prior to their implementation.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This is a project to develop a computational fluid dynamics (CFD) computer model of processes that cause dissolution of air into water during spill. These processes cause high total dissolved gas levels in dam tailwaters and supersaturated conditions with respect to atmospheric pressure, which can injure and kill fish. Such a model would predict gas levels in a tailwater based on the physical geometry of the spillway and water flows. The proponents justify the model development by the anticipated ability to compare predicted total dissolved gas levels under different simulated physical configurations at a spillway (e.g., testing whether different designs of flip lips will work as expected) or under different simulated spill flow regimes. A wide variety of configurations and flows could be tested via these simulations (far more than could be empirically tested at an actual dam). Currently, such predictive power is believed not to exist, and only empirical observations under a limited number of different conditions are available. As clarified in the presentation, the CFD model is a near-field model and does not compete with far-field models that are designed to calculate gas flux (mostly loss) in a river or reservoir downstream of a dam.

The proposal is technically excellent. The proposal meets most of the ISRP review criteria. It is based on sound scientific principles, it is consistent with the Council's Fish and Wildlife Program, it has clearly defined objectives (with appropriate tasks and methods), and it provides for monitoring and evaluation of its results through model verification. The proposal is claimed to meet a regional need in adapting and applying well-known methods and software to help the region better understand the benefits and consequences of spill events and to forecast the effects of changes in spillway configurations designed to reduce gas supersaturation (but see below).

The ISRP recognizes that Computational Fluid Dynamics (CFD) models are being used for many hydraulic applications, and it seems logical to try this technique here. The adaptation combines deterministic equations with limited use of statistical models to understand the magnitude and distribution of dissolved gases below spillways. The logic for the model seems good. The proponents are well qualified to do the work, and the collaboration (including a large cost share) between ENSR and the Corps is an excellent mix of interests, capabilities, and eventual users. The problem of modeling air entrainment in the plunge pool may be a particularly difficult one to solve. The basic concept that mass exchange of gas between bubbles and water is an equilibrium process where the history of bubbles entrained below the spillway in time controls the TDG below the spillway has a firm basis in physical science. The success of the modeling effort will be tested against the relatively abundant data at Bonneville Dam spillway, but Bonneville Dam may

not be the best place to test this model. The ISRP would prefer further consideration (calibration, validation) of the model at other dams so that the model is not constrained by any peculiarities of Bonneville.

The ISRP has concerns, however, over the need for this model. The proposal states on page 1 that "To date, prediction of spill-induced TDG is based on empirical relationships developed from project-specific field data. These predictive relationships are only applicable for the range of project operations for which the field data were collected and are only valid for the existing spillway geometry." The proposal goes on to assert that there are no tools available for accurately predicting expected improvements prior to implementing changes in the field. However, existing models that use empirical data over a range of spillway operating ranges with prescient forebay conditions have already been developed and they use real data, real conditions and are calibrated sufficiently to predict the TDG behavior of spill scenarios expected over most operations. Field data have been collected in a designed program for more than 20 years, and must cover a wide range of project operations. This data might be used as comparison among designs or operations that would provide guidance in this regard. The ISRP reviewers remain skeptical that 3D computational fluid dynamics modeling can add much to the field data and analyses that have already been produced. The proposal could have provided a fuller discussion about the specific flaws or gaps in existing information that might be provided by a new mathematical model (that would need to have field data for input and validation).

The presentation and discussion clarified the distinction between the CFD spillway model and the existing water quality models that predict far-field TDG effects. These water quality models were completed by Battelle over the past 5 years (see Richmond et al. 1999 and others). The proponents need, however, to show how their near-field model will link with these existing far-field models.

In summary, the ISRP has specific information requests:
1. Describe how the CFD model could be linked to the existing far-field models so that the predictions could be compatible with existing monitoring station data.
2. Better justify the model development in light of existing empirical spill/TDG data. Some points to respond to: What specific flaws or gaps in existing empirical information call for this model? If the CFD Model plans are for new designs, this makes sense. However, aren't most spillways already fitted with TDG improvements (flip lips)? This would have been a valuable tool before the decision and commitment of funds to install flip-lips. Is this proposed because the Corps wants to rethink that decision? If this project is to model existing spillways and structures, it makes less sense. Is it to modify the existing spillways? Please explain what new structures are planned or contemplated and specifically how CFD modeling would benefit pre-design.
3. Describe how other dam spillways besides Bonneville could be used in the calibration/validation process to make the model less specific to Bonneville Dam.
4. Justify this expenditure as a BPA-funded project rather than as a Corps project, considering its close association with the hardware of a dam.

ProjectID: 35024

Evaluating the sublethal impacts of current use pesticides on the environmental health of salmonids in the Columbia River Basin.
Sponsor: NMFS/NWFSC
FY03 Request: $364,105
5YR Estimate: $1,053,975
Short Description: Screen for the effects of a broad range of current use pesticides on a model species (zebrafish). Evaluate the effects of specific pesticides on the physiology and fitness of at-risk chinook. Incorporate data into a model of chinook population viability.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. The quality of this proposal is extremely high. This is an exceptionally thorough proposal for research on a topic that needs attention. The investigators are highly knowledgeable of the techniques and literature. The proposed research is scientifically sound; it is consistent with the FWP; it has clearly defined objectives and related tasks. And it has a monitoring component. It is well connected to other pesticide studies in the basin. The staff seems exceptionally well qualified for the type of work proposed. Some very good science is likely to be done under this proposal. Thus, the expectations from the authors to implement the program and obtain results are not questioned.

But a key question is whether the research is likely to lead to useful results and implementable mitigation? Do pesticides in question exist in sufficient quantities in the environment such that those concentrations are likely to have measurable effects and can be partitioned and separated from other large and known sources of salmon mortality. Although a variety of pesticides are used and detectible in the environment, what are the concentrations and identities that are expected at levels in which salmon would be affected. If there is evidence, it should be cited.

Is the model realistic? The use of a copper based model and surrogate for organic pesticides seems convenient but not necessarily realistic. No evidence was provided to show copper concentrations exist in the Columbia River or most tributaries of the levels likely to be toxic or have sub-lethal impacts. Copper does exist in the Clarkfork River in high concentrations. There the homing instincts of rainbow trout and bull trout, two potradromous species, seem extremely well developed (Schmetterling, personal communication, MDFWP) in this extremely copper contaminated system. Milltown Dam is one of the most studied and evaluated cleanup sites on EPA's superfund list.

Is the work directly applicable to salmon? The proposed work is physiological research (driven by good ecological issues). The question arises is what is the actual relevance of the studies to the real world of salmon. For example, how applicable is the zebrafish model to salmon and what evidence is there that the rapid development rate of zebrafish embryos (a tropical species) represents much slower development of coldwater salmon embryos?

Are natural concentrations and mortalities significantly detectable to warrant the research? The discovery of microscopic anatomical or physiological anomalies after exposure to high concentrations of a toxin in a rapid developing model (zebrafish) in vitro may present unrealistic results and lead to unwarranted conclusions (Type 2 statistical error- i.e. find problems that don't actually exist for example, that pesticides from lab data extrapolated to the wild indicate a mortality component for wild salmon when there may be none). Response?

Are there potential affects on other species of fish and if so, what would be consequences to salmon? The authors hypothesize that predators may gain some advantage over smolts with impaired olfactory senses; however, should such a pesticide condition occur, why wouldn't the predators species have similar impairment?

Does evidence exist in nature that shows any unusual patterns of straying that might be connected with pesticides? The authors hypothesize olfactory impairment from pesticides may be a source of straying. Is there even anecdotal evidence that specific basins, sub-basins or tributaries with higher levels of pesticides (even use, if not data) show higher rates of straying than other basins?

Can we really get at the question of genetic consequences of pesticides? The authors hypothesize that genetic integrity of certain weak stock ESU's may be compromised by straying. The introduction of artificial selection to 95% of the salmon migrants via various artificial propagation (hatchery) techniques and selective harvest of the past 50 years seems gargantuan compared to the potential problem of incremental straying from a pesticide source. A simpler hypothesis is that if pesticides are entering the salmon's life cycle, it is likely that those individuals and populations are carrying an additional genetic or environmental load. If this is true, a more direct approach to warrant the physiological studies proposed herein would be to find at least one watershed that has physiological detectable concentrations of copper (or other toxins) and then emulate that condition in the lab. At the same time, the problem of toxicity can be addressed as a preventative measure while research confirms the extent of the mechanism and the extent of the problem in the lab.

If any results suggested that pesticides were an additive component of lifecycle mortality, how would such a finding be extrapolated over all populations and with all other causes of mortality? This becomes statistically daunting when in even a healthy system, 95-98% of the smolts do not return, mostly for unknown causes.

Alternative Research Designs. Is there any possibility of an alternative experiment that would use salmon, perhaps in populations known to be exposed to certain toxins; e.g. are there known exposed and control populations in nature that could be used as subjects of this study? The current approach asks us to extrapolate from zebrafish to salmon and do theoretical population modeling using a large suite of hypothetical variables about olfactory impairment and gene flow. The ISRP would be more enthusiastic if the model were with salmon and in a location where pesticide is actually found in known concentrations of concern in the environment?

Summary.

(1) Please address the basic evidence that pesticides in the environment are having a measurable and detectable impact on the return rates of salmon. Of the 100 pesticides identified, how many exist at concentrations are physiologically affecting sub-populations of salmon. Please identify evidence of specific impairment or straying or genetic or environmentally detectable load on any population. Address the concern that the model of zebrafish in the lab has several limitations to direct application to salmon in the wild. Address alternative approaches using salmon, potentially in nature.

(2) If a potential connection between copper and salmon is found, how significant is this source of mortality versus dozens of other sources not only of other pesticides, but also of dams, harvest, predation, ocean losses etc. Normal mortality rates are already above 95%. This speaks to the previously defined experiment, as the treatment and control will be exposed to all these cumulative impacts.

(3) The research seems extremely interesting to basic science, but please elaborate more directly on the likelihood that results will be directly applicable to the management of the FCRPS and salmon recovery. For example, hypothesize some expected and quantifiable impact, and what might be done about it. Wouldn't it be simpler to keep concentrations of harmful chemicals at sub-physiological impairment levels? This is EPA's mission and the toxicological research is usually in the realm of EPA chemical use and approval domains. Shouldn't this research wait for more details about natural concentrations of toxins? Some fascinating observations were cited by the authors about physiological and behavioral responses to predator alarm pheromones. What types of research can be done to develop more wild-like traits in hatchery reared smolts? Does this area of physiological research hold potential large benefits to salmon?

ProjectID: 35058

Evaluation of food availability and juvenile salmonid growth rates under differing thermal and sediment regimes.
Sponsor: CRITFC
FY03 Request: $218,885
5YR Estimate: $672,409
Short Description: Evaluate food availability as an index to potential salmonid growth and survival on stream continua representing varied combined land management effects, such as water temperature regime, substrate composition, and riparian condition.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not Fundable. This proposed study would contrast food availability and growth rates of bull trout, steelhead and spring chinook salmon in different qualities of stream habitat in the John Day watershed, with emphasis on water temperature. Stream reaches encompassing orders 2-4 are viewed as river continua (gradients) in which temperature is expected to range from cold in the headwaters to warm in lower reaches. Continua that have undergone landscape disturbance (e.g., agriculture, forestry) are expected to be warmer, have less total optimal thermal habitat over the fish growing season, and have additional changes in physical structure such as substrate composition, bank stability, and riparian vegetation. The study would quantify physical stream features, macroinvertebrate abundance (largely as drift of aquatic and terrestrial forms), and fish growth. This study would be tied closely with ones conducted by the ODEQ and ODFW, which will conduct the initial site screening and allow the proposed study to select the most suitable study reaches. The expected result is that certain land management actions will be shown to result in reduced productivity of food and lowered growth of fish (due, in part, to less optimal temperature habitat).

Although the topic of salmonid production is important and temperature effects issues are timely, the proposal lacks clarity. The background section is long and not well organized. It lacks focus on the salient features leading up to a hypothesis for the proposed study. Although temperature is a key element, few thermal references are given for the many generalizations. Some topics are introduced that do not seem germane to the proposal. Information on ESA listings seems to have been tacked on at the end of the section with little thought. The Council's Fish and Wildlife Program is not mentioned although the rationale lists RPAs from the Biological Opinion, but does not say what they are or discuss the Action Agencies' need to address them. The acronym RPA seems to have been used in several places when the general BiOp is meant. The rationale uses stated needs for food and feeding studies in the mainstem, estuary and ocean as justification for the work in the John Day watershed, without clarifying that this seems to be a general need over

salmonid life histories. In the section on relationship to other projects, the proposal discusses the linkage with the ODEQ and ODFW studies, but does not make clear just which organization will do what (there does not appear to be any cost sharing).

It is not apparent that the study would have the ability to separate abundance, growth, and the influence of competition The proposed study focuses on growth as the response variable to water temperature and food availability. It will depend upon other studies (by ODEQ and ODFW) for measurement of fish abundance (page 10). Those studies are said to provide information on presence/absence of juvenile salmonids and indices of abundance. Experience suggests that adjustments in abundance will be the primary response by populations of juvenile salmonids. Dominance hierarchies are established, leading to emigration of less competitive individuals or species. In this way, growth rates will not necessarily reflect the influence of environmental factors on the population. It is proposed (page 12, item 3) to temporarily confine salmonids in stream reaches for the purpose of measuring their growth rates. This is an unrealistic procedure that is unlikely to satisfy the requirements of an appropriate sample of conditions in a natural stream. For example, the method of confinement may, in itself, modify the production of invertebrate stream drift. A further problem is that other than specifying that the study is proposed to be conducted in the John Day Basin, no sites have been chosen for the study. It is at this stage uncertain that appropriate sites, that will represent "…key stream continua representing substantially different thermal regimes (and land management effects) …" can be found. (page 12).

It is not clear that the proposal meets the ISRP review criteria (although known to the proponents from solicitation materials, they are not clearly identified in the proposal). There is sound science described in the background, but its application to the study is not clear. The study seems to lack rigor of purpose (perhaps more a matter of quality of explanation than of intent). There appears to be benefit to fish and wildlife in larger fish at outmigration when growth is high, but the benefit of the project in guiding land management is not broached. The objectives and expected outcome are not clearly stated. The proposal's objectives are actually tasks, and the listed tasks are detailed elaboration on them. The real objectives remain to be clearly stated. Reference is made to meeting the objectives stated in subbasin documents, but these are not given or addressed. The methods are very detailed and instructive (perhaps leading to quibbles over details). The figure was not labeled so that reviewers could tell what the notations mean. The whole project is considered monitoring and evaluation, with no further discussion.

In summary, the proposal is poorly presented and not well organized. Hypotheses are not clear and the implicit ones are rather simplistic given our current understanding of temperature impacts, feeding ecology, competition, etc. Study sites (and therefore the land use practices to be compared) have not been selected. The proposal is not fundable in its present form and the deficiencies were not clarified in the presentation. The ISRP's concerns are unlikely to be resolved in a response.

Action Agency/NMFS RME Group Comments:
HABITAT ACTION EFFECTIVENESS RESARCH GROUP -- Does the Proposal address RPA Objectives?

This proposal is designed to examine the effect of temperature and food availability on juvenile salmon growth rates within the John Day Subbasin. While the experimental layout, with pristine treatment areas and anthropogenically altered control areas, is well designed for the study objectives, its relevance to 183 is limited.

Elements the Proposal is Lacking.

The proposal does not directly meet the requirements of RPA 183. The sample size and site selection do not adequately address monitoring needs.

Means and Opportunities to Strengthen the Proposal.

It could be made more applicable by simultaneous measurement of salmonid survival rates in treatment and control areas, in addition to growth rates. This proposal will also benefit from increased sample size and site selection that produces more representative sampling. The basic material is present to generate a high quality project.

ISRP Remarks on RME Group Comments:
The Action Agency/NMFS RME Work Group's review concludes that the proposal, while directed at RPA 183, does not meet their needs. The ISRP concurs.

Juvenile and Adult Fish Passage

ProjectID: 199403300

The Fish Passage Center
Sponsor: PSMFC
FY03 Request: $1,316,323
5YR Estimate: $7,257,504
Short Description: Provide the fishery agencies and tribes with technical expertise regarding hydrosystem operations, analysis of smolt monitoring data for daily, weekly and monthly fish passage management decisions, and regional fish passage data base management.
Response Needed? Yes
ISRP Preliminary Comments:
This is a useful and needed project; however the methods section is too brief to allow scientific review. Methods must be attached to each task and provided in sufficient detail (or adequate summaries and references given to written protocols or reports) to allow review and ensure documentation for future use of data. Results and plans for quantitative monitoring and evaluation of this project must be given. It is not appropriate for one of the most quantitative projects to not have a quantitative monitoring and evaluation plan for itself.

The response should contain a careful self-review evaluating the advantages and disadvantages of combining this project with the CBFWA proposal #35033 to form a systemwide monitoring and evaluation project.

Action Agency/NMFS RME Group Comments:
STATUS MONITORING SUBGROUP -- These comments are aimed at how the 199403300 Fish Passage Center proposal addresses RPA 180, which calls for the development of a program to determine population and environmental status while allowing ground-truthing of regional databases. The proposal includes some important elements in the service of the Biological Opinion RPA 180, specifically, the measurement of annual juvenile population abundance, survival, and SARs. Useful guidelines for the proposal, taken from document Mainstem/Systemwide Province Stock Status Program Summary (February 22, 2002), are given below. We suggest that the sponsors address these guidelines in the proposal. Using these

guidelines, we have commented on how the proposal 199403300 can be strengthened or clarified to help meet the RME needs specified in RPA 180.

Guidelines: Tier 2 Population Status-Juvenile Life Stage:
1. Clearly identify the demographic unit (e.g., population, ESU, deme; wild/natural or hatchery origin) over which sampling will take place.

Comments: It would be helpful if the proposal would clearly identify the demographic units targeted. According to reports on the FPC website, Comparative Survival Study work appears to be aimed at spring/summer chinook juveniles of hatchery-origin, while the Smolt Monitoring Program is aimed at all salmon species. Presumably identifying demographic units can be done using PITTAGIS data system and FPC databases. As far as RPA 180 is concerned it is measures of population abundance, survival, and trend that are of interest. The proposal would be made more relevant to the RPA 180 if it had a thorough treatment of wild juveniles. The current FPC work is more relevant to hatchery-born juveniles, and, according to the CSS report, it cannot presently be demonstrated that hatchery-born juvenile survivals can be used to reliably estimate wild-born juvenile survivals. The method for constructing confidence intervals for wild fish juvenile numbers, adult numbers, and in-river survivals should be explicitly treated in the proposal. What progress has been made in this endeavor? Do the confidence intervals indicate that estimates are reliable?

2. Clearly identify the spatial scale represented by each samples (e.g., reach, watershed, basin).

Comments: The location of the samples for the Smolt Monitoring Program (traps and dams) are clearly indicated in the proposal. For the Comparative Survival Study tagging sites, it was necessary to read reports on the FPC website. A link (or reference) should be supplied to this information, along with a table of the tagging sites.

3. Identify the performance measure or indicator that will be monitored (e.g. summer/winter juveniles, outmigrating smolts). If different methods are used to enumerate the same population, specify.

Comments: The performance measures are described in the proposal. They include smolt-to-adult ratios, juvenile passage survivals, and relative abundance measures.

4. Describe the method used for enumerating the indices, e.g., snorkel surveys, electrofishing, smolt trap, and the error associated with the method.

Comments: The method for estimating juvenile survival (the program MARK) is outlined in the proposal. The proposal should have greater detail in the methods for estimating relative abundance and smolt-to-adult ratios. It should reference papers and reports where detailed methods are given for estimating these measures. The proposal should describe which measures have standard errors and confidence intervals reported, and how they are developed.

5. Specify any expansion factors (e.g. aerial expansions, trap efficiency) or other adjustments (e.g., daylight trapping only) that need to be applied to the raw counts. Provide the rationale supporting the use of those expansion factors, how the factors change over time, how they are estimated, and assess their reliability.

6. Provide an assessment of the accuracy and precision associated with the proposed methods for estimating juvenile abundance or an index of juvenile abundance.

Comments: Estimates of bias and precision should be available for all estimates derived. When sample sizes are small biases can be large and precision poor. How will bias be assessed?

HYDRO SUBGROUP -- As part of the FPC activities a variety of smolt survival estimates are generated using combinations of hatchery and wild fish. In the RME-context of the NMFS BO, these estimates could be useful in computations of D, EM and testing compliance with survival Performances Standards for the hydro system. It would be instructive if the investigators provided examples as to how these might be applied to such. Given there are a number of other NMFS (D, EM, inriver survival estimates) and CBFWA (CSS) studies producing hydro-related survival estimates, it would be useful to understand what the applications of the collective estimates are. It appears that there may be overlap for some stocks and river segments. However, this is difficult to decipher since the efforts are not treated as a whole. This is probably more of a regional process matter than one specific to FPC investigations.

ISRP Remarks on RME Group Comments:
In general the ISRP agrees with the comments provided. We would suggest that it may be adequate to reference and summarize written documents to provide some of the detail asked for in the comments.

ProjectID: 198712700

Smolt Monitoring by Federal and Non-Federal Agencies
Sponsor: PSMFC
FY03 Request: $2,481,100
5YR Estimate: $13,493,183
Short Description: Daily passage data through the mainstem, Snake, Columbia and mid-Columbia Rivers to facilitate fish passage management decisions, including Biological Opinion implementation, is collected daily. Sampling and marking occur at 8 sites of the larger region.
Response Needed? Yes
ISRP Preliminary Comments:
This is a useful and needed project; however, the methods section is too brief to allow scientific review. Methods must be attached to each task and provided in sufficient detail (or adequate summary and reference given to written protocols) to allow review and ensure that they are documented for future use. Results and plans for monitoring and evaluation of this project must be given. It is not appropriate for one of the most quantitative projects to not have a quantitative monitoring and evaluation plan for itself.

This is one element of work by the Fish Passage Center. The response should clarify the tasks and budget for smolt monitoring that is contracted out to the states and tribes. To be consistent with ISRP's statements on implementation of a systemwide M&E program (see proposal #35033) the proportion of the budget passed through for participation of other agencies and tribes that could potentially be reallocated under the overall CBFWA proposal #35033 should be identified. The response should contain a careful self-review evaluating the advantages and disadvantages of combining this with the CBFWA proposal #35033.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- The proposal identifies three BO research actions (1240,-41,-42) that can benefit from information obtained under this program. These research actions are linked to

RME RPA 199 in the FCRPS BO. We further note that some of the estimates generated in the SMP may also have utility in the context of juvenile performance standards (Hydro) specified in the BO.

RA 1240. Specifies the evaluation of the spillway weir at LGR Dam using telemetry techniques. The contribution of the SMP would be to collect fish to use in the research.

RA 1241. The action specifies that telemetry be used to assess smolt behavior and survival at dams in the Lower Columbia. The contribution of the SMP would be to collect fish to use in the research.

RA 1242. The objective of this RA is to evaluate inriver migration survival and transportation survival from LGR to BON Dam. Fish PIT tagged under the SMP have the potential to contribute to this. However, it is not clear if the sample sizes described in the proposal will generate survival estimates with suitable precision. It would be instructive to detail these points in a revised version of the proposal, so the utility of the proposed survival estimates can be estimates can be evaluated a priori.

Performance Standards. The survival estimates derived from the PIT tagged SMP fish can potentially have application in the evaluation of BO performance standards. However, concerns regarding the suitability of precision need to be addressed before this could be determined. Also, as we noted for the NMFS survival proposal, the reliance on hatchery stocks may restrict the utility of these fish, since ESA focuses on wild stock performance. If this proposal remains linked to ESA needs, then it should offer evidence or rationale to support the use of hatchery fish as surrogates for wild populations.

ISRP Remarks on RME Group Comments:
In general, the ISRP agrees with the comments on this proposal. Specifically, the response should address the precision associated with survival estimates of wild fish through the hydropower system and use of hatchery fish as surrogates for wild fish.

ProjectID: 199602000

Comparative Survival Rate Study (CSS) of Hatchery Pit Tagged Chinook & Comparative Survival Study Oversight Committee
Sponsor: PSMFC & CBFWF
FY03 Request: $1,742,776
5YR Estimate: $9,497,683
Short Description: Adult and juvenile PIT tag recovery data are analyzed to compare survival estimates for transported fish of known origin, downriver stocks, wild and hatchery transported fish and fish handled and not handled at dams.
Response Needed? Yes
ISRP Preliminary Comments:
The response must include an outside peer review of the estimation process by a qualified statistician(s) or there must be a programmatic review by the ISRP allowing adequate time for careful evaluation of the estimation process before a positive recommendation for funding can be given. Previous reviews by the ISAB and the ISRP resulted in the conclusion that the overall design of the data collection was adequate to meet the primary objectives of the project, but that the statistical properties of the proposed analysis procedures (mathematical formulas) should be further investigated before conclusions are based on data from this study. The previous ISRP and

ISAB reviews did not approve the specific mathematical formulas in the reports issued by this project. Adequate review of the proposed analysis procedures is not feasible in the time allocated for the review of all proposals in the Mainstem and Systemwide Province.

When will the project end? The reason for the project stated on page 2 is to answer, " can transportation of fish to below Bonneville Dam compensate for the effect of the hydrosystem on juvenile survival rates of Snake River spring and summer chinook salmon during their downstream migration?" It appears that the direction of the project is changing to the point that the proposal should be considered a new proposal. The project began in 1996 yet the proposal notes a rather tentative goal on page 2, and repeated on page 3, " This study is intended to begin to provide the basis for the Mainstem Monitoring and Evaluation (M&E) Program's analysis of long term alternatives for recovery of depressed listed and unlisted stocks of chinook and steelhead." The response should contain a careful self-review evaluating the advantages and disadvantages of combining this project with the CBFWA proposal #35033 to form a systemwide monitoring and evaluation project.

The proponents should summarize progress toward publication of the results and methods in the peer reviewed literature, if any attempt has been made.

It was mentioned that bootstrapping would be used to obtain confidence intervals on the point estimates and we agree that this may be an appropriate procedure. However, the problem is deeper than estimation of variances. The formulas proposed are ratios of ratios and the magnitude of mathematical bias in the point estimates should also be evaluated. In addition, maximum likelihood estimators and perhaps others should be developed and contrasted to the proposed ad hoc estimators to determine the most accurate and precise estimates possible with the available data.

Why is NMFS not on the interagency Comparative Survival Study (CSS) Oversight Committee? It seems that they are one of the primary users of the results and should be directly involved in oversight of the project.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- The proposal identified several Hydro-related RME-RPAs that the research would support 185 ("D"), 187 ("D"), 188 (lower Columbia stocks), and 189 (EM).

The RME Hydro work group recognizes that the proposed research has the potential to provide data and estimates useful in satisfying elements in those RPAs. Hydro-related RME RPAs 185, 187, 188, and 189. The smolt survival estimates have further application in the context of testing compliance with the Hydro performance standards as noted for other proposals in this review. The proposal was thorough in specifying sample sizes comprising key index and treatment groups. However, it would be beneficial if that information was translated into precision estimates. Alternatively power analyses for key hypothesis tests could be presented to demonstrate the estimates will be satisfactory for evaluating key hypotheses remaining in the region. This would also aid in assessing the utility of the information in performance tests that would be performed at the checkins.

ISRP Remarks on RME Group Comments:
In general, the ISRP is in agreement with the comments.

ProjectID: 199008000

Columbia Basin Pit Tag Information System
Sponsor: PSMFC
FY03 Request: $2,532,711
5YR Estimate: $13,717,975
Short Description: Provides basic infrastructure for all PIT tag related projects in Columbia River Basin. Operates and maintains long-term data repository for PIT tag information. Operates and maintains permanent PIT tag interrogation sites. Supports other PIT research.
Response Needed? Yes
ISRP Preliminary Comments:
The programmatic need for operations and maintenance support for collection of PIT tag information is clear. The relationship to many high priority programs is documented. The objectives and activities are clearly listed. Three aspects of the proposal should be clarified in the response. First, what is the process for obtaining metadata on data in PTAGIS and is the process adequate to ensure long-term usefulness of the data. Second, methods were attached to specific tasks, but are too brief to allow scientific review. The methods should include references to written protocols or details should be provided in the proposal to ensure consistent operations in the future. Third, quality assurance goals are specified but monitoring and evaluation of success should be given. A monitoring and evaluation plan must be given in this proposal. It is not appropriate for one of the most quantitative projects to not have a quantitative monitoring and evaluation plan for itself.

ProjectID: 200100300

ISO Adult Pit Interrogation System Installations
Sponsor: PSMFC
FY03 Request: $1,972,106
5YR Estimate: $4,529,506
Short Description: Provides for procurement of PIT tag interrogation system electronic components and labor for assembly and installation in adult fish ladders at Ice Harbor, Lower Granite and the Dalles in FY02/03 and at John Day, Lower Monumental and Little Goose in FY03.
Response Needed? Yes
ISRP Preliminary Comments:
Generally fundable -- the proposal deserves high priority -- but a response is needed. The proposal includes a Monitoring and Evaluation component. However, more detail should be given on study design and determination of sample size. The power to detect important “failures”, etc. should also be given. Are there quality control standards in place for performance of such devices?

ProjectID: 35031

Tagging Study Technical Committee
Sponsor: BPA
FY03 Request: $150,000
5YR Estimate: $850,000
Short Description: This project will establish a forum – the Tagging Study Technical Committee – to assist the region in mapping and tracking PIT-tag studies to help identify gaps and overlaps; to coordinate funding and implementation among the Corps, BPA, and the PUDs; to
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Do not fund. There is a need to integrate the entire smolt monitoring/PIT tagging and other tagging responsibilities into a systemwide monitoring and evaluation program. The responsibilities described in this proposal should be shifted to the Fish Passage Center. Review of proposals is a task included under this proposal, which overlaps the responsibility of the ISRP.

Action Agency/NMFS RME Group Comments:
STATUS MONITORING SUBGROUP --
a. Does a proposal satisfy the objectives of RPA?

This proposal is not explicitly linked to RPA's 180/181 in the narrative, but it is implicit that some tagging studies can/do support RPA 180 (Population and Environmental Status Monitoring – Tiers 1 and 2) by having the potential to estimate life-stage specific survival rates such as SAR. The proposal does reference 15 unspecified RPA Actions that involve pit-tags.

b. If not, explain what elements are lacking.

An explicit linkage to RPA 180 and specific objective, tasks, and methods to ensure that pit-tag studies that can support RPA 180 are identified and reviewed by the proposed Tagging Study Technical Committee. The proposal in its current form is aimed at being a central clearinghouse for all proposed and on-going tagging studies.

c. If the proposal partially satisfies the RPA objectives, suggest means or opportunities to strengthen the proposal.

One approach the proposal should consider is using state and federal scientific take permits to track the who, what, and where in the application of tagging technologies. For example, in Oregon the 4d and State Take database can tell exactly who is pit-tagging how many of what species where and for what reason. NMFS or States throughout the Columbia would require similar information.

d. If a proposal is entirely satisfactory, indicate so and note the particular strong points.

e. Assess the feasibility of the proposed work in general terms.

Although the appeal of this type of effort is apparent, it seems that instead of creating another entity to oversee/advise another aspect of activities in the CRB, the essential elements of this proposal could be incorporated into another project already addressing pit-tags. These might include the PTAGIS or Fish Passage Center. The tasks and responsibilities could be incorporated into ongoing work statements with the same net result.

HYDRO SUBGROUP -- The Hydro work group sees a need for the coordination activities identified in this proposal. Many of the survival studies linked to RME RPAs appear redundant in coverage, while gaps can be evident. A forum to coordinate tag use and coverage, particularly in terms of satisfying BO needs could be advantageous to the community.

ISRP Remarks on RME Group Comments:
The RME group comments on this proposal are rather lengthy compared to others, but none of them is in conflict with ISRP comments. In fact, the most substantive comment is in full agreement with the ISRP recommendation to include the work under an existing project, such as the Fish Passage Center. It is quoted as follows: "Although the appeal of this type of effort is apparent, it seems that instead of creating another entity to oversee/advise another aspect of activities in the CRB, the essential elements of this proposal could be incorporated into another project already addressing PIT-tags. These might include the PTAGIS or Fish Passage Center. The tasks and responsibilities could be incorporated into on-going work statements with the same net result."

ProjectID: 198331900

New Marking and Monitoring Techniques for Fish
Sponsor: NMFS
FY03 Request: $878,000
5YR Estimate: $2,886,900
Short Description: Develop, install, and evaluate PIT-tag interrogation systems and ancillary equipment to expand the capabilities of the Columbia River Basin (CRB) PIT-tag technology to meet fishery resource stakeholders' needs
Response Needed? Yes
ISRP Preliminary Comments:
Generally fundable, but a response is needed. Investigators should prioritize the subprojects and split out the budget into components. Each of the subprojects should include a plan for monitoring and evaluation of effectiveness of each task.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- The proposal sponsors indicate this project addresses RPA Actions 50, 87, 192, and 193. The RME subgroup sees direct and critical association with 50, 87, and 192. However, we question the extent that this project contributes to 193 (RPA Action 193 includes discriminating hatchery and wild fish, tracking fish in oceanic environs, and determining growth and survival for specific wild stocks.

This project provides PIT tag detection infrastructure support, specifically development/refinement of transceivers, antenna, and associated hardware/software used at dams and in small streams. Its current focus is on the expansion of current PIT-tag interrogation technologies for adult PIT detection in fish ladders (RPA Actions 50 and 192) and juvenile PIT detection through high flow systems (e.g., Bonneville second powerhouse corner collector, full-flow surface bypass facilities, and small streams; RPA Action 87). These developments include transceiver upgrades for multiplexing and auto-tuning, and alternative antenna design (e.g., arrays, flat plate).

Juvenile and adult PIT tag detection facilities at dams are critical to estimating reach survival, assessing progress toward hydrosystem performance standards, evaluation of transportation, and

addressing critical uncertainties such as delayed transportation mortality, extra mortality, passage through multiple bypasses, and adult return rates.

For purposes of hydrosystem RME and performance standard tracking, objectives 1, 2, and 4 are very relevant. The RME subgroup wants to emphasize the continued importance of development of high flow juvenile PIT detection at the Bonneville second powerhouse corner collector - this is imperative for sustaining sufficient detection rates in the lower Columbia River. We also want to emphasize the continued support of developing adequate adult detection capability in fish ladders. Each is imperative to assessing progress toward hydrosystem performance standards. The Status Monitoring subgroup should assess the priority and adequacy of objective 3, development of in-stream PIT tag interrogation systems. Objective 5, adaptation of state-of-the-art technology to tagging fish (e.g., video technology, spectral analysis) does not appear to be associated with any RPA Action.

ISRP Remarks on RME Group Comments:
The RME comments are primarily descriptive of the proposal. There is no conflict between ISRP and RME comments. We agree the proposal deserves high priority.

ProjectID: 199302900

Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers
Sponsor: NMFS/NWFSC
FY03 Request: $1,884,200
5YR Estimate: $9,192,200
Short Description: Provide precise measurements of survival of juvenile salmon as they pass through dams and reservoirs in the Snake and
Columbia Rivers and relate to adult returns.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable. This is an ongoing research project to provide precise estimates annually of survival of juvenile salmonids migrating through reservoirs, dams, and free-flowing reaches of the Snake and Columbia Rivers. Survival information is important for evaluating the success of strategies to recover depressed stocks and to evaluate success in meeting the passage survival performance standards in the NMFS 2000 Biological Opinion. The project plans to continue to PIT tag yearling chinook salmon and steelhead at Lower Granite Dam as needed to estimate their survival through the hydropower system. When possible, the project will also follow fish PIT-tagged in other studies. The project will also continue to PIT tag hatchery subyearling fall chinook salmon for release above Lower Granite Dam to estimate their survival through the Snake River and PIT tag and release river-run subyearling fall chinook salmon (mostly wild Hanford stock) at McNary Dam to estimate their survival through the lower Columbia River. The research will determine where losses occur for subyearling chinook salmon between the free-flowing Snake River and Lower Granite Reservoir using a streambed flat-plate PIT tag detector. Results will be used to explore the relationships among survival, travel time, environmental variables, and dam operations using the expanding database generated by this study. As PIT-tagged adult fish return, the research will continue to explore survival to adult for fish with different passage histories.

This is a very well prepared proposal that meets the ISRP review criteria. The ISRP's comments on the FY 2000 proposal (selectively quoted below) remain germane. The excellent publication record continues. The project cost has escalated as plans are made to partially absorb the trawl

netting conducted below Bonneville Dam in order to obtain lower river survival estimates. The size and complexity of the project warrant periodic special review. The region is again advised to think about the future of this research and monitoring effort, which is a cornerstone of salmon evaluations in the mainstem.

In FY 2000, the ISRP commented: "This proposal is very well presented, reports progressive development of methods and techniques over time, and demonstrates a timely and strong publication record of research. The proposal is well integrated with other related projects and presents a logical sequence of objectives and methods. The project is a core PIT tag application program that has been expanding its area of study as new detectors are installed and developed. This kind of information is vital if agencies wish to develop priorities for research and/or to develop a relative ranking of mortality sources in the Columbia.

The scope of the project is again so huge that it is extremely difficult to provide any cogent or constructive comments. Given this scope, the annual cost, and projected duration of this request, it seems advisable to conduct periodic programmatic reviews using expert panels. Such panels should provide a broader scientific basis for review and the necessary regional perspective to better evaluate the merits of the on-going research. This would assist in determining the appropriate scope and direction for future work."

In 2000, the ISRP asked whether the results obtained to date were sufficient, or whether the project should continue as a key component of basinwide monitoring. The question was again raised (and answered) in review. It is clear that the project has been a cornerstone for monitoring juvenile survival in the Columbia River system, and that it should continue for the foreseeable future.

In summary, the proposal meets ISRP criteria, represents a particularly valuable project for the basin, and warrants continuation.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- The researchers indicate that the proposed research contributes information that supports RPAs 185, 189, 190 and 193. The RME group also notes the estimates can be important for evaluating compliance with certain Hydro-Performance Standards. But the authors do not mention such.

The thrust of the proposal is to continue generating inriver smolt survival estimates for Snake River stocks (steelhead, spring/summer chinook and fall chinook). The research contributes data useful in satisfying elements within each of the RPAs they identify. We generally agree. The Objective of RPA 185 is to produce useful estimates of "D". The RPA states that extant estimates have wide confidence levels, implying their utility may be questionable. New estimates should exhibit improved precision. Part of that improvement may lay in the quality of inriver survival estimates that are a product of the proposed research. The proposal could be improved by describing precision associated with the inriver survival estimates and implications to the future utility of "D".

The objective of RPA 189 is to investigate causes of apparent discrepancies in adult return rates associated with different smolt passage routes. This proposed research may contribute information regarding the magnitude of survival exhibited by screen-bypassed fish, but not other routes individually. Furthermore, there is not expressed intent in this proposal to identify actual causes or mechanisms of mortality. Overall contribution to RPA seems limited.

The objective of RPA 190 is to improve our understanding of wild Snake River fall chinook early life history, including juvenile survival. If the hatchery fish used in this research are suitable surrogates then this proposal has merit in contributing to RPA 190. However, the RME Hydro Work Group encourages the authors to incorporate information into the proposal that supports the use of hatchery fish as surrogates.

The objective of RPA 193 emphasizes developing novel tools for discriminating hatchery and wild fish, track fish in oceanic environs, and determine growth and survival for specific wild stocks. The linkage of the proposed research to this RPA is not readily apparent.

In the opinion of the federal RME team the proposed research has important implications in evaluation compliance with performance standards at the BO-prescribed check in periods, although the authors did not explore this application. ESU-specific life stage survival for juveniles and adults while migrating through the FCRPS are key performance measures detailed in the BO. The proposed research will be generating smolt survival estimates for Snake River stocks of interest, albeit using primarily hatchery fish.

It would be instructive if the proposal specified sample sizes and precision associated with survival estimates. Lacking this information it is difficult to ascertain how useful the estimates will be in progress and compliance tests called for in the BO. Also, the performance standards in the BO are ESU-specific. The estimates from this research involve only Snake River ESUs. It seems there are opportunities to develop estimates for other stocks as well, such as Yakima and Leavenworth as Zabel et al. (2002) report. We encourage expanding stock coverage if tractable. Finally, the BO focuses on wild fish survival, where this research uses primarily hatchery fish. Justification for using these as surrogates should be discussed in the proposal.

ISRP Remarks on RME Group Comments:
The proposal was selected by the Action Agency/NMFS RME Work Group for review. The ISRP concurs with their observations including opportunities exist for better aligning the work to RME objectives. Their primary conclusion was that this excellent proposal could better state the important implications in evaluation of compliance with performance standards at the BO-prescribed check in periods. They noted that ESU-specific life stage survival for juveniles and adults while migrating through the FCRPS are key performance measures detailed in the BO. The proposed research will generate smolt survival estimates for Snake River stocks of interest, albeit using primarily hatchery fish. The RME group also sought specification of sample sizes and precision associated with survival estimates, for without this information it is difficult to ascertain how useful the estimates will be in progress and compliance tests called for in the BO. They also noted that the performance standards in the BO are ESU-specific, whereas the estimates from this research involve only Snake River ESUs. They wondered whether there are opportunities to develop estimates for other stocks as well, such as Yakima and Leavenworth as Zabel et al. (2002) report, and encouraged expanding stock coverage, if tractable. Finally, the RME group mentioned that the BO focuses on wild fish survival, where this research uses primarily hatchery fish. Justification for using hatchery fish as surrogates should be discussed in the proposal.

ProjectID: 35047

Evaluate Delayed (Extra) Mortality Associated with Passage of Yearling Chinook Salmon Smolts through Snake River Dams
Sponsor: NMFS
FY03 Request: $1,083,900
5YR Estimate: $4,946,100
Short Description: Determine if downstream migration through Snake River dams results in extra or delayed mortality.
Response Needed? Yes
ISRP Preliminary Comments:
Fundable if a response can justify this design or if the design can be modified to provide valid estimates of extra mortality.

The objective is to use empirical experiments to quantify delayed effects associated with hydrosystem passage. There is a logical need to address the problem of assessing dam passage mortality and the team possesses the experience and background to address the problem.

The ISRP questions whether this experiment will settle the issue because concern was originally for extra mortality to Bonneville and it is not clear that results from this experiment will apply. In this proposal, although the objectives are clearly defined, the methods do not appear appropriate for determining a clear answer to the hypothesis being tested. Determination of significant differences in delayed mortality due to passage through 8 dams versus passage through 4 or fewer dams will not be possible with the current study. The proposal asserts that if the null hypothesis is rejected, it is highly likely that migration through Snake River dams does cause extra mortality in spring/summer chinook salmon smolts. An assumption (unstated) is that the effect due to transport is the same for fish experiencing dam passage plus transport stress as it is for fish experiencing only transport stress. Is this assumption justified? It is possible that some fish experiencing dam passage alone would survive but due to experiencing transportation stress prior to dam passage stress, they succumb. Therefore comparing extra mortality for transportation only with extra mortality for transportation plus dam passage may not provide an unbiased estimate of the dam passage effect.

Questions: Have the authors considered conducting a study on fall Chinook instead or in addition to spring/summer Chinook? Could something be done to estimate the effects of the different impacts of spill, turbines, and bypass system instead of merging everything in dam passage as one thing? Are there procedures in place to ensure that good estimates of expected mortality at the dams for fish migrating in-river are obtained so “extra mortality” is clearly defined?

An excellent effort was made to do a power analysis in order to determine adequate sample sizes. One correction necessary is to note that a one-tailed procedure is required so alpha should be used rather than alpha/2 in the sample size formula.

Action Agency/NMFS RME Group Comments:
HYDRO SUBGROUP -- The authors indicate the proposed research provides information useful in satisfying RPAs 188 and 195.

The objective of RPA 185 is to contrast productivity and hydrosystem effects (delayed) between wild stocks in upper Snake stocks and those in the Lower Columbia Basin. To accomplish this, the RPA calls for PIT-tagging both wild population complexes with PIT tags. This proposal relies

heavily on hatchery stocks from the Snake drainage as the population monitored. Thus its ability to fully satisfy the intent of RPA 188 is not readily apparent. The primary objective of this research is to identify the existence and generally quantify the magnitude of extra mortality as associated with dam passage. The linkage to the RPA is not all that pronounced.

The objective of RPA 195 is to establish how much post-Bonneville mortality is attributable to natural causes or other processes, such as hydrosystem passage or general fish fitness. This proposal is relevant to the fundamental intent of this RPA, i.e., identify delayed effects associated with hydrosystem passage. The proposed research clearly addresses the hydrosystem contribution to any extra, unexplained mortality that may exist. The experimental approach appears sound. However, the sample sizes necessary to provide the precision targets are considerable (~ 236,000 PIT-tagged @ LGR) and may be a challenge to acquire in some brood years.

Ancillary Benefits. These tagged yearling chinook will also yield inriver survival estimates. The large sample sizes all but ensure improved precision over most extant smolt survival estimates. This could be advantageous to the extent these estimates can be incorporated into survival Performance Standards tests prescribed in the BO. The proposal does not discuss the suitability of these estimates for such evaluations. The RME Hydro Work Group encourages the authors to explore this application and incorporate it as a section in the proposal.

ISRP Remarks on RME Group Comments:
The ISRP does not agree with the RME Workgroup comments that the experimental approach appears sound as noted above. Other RME Workgroup comments relate to RPA connections and ancillary benefits that are not noted in the ISRP review comments.

ProjectID: 198910700

Statistical Support for Salmonid Survival Studies
Sponsor: UW
FY03 Request: $265,850
5YR Estimate: $1,409,650
Short Description: Improve monitoring and evaluation capabilities by developing better measurement tools and study designs to estimate juvenile and adult salmonid survival and survival relationships. Provide statistical guidance to investigators in the Columbia Basin.
Response Needed? Yes
ISRP Preliminary Comments:
The project develops analytical tools for tagging studies. This project provides support for the design and analysis of tagging studies to groups requesting assistance. This project offers a valuable system of checks and balances for evaluation of statistical analysis of complex tagging studies (PIT tags, radios, etc.) and other studies.

A response is needed to identify methodology for monitoring and evaluation. Information to aid in answering the following questions is needed: Have the products produced in the past benefited fish? How many client hours have been logged in the past? Is there evidence of client satisfaction? Who uses the products produced and how beneficial are they to users?

Related questions are: How available is the service and to whom? What is the role of the author in review of project proposals? What is the means for providing statistical support to Council FWP funded projects. How are services advertised to the region?

The FY00 ISRP review noted that there was inadequate detail on what the principal investigator will do and that there should be a better description of indirect costs to the UW and direct costs for office space. These comments still apply.

ProjectID: 199105100

Monitoring and Evaluation Statistical Support
Sponsor: UW
FY03 Request: $394,655
5YR Estimate: $2,137,255
Short Description: Develop statistical methods for monitoring and evaluating salmonid recovery plans. Provide added-value analyses and statistical support on regional fisheries issues. Provide smolt migration timing predictions on the internet.
Response Needed? Yes
ISRP Preliminary Comments:
Generally fundable, but a response is needed. The main elements of the project are to provide real-time analyses of PIT-tag data and smolt passage indices to predict outmigration timing and to provide value-added analyses of historical tagging data by testing hypotheses, estimating parameters, and investigating interrelationships. An additional element is to provide statistical assistance to the BPA and the NW fisheries community on an as-needed basis.

A response related to monitoring and evaluation is needed. Specifically, the following questions should be addressed or a protocol for answering these questions should be specified. How many clients are supported by the statistical consulting service and is this service duplicated in other projects (e.g., 198910700)? What evidence is there of client satisfaction and cost effectiveness? What evidence is there that the extra-value information extracted has benefited fish? What is the basis for deciding which hypotheses to test, parameters to estimate, and interrelationships to investigate? What evidence exists that the in-season statistical support has been sufficiently accurate to be useful?

The ISRP recommends that Task 3.2 “Statistical evaluation of performance standards.” be redirected to proposal #198910700, a proposal from the proponent that seems to more consistent with this task. In fact, the stated goal in the statement “The goal of this task is to design and analyze tagging studies using state-of-the-art statistical methods.” seems to be a direct overlap with proposal #198910700.

The FY00 ISRP review noted that plans for formal evaluation do not exist other than those provided by observing the continued use of the products from this on-going project and the success of the investigators in publishing results. The budget and personnel are not adequately justified. These comments remain appropriate.

ProjectID: 35003

Vitality based studies of Delayed Mortality
Sponsor: UW
FY03 Request: $207,180
5YR Estimate: $1,060,638
Short Description: Based on the vitality survival model we will develop and deploy a field procedure to evaluate the contributions of freshwater events on delayed and extra mortality.
Response Needed? Yes
ISRP Preliminary Comments:
Generally fundable, but a response is needed. The project is designed to characterize the factors contributing to delayed and extra mortality. The technical background is addressed well with references and links to other work. The problem of identifying and solving delayed and extra mortality problems is complex due a variety of mechanisms through which mortality may operate. The proposed research is designed to study these mechanisms through theory, laboratory studies and field studies. The study could be valuable in helping to resolve these complex issues.

A response is needed to clarify some issues. Is it possible to evaluate this theory with existing or anticipated data from the CSS? That is, can the model be validated based on existing data?

Would it be possible to revise the proposal to incorporate data from project #35047 that includes fish released at Lower Granite? This collaboration would allow this project to compare the survival and SARs for the two groups: those released at Lower Granite and those released at McNary.

Action Agency/NMFS RME Group Comments:
OCEAN AND ESTUARY SUBGROUP -- The following ongoing projects are, or would, contribute to the delayed and extra mortality issues. Before funding this proposal a complete integration should be made with the COE's work, Carl Schreck, OSU, and with the ongoing NMFS and Dept. of Fisheries Oceans Canada project 1998-014 (now a separate proposal 30010), and the acoustic projects proposed in this RM&E section as 35046 and 35047, and the estuary as 30007.

ISRP Remarks on RME Group Comments:
The ISRP and RME Workgroup concur that an exploration of connections with other projects would be beneficial.

ProjectID: 35011

The Floating Net Pen Transportation System Pilot Project
Sponsor: Columbia Basin Fishery Restoration L.L.C.
FY03 Request: $3,291,275
5YR Estimate: $10,196,875
Short Description: The transportation of Chinook salmon smolts in floating net pens from various fish hatcheries and collector systems to be released at the mouth of the Columbia River or in the Pacific Ocean.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not fundable. The experimental design is not technically sufficient. The proposal does not specify what benefits might be expected from use of net pens relative to existing methods of transportation of juvenile salmon, nor how any such benefits would be obtained or measured. Neither the need for transfer nor the method to be used for transfer of fish from hatchery raceways or other sources to the net pens is discussed in the proposal.

The reviewers are aware of an experiment on gas bubble trauma conducted by Earl Dawley that employed net pens in the Columbia River. Dawley couldn't keep the net pens together. The proposers should review that experiment.

Action Agency/NMFS RME Group Comments:
OCEAN AND ESTUARY SUBGROUP -- Potential action items addressed - 187; 195. The artificial transportation aspect of this proposal is not in concert with the habitat restoration efforts and proposed research on ecosystem function of the lower river and estuary currently being conducted by LCREP, NMFS, and others.

ISRP Remarks on RME Group Comments:
The RME Group comments are descriptive. There is no conflict between the ISRP and RME Group comments.

ProjectID: 35023

Establish Relationship between Fish Passage Survival and Turbine Operating Efficiency
Sponsor: Normandeau Associates
FY03 Request: $3,887,500
5YR Estimate: $11,932,468
Short Description: Provide guidance to turbine operators for maximizing passage survival; provide quantitative information for turbine rehabilitation/replacement at dams; and assess whether survival targets are met
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not Fundable. This is a proposal to determine if fish passage through turbines is least damaging at peak electrical generating efficiencies of the turbines, which is a commonly held belief that currently guides operations. A sub-objective is to establish whether consistent results are obtained from several turbines at the same dam, under the premise that turbines' effects may differ even when the turbines are nominally similar. The study would determine immediate mortalities and damages at McNary Dam using the proponent's balloon tag, longer-term effects after holding of test fish in tanks, and even longer-term survival of in-river fish tagged with sonic tags (all with

appropriate controls released at the base of the dam). The ultimate objective is to establish more scientifically grounded rules for operating turbines for benefit of fish (or for balancing fish survival and power production).

This is a generally well-written proposal from a group with outstanding credentials. There is little doubt that they can achieve what they propose to do. The basic question is whether it is worth investing $12 million to arrive at recommendations that might lead to improvements of 1 to 2% in survival of juvenile salmonids (based on the text and tables at the end of the proposal) that pass through turbines, particularly given the emphasis in the region on measures to divert the juveniles away from the turbine intakes. The question might boil down to an economic one, of how valuable it is to the power operators to be able to diverge from the criterion of operating within 1% of the peak efficiency of turbines? If it is quite valuable, in the millions of dollars, then it ought to be desirable for them to fund this study.

The proposal lacks such estimates of the net benefit to the total population if turbine efficiency were maximized. Turbine survival is currently about 85-95% at most mainstem dams. The installation of improved fish friendly turbines may enhance overall turbine survival rate by maximally 5%, on average. Given that with screen efficiencies as high as 70% or more, spill efficiencies as high as 30% and the use of transportation, it is possible that less than 10% of migrants will ever experience turbine passage in the mainstem FCRPS. Doubling this to 20%, with a turbine mortality improvement of 10% (twice its theoretical potential) provides a net FCRPS system survival increase of about 2%. In reality, we could probably achieve less than 1% with the equipment in place today for Snake River smolts and maybe the same for Columbia River smolts. This would result if we changed out every turbine in the system to a fish friendly design and fine-tuned each operation. The cost of testing the current system at one dam is estimated at $12 million over next 5 years. It appears that as turbines require replacement, there are some energy benefits as well as fish benefits to using more fish friendly turbine designs. It makes great sense to model, test and modify turbines based on previous studies of turbine-induced mortality as new designs are being developed, rather than concentrate on testing existing facilities such as McNary.

The place of this proposal in overall FCRPS planning is not clear. Currently each fish-passage pathway is the focus of intense research that is costing enormous sums. The NMFS Pit Tag data is suggesting that transportation returns more adults from smolts transported high in the system than in river or lower river transports. This database should enable construction of a Decision Support System to establish how many, when and where smolts should be transported, left in river or both depending on river discharge conditions. Turbine passage survival is one component of such a Decision Support System. The question is do we have enough data on hand to build such a model. An independent review panel might evaluate this question from the broader FCRPS perspective.

Aside from economics and FCRPS planning, the proposal does not meet the ISRP review criteria. It is strong on methodology (good science) but short on justification. The technique of balloon tagging has become a staple in hydropower survival studies nationally following patenting of the technique by the proponent. The approach, including the detailed statistical design, is well tested in the Columbia River basin and has been shown to be scientifically sound and fruitful (a useful table of results from many studies in the basin is included at the end). The novelty of this study is the inclusion of more than one turbine (to evaluate consistency of results) and longer-term, in-river survival (a topic for which the balloon tag work is often criticized). The study objectives, tasks and methods are described in adequate detail. However, the justification for this study is brief and incomplete. The study would be very expensive, and thus a more thorough scientific

justification is mandatory. The previous studies are not well summarized to demonstrate that this proposal is the next logical step in obtaining more successful fish-passage. How much change in fish survival and electricity generation are we talking about in shifting from the peak efficiency level (large amounts, small amounts)? That is, what level of biological benefit (an ISRP review criterion) is at stake? What evidence is there now that adjacent turbines differ in their performance? What literature suggests that in-river mortality may be higher than indicated by the immediate or short-term effects shown by the balloon tag (and by how much)? The relationships of the proposed work to previous or on-going studies are given briefly and very generally (what are the project numbers listed in Part I?). The RPA's from the NMFS BiOp are listed, but neither named nor discussed as justification for this work. No priorities from the mainstem/systemwide province solicitation or program summary are mentioned. There is no mention of the Council's Fish and Wildlife Program, for which the ISRP must determine if the proposal is consistent. The whole project is considered one of "monitoring and evaluation" but the proposal would have benefited from a short discussion of how any operational changes implemented as a result of this study would be monitored and evaluated short of redoing this whole study.

In summary, the proposal falls short of meeting the ISRP review criteria. This is particularly true for the criterion of demonstrating likely biological benefit. With very high costs, a favorable cost-to-biological-benefit ratio is not evident.

The proposal was not selected by the Action Agency/NMFS RME Work Group for RME review.

ProjectID: 35034

Fish Behavioral Guidance Through Water Velocity Modification PHASE ONE
Sponsor: Natural Solutions
FY03 Request: $285,020
5YR Estimate: $1,104,596
Short Description: Field evaluation of a prototype mechanism for guiding juvenile and adult fish through a hydro facility. Test insitu the ability of induced turbulent flow and water velocity to simulate natural migratory ques for guiding fish to safe passage routes.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal has been improved from the innovative submission with additional input from biologists. It is still true that the proposal gives a tantalizing view of what might be accomplished, but it does not go far enough to allow evaluation of the chances for success. The proposal is too preliminary to be competitive. There are still issues that need to be addressed from the innovative review.

The potential value of this concept might be in the creation or enhancement of attraction flows at surface collectors or other bypass systems currently under development at dams in the Columbia Basin. Biological information already available ought to make it possible to develop criteria for deciding whether development and application of a large bore eductor would have the desired effects on guiding juvenile salmon. For example, tests of surface collectors at Rocky Reach Dam as well as Lower Granite and Bonneville dams probably have developed information on volume and velocity of water required (or that are inadequate) to attract juvenile salmon away from the turbine intakes and direct their movements elsewhere. A contact person would be Chuck Peven at Chelan County P.U. D. in Wenatchee, WA.

In this context, the lack of information on how eductor-based passage devices would fit into the forebay of a Columbia River low head dam may be indicative of a shortage of hydraulic physics and engineering content in the proposal. Figures are sorely needed to show the layout and positioning of project components (eductors, etc) for both a theoretical (or actual) fullscale forebay and for the prototype testing. The issue of scale needs to be addressed: what might be the size and cost of pumps and eductors needed to produce enough hydraulic change to be meaningful to fish.

Specific questions and comments needing attention are given below.
Is fish behavior going to be positive or negative to this attraction? In this connection, it must be said that the proposed use of cutthroat trout for tests of efficacy of the device or concept is not appropriate for a test of potential application to problems with juvenile fish passage in the mainstem Columbia and Snake rivers, which is where we perceive that its utility might lie. What is needed is a test with juvenile salmon that are ready to migrate downstream. Perhaps a test site could be found at a so-called acclimation pond somewhere in the Columbia Basin.

There should be discussion of the plan for the intake end of the water line for the Venturi supply. There would be a need to locate it outside of the area where fish might be affected by it.

Engineering questions raised during the Innovative Review process need to be addressed.

Data Management

ProjectID: 198810804

StreamNet
Sponsor: PSMFC
FY03 Request: $4,211,435
5YR Estimate: $24,027,308
Short Description: Provides regionally consistent, georeferenced data pertaining to fish and their habitats obtained from the basin's state, tribal and federal fish management agencies via the Internet at www.streamnet.org, and custom data services to FWP participants.
Response Needed? Yes
ISRP Preliminary Comments:
Streamnet is a necessary and useful project utilized by all agencies in the region. The ISRP recommends that the response more clearly separate the tasks and budget for long-term storage and distribution of data in StreamNet and the tasks and funding passed through to the states and tribes for preparation of data (so that the data are more comparable among the agencies and tribes). The response should identify and evaluate the increased scientific value of data in StreamNet and cost savings that would arise if agencies contributing data used common methods and data recording formats. The response should include objectives and timetable for development and use of standardized protocols for collection of primary field data by the states and tribes. The response should include a careful self-review including an evaluation of whether the structure of the current administrative oversight and advisory board is likely to result in standardization of field data protocols.

The data are georeferenced (location coded) to the 1:100,000 hydrography GIS layer so that different kinds of information can be mapped together and spatially analyzed. The data are tied to references in the StreamNet Library to document sources. An example of its usefulness is that,

data from StreamNet is used to populate the pilot database discussed in Proposal #35048 from the NMFS.

Concerns in earlier reviews for overlap with other projects including other database operations were adequately addressed.

The response should be more forceful on proposed additions to the project and segments of the project to keep. The proponent should give a prioritized list of data needs based on use of present segments of the database and on past requests for information including information requests for subbasin planning. Each task for collecting and maintaining high priority new data should include a detailed methods section. For example, the proponent states that "Some data are still relegated to paper files or are retained by local biologists. If requested, StreamNet staff can effectively mine data from field offices." One of the other areas that the proponents indicate a need for new effort is in collection of data on the fraction of hatchery fish on spawning grounds. The 40 data sources listed should be prioritized and methods (with proposed budget) given to accomplish the individual tasks of acquiring and maintaining the data. To be consistent with ISRP's statements on implementation of a systemwide M&E program (see proposal #35033) the proportion of StreamNet's budget passed through for participation of other agencies and tribes could potentially be reallocated under the overall CBFWA proposal #35033 (approximately ¾ of the StreamNet budget according to the oral presentation).

Tasks and methods to meet the objectives (2 – 6) should be expanded and prioritized. For example, tasks and methods to accomplish Objective 6. Support and Services to Subbasin Planning are too brief to allow scientific review.

The ISRP suggests that an alternative approach be used in the response. Namely, independent proposals should be prepared to provide suggested new data analyses for the region, in the spirit of DART and the FPC. The proposals should be to accomplish specific needed analyses, e.g., calculating and/or summarizing specific population estimates, or deriving results from other analyses, where not done by the originating agency. Data justifying demand for analyses should be given with detailed methods to provide the service. It is the opinion of ISRP that quality of the database service provided by StreamNet will be improved by funding an in-house, but independent project, to provide analyses and compete with other second tier database systems on an equal basis.

The response must have a monitoring and evaluation section in the project history and a proposed monitoring and evaluation section for the proposed project. It is not acceptable for one of the most quantitative projects to not have a quantitative monitoring and evaluation plan for itself.

Action Agency/NMFS RME Group Comments:
DATA MANAGEMENT SUBGROUP -- The Stream net proposal claims specifically to address RPA's 180 and 198 (at Section 1), and other RPA's outside the Data Management Subgroup's scope.

Overall:

The Action Agencies' RME program calls for the systematic, rigorous and directed collection and maintenance of data for status and effectiveness monitoring as defined by the program. Like the NWFSC project (see comments on NWFSC proposal above), the StreamNet project only manages data that is submitted to it by the participating agencies. The project is not designed in the base or new program to ensure that agencies that submit the data have a quality control and

quality assurance program that would meet the RME requirement. Hence data in the base program and data anticipated in the new program may be standardized but may be insufficient for the needs of the BO if the data collecting agencies have not used consistent, rigorous protocols as defined by the RME program. For example, because of the lack of protocols, the current StreamNet database does not adequately locate dams, barriers, points of diversion, amounts of each diversion, changes in points of diversion, etc. Any new data collection should proceed only after common field collection protocols have been adopted.

The StreamNet proposal has a considerably greater emphasis on Subbasin data than specific Opinion-generated RM&E data.

RPA 180.

It is not clear how the StreamNet proposal meets the requirements for the "development and implementation of a basinwide hierarchical monitoring program… the ground truthing of regional databases… and a draft program including protocols for specific data to be collected".

The text of the StreamNet proposal at page 8 refers to RPA 180 with the detail of the proposal offered by StreamNet stated as follows: "StreamNet's experience and abilities with database management can be provided to support this effort on a more cost effective basis than through entities that are not already dealing with monitoring data in the basin". This claim is not supported with any other information, and it does not address the concept of a basin wide monitoring program specified in RPA 180. It is not clear what the StreamNet deliverables for RPA 180 are.

Note: StreamNet has two funding requests that it says do relate to RPA 180.
The first is to deploy a prototype database to obtain and deliver water temperature data. This item, temperature recording for RPA 143, has a 2003 cost of $83,130. The second expenditure is stream habitat data for 2003 expenditure of $89,799 to complete a needs assessment (scoping) with existing groups who collect habitat data, hold focus groups, define core data develop a database structure and manage the data. While this could be a part of a basin wide monitoring program it is by no means complete.

RPA 198.

There is a specific reference in the StreamNet proposal to work on the SAIC project as "Participation in Regional Data Initiatives". The proposal is listed in a category of expenditure called "Services to Fish and Wildlife program". The 03 budget for this category is $167,508 however it is not possible to determine how much of thius funding is being proposed for RPA 198 and, for that matter, what "Participation in Regional Data Initiatives means". There is a reference at page 22 of the proposal as follows: "Work with state and local subbasin teams to identify priority information management and sharing needs. Share findings with SAIC project". There is inadequate information here to determine what the deliverables are and who has responsibility.

Pros:

1. StreamNet's willingness to address new information system development needs.

1. 2. StreamNet's experience in data management and knowledge of existing databasesThe project consolidates, standardizes and distributes fish information throughout the Columbia Basin; also some coastal streams.

2. It includes a library function.
3. Through use of data exchange formats (DEFs), data are made comparable among the 4 states, CRITFC, PSMFC and USFWS.
4. Relies on metadata, 1:100,000 hydrography; Uses LLIDs for accuracy.
5. Program is distributed among F&W management agencies. The seven cooperating agencies represent the major F&W management agencies, except for NMFS.
6. It uses restoration project database format developed by PSMFC and California; data from states.
7. Has ARC-IMS GIS application; on-line query system promotes distribution of standardized data.

Cons:

1. The proposed budget does not include budget items for Planning/Design or Construction/Implementation. This makes it difficult to determine how StreamNet will complete proposed tasks such at needs assessment which is a Planning/Design task.

2. We cannot determine how and when StreamNet will meet RPA action item 180 and what the cost will be. The StreamNet proposal for RPA 180 does not address the requirements of RPA 180 for a basin wide hierarchical monitoring program.

3. Data / information will be collected but not necessarily standardized. It will be a repository, no guarantee of data integrity.
4. For RPA 198, we cannot determine what the actual spending and deliverable is, apart from generally described cooperation and coordination and completing a needs assessment for priority subbasin data.
5. Current data categories are limited to those established as part of the StreamNet mission. Region needs other data but guidance previously lacking.
6. Data are not distributed but partial distribution through State StreamNet servers has been evaluated.
7. Lacks 1:24,000 level data of interest to IRICC agencies – difference in mission.
8. Lack of NMFS in StreamNet may mean data are not standardized and cannot be exchanged with the StreamNet projects.
9. NMFS proposing use of OWEB and PRISM restoration databases also.
10. NMFS' identified 30 tabular data layers might duplicate newly proposed StreamNet data layers and will need integration. Who serves the Region?

ISRP Remarks on RME Group Comments:
The ISRP agrees in general with the comments on this proposal. Specifically, "…the StreamNet project only manages data that is submitted to it by the participating agencies. The project is not designed in the base or new program to ensure that agencies that submit the data have a quality control and quality assurance program that would meet the RME requirement. Hence data in the base program and data anticipated in the new program may be standardized but may be insufficient for the needs of the BO if the data collecting agencies have not used consistent, rigorous protocols as defined by the RME program." The ISRP agrees with this assessment, and recommends funding of Proposal #35033 from the CBFWA to coordinate the development of a basinwide research, monitoring and evaluation program, including potential reallocation of funds from StreamNet and other projects to accomplish the tasks and meet the needs of RPAs 180 and 198. NMFS through participation in CBFWA would have more influence on data collected by the states and tribes and stored by StreamNet to help ensure that RPAs in the BiOp are satisfied.

ProjectID: 199601900

Second-Tier Database Support
Sponsor: UW
FY03 Request: $275,111
5YR Estimate: $1,379,983
Short Description: Provide single-point, internet-based access to a subset of information to guide and support BPA's independent decisions pertaining to its responsibilities under the Power Act and Endangered Species Act.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This is a valuable project providing service to the scientific community in the region at relatively low cost. Previous concerns of the ISRP with overlap of responsibilities between database projects have been addressed. In fact, some degree of overlap of services provided by second tier database projects (modeling, projections, analysis, use of multiple first tier (primary) databases) is healthy for the region, because it promotes careful evaluation of assumptions made in analyses of primary data. The project history and technical background sections are informative, however the Section f. Proposal objectives, tasks and methods is too brief to allow scientific review. The response should provide specific tasks and detailed methods to accomplish each objective (some of the necessary material is in the other sections). Also, the project must have a monitoring and evaluation plan, including for example, lists of services provided. It is not acceptable for one of the most quantitative projects to not have a quantitative monitoring and evaluation plan in the proposal.

Only 4 objectives are identified, but in the text, it is stated that an FTE is needed for objective 5. Please clarify.

Action Agency/NMFS RME Group Comments:
DATA MANAGEMENT SUBGROUP -- Action 180:

The DART proposal is not considered a core contribution to a basin wide hierarchical monitoring program and appears to be more closely directed to reporting and tracking the effect of temperature, flow and gas changes on populations and passage.

Action 198

Apart from indicating general support and suggesting actions that should take place DART does not propose any particular actions.

Pros:

1. Identified as a non-discretionary work element by BPA
2. Project has created and maintains a number of mainstem FCRPS applications for TDG, flow operations and temperature.
3. Applications integrate data from Fish Passage Center, Corps of Engineers, tagging programs, StreamNet, EPA and others.
4. Will participate in Regional database integration using tools such as XML.
5. Provides tracking of performance standards for the hydro system called for under the BiOp.

Cons:

1. The DART proposals for RME are not specific enough to meet RME needs.

ISRP Remarks on RME Group Comments:
The ISRP is somewhat confused by comments on this and other proposals. In other cases, e.g., #35048, there is apparently strong support for analyses of primary data to be conducted in second tier databases, whereas there is weak support for similar analyses to be conducted under this project. The response should more clearly identify current and proposed tasks and services to meet the needs of RPA 198.

ProjectID: 35010

An Interactive Biodiversity Information System for the Columbia River Basin
Sponsor: NW Habitat Institute
FY03 Request: $432,950
5YR Estimate: $3,079,050
Short Description: To complete development of a resident fish and wildlife information system on the Internet to allow users/resource managers to access, query, and retrieve spatial, text, and tabular data. Interactive and decision support tools will also be developed.
Response Needed? Yes
ISRP Preliminary Comments:
This is a well-written and detailed proposal to provide needed wildlife data for subbasin planning. The approach is to enhance an existing internet site (IBIS) to provide biodiversity databases through an improved database management system. The IBIS site currently exists and is maintained by the Northwest Habitat Institute, but is inadequate and in need of improvement.

The goal is to have a more accessible common data management system of peer-reviewed data on fish and wildlife and their habitats that would provide consistent data throughout the basin. The project would provide information and services relevant to regional planning efforts. The data described would be useful in establishing resident fish and wildlife distributions and the linkages among them for subbasin planning.

Objectives are to restructure the existing database on IBIS to allow concurrent use and more complicated data queries. Decision support tools and a manual will be developed. Proposers also intend to monitor the use and effectiveness of IBIS through user feedback.

The project is costly, leading to the question of whether it would produce information of sufficient value to the region to justify its expense. The proponents should address the question of demand for the improved databases. How extensively used is the present version and what are its primary uses? If this project is not funded what will happen to plans for improving this information system?

Additionally, more detail is needed on the products that would be delivered by this project. It is unclear whether there will be sufficient detail in the output to satisfy many users. The sponsors should provide explicit examples of the major types of outputs. For example, what do the terms in figure 3 mean and what will be the explicit information for the basis of Figure 3? The current descriptions are too general.

Maps alone would be of limited use in subbasin planning. Will the detailed 5th HUC-level data on which maps were based be accessible through the program? Will the results be available to users for free or will they have to buy a book and CD?

Does the project duplicate USFS and BLM efforts? More detail should also be provided about the online peer review and processes for quality control. Is there an M&E plan for checking the accuracy and precision of the database?

Action Agency/NMFS RME Group Comments:
OCEAN AND ESTUARY SUBGROUP -- Action item addressed - 198. The proposal identifies data fields related to the entire basin, including estuarine resources (i.e., bays and estuaries; inland marine deeper waters; marine nearshore areas). The project applicant needs to identify which data fields are to be emphasized/actually used, and how this prioritization relates to the estuary/basin. This proposal identifies a specific data management structure. The structure needs to be reviewed to determine how the project fits with current conversations on data base management, including the ongoing StreamNet project, EDT, and with work that LCREP has been coordinating.

DATA MANAGEMENT SUBGROUP -- Does the Proposal address RPA Objectives?

The proposal represents a substantial development of a stand-alone DBMS with addition of data and mapping and Internet capabilities. In other words it would represent a fully functional end-to-end information system, with custom query tools, all for a subset of regional data. While each of the proposals have the potential to improve information system delivery, specifically by overcoming technical constraints with the existing IBIS system, and by expansion to new data sets, the proposal does not document well the extent of these claims. The proposal does not adequately address RPA's 180, 181, or 198.

Elements the Proposal is Lacking.

The strengths of the proposal are in it's claims to overcome deficiencies in the current IBIS information system design, offer basin wide mapping utilities, and provide currently needed wildlife and related habitat data, and some resident fish data, not otherwise available in a regional as opposed to a state context. However there are many lacking elements within the proposal. Despite claims of developing materials to support monitoring; it is not clear how the proposal will actually meet goal 180 by developing or integrating with a monitoring program and ground-truthing data. This proposal appears to be to develop imagery technology rather than to provide the imagery. The main problem with providing digital imagery is not the technology for delivery, rather, it is the very high cost of acquiring the imagery. Since there is no budget request in this proposal for actually acquiring spatial data layers, and it could take years to acquire "all the Columbia spatial data layers", there is no guarantee of delivery of the spatial data from this proposal. It would make more sense to adopt the technology for spatial data provision when there is also a budget for acquisition of data layers. This claim the proposal will fulfill the needs for a regional information system is not supportable by information within the proposal since the needs are currently being identified by SAIC. Furthermore the report by Coutant et.al identified many problems that concern information management per se rather than nominal collection and delivery of a subset of data. Since the claim of performance for this proposal is narrow it cannot reasonably claim to solve the problems identified by Coutant et.al. There appears to be potential for overlap with other data collection institutions: for example the plan to include marine fish habitat data into IBIS appears to overlap, at least in part, with the current recording of data by the PSMFC. The proposal requires a new DBMS design which results in a custom stand alone

solution for just a subset of regional data. The project currently lacks tabular database management; proposed project will develop interactive databases.

Means and Opportunities to Strengthen Proposal.

Clearly identifying how the proposed system is distinct and different from the proposal by StreamNet to provide data collection for stream habitat data users would strengthen the proposal. Detailing the proposed advance query capabilities and decision support tools, and delineating cost effectiveness of off the shelf query tools versus custom query tools would also strengthen this proposal. Another adjustment possibility is to clearly demonstrate how the basin wide mapping utilities apply to other mapping initiatives and how they relate to RME needs. Finally the proposal needs t directly address RME information system design needs and in particular address RME needs with respect to anadromous fish and wildlife populations as opposed to only addressing non-anadromous fish and wildlife populations.

Feasibility of Work

It is not clear whether the proposal is more or less efficient in terms of regional funding resources with a completely separate database organization and administration for collection of terrestrial wildlife and non-migratory fish species. It is also unclear that there is funding for obtaining actual data for digital imagery.

ISRP Remarks on RME Group Comments:
The ISRP agrees that the proposal should clarify how it will contribute to RPA 180 by developing or integrating with a monitoring program and ground-truthing data, Nevertheless, this is one of the few wildlife proposals in the systemwide solicitation and will provide needed wildlife and resident data for subbasin and basin planning.

ProjectID: 35048

NWFSC Salmon Data Management, Analysis, and Access for Research Monitoring and Evaluation Programs
Sponsor: NMFS-NWFSC
FY03 Request: $763,150
5YR Estimate: $3,463,150
Short Description: Assess and consolidate all listed salmon related data and metadata sources in the Columbia Basin, develop and deploy Internet-based information repository and related analysis/reporting tools in support of science based research.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. The proposed work is difficult to review because the objectives and tasks and methods are not organized in a clear and systematic way in this long rambling proposal. The proposal should be reviewed within the NMFS before resubmission. There is some description of the NMFS Salmon Data Management (SDM) program, but no specific list of objectives with associated tasks. A list of "general tasks" has no associated methods. Methods are embedded in longer narratives that do not clearly relate to specific tasks or objectives. The sponsors propose to add available useful information throughout the Region by meeting a number of objectives including: 1) access to data, tools and information to Internet and Intranet users via SDM Web; 2) access to NWFSC Salmonid database available to users inside and outside the NWFSC; 3) access to needed spatial data layers based on a just completed NWFSC spatial data needs assessment

including those needed by Technical Recovery Teams (TRT), Cumulative Risk Initiative (CRI), and Salmonid Watershed Analysis Modeling effort (SWAM); 4) Research Monitoring and Evaluation data management capability; 5) electronic access to currently inaccessible paper records for Columbia Estuarine Juvenile Data; 6) rewrite SWAM Avenue analysis tool to Visual Basic and add additional functionality for more general analysis purposes; 7) access to the NWFSC Genetic and Evolution database for users inside and outside the NWFSC. The proponents should rewrite the section f. Proposal objectives, tasks and methods, carefully listing specific tasks and detailed methods to accomplish each task. There must be a monitoring and evaluation section. It is not appropriate for one of the most quantitative proposals to not have a quantitative monitoring and evaluation plan for its own effectiveness.

The proponent should clarify if the primary objective of this project is to: 1) be a part of a distributed database system providing NMFS primary data to the region, 2) develop a second tier database in the spirit of DART to analyze primary data for NMFS and the region, or 3) do both 1) and 2).

This proposal is potentially for an important and needed project to provide assess to NMFS primary data and make available second tier analyses available via the internet on listed salmon (and steelhead, we assume) related data and metadata sources in the Columbia Basin. The ISRP believes that the objective to "consolidate" data is overstated and a better description of the intended activity is to analyze data from NMFS and other sources according to certain assumptions. Those assumptions and other metadata for the analysis must be made available with the "consolidated" data. The proponent should make it clear that responsibility for and long-term storage of primary data from other agencies rests with other database programs elsewhere in the region, otherwise more than one version of primary data will exist.

It would be helpful in evaluating the potential for overlap of efforts if letters of support are provided from other database projects in the region, including StreamNet, the Fish Passage Center, Data Access in Real Time (DART), the Columbia Basin PIT-Tag Information System (PTAGIS), and from other agencies outside the NWFSC.

This proposal is for partial support of a program that the NWFSC is already pursuing with limited funding. It embraces the NWFSC vision about the future of data sharing through multiple data portals, and of groups of individuals from different agencies sharing common project data. This appears to complement some projects (35016, 35019, 35020) but perhaps duplicates other efforts (35033).

Action Agency/NMFS RME Group Comments:
DATA MANAGEMENT SUBGROUP -- The NWFSC RM&E proposal is designed to make it possible for researchers to query the data, which will be collected from multiple regional databases, through a single portal. The NWFSC currently has a prototype that has been demonstrated using data from OWEB and PRISM databases.

The project is not designed to ensure that agencies that submit the data have a quality control and quality assurance program that would meet the RME requirement. Hence data may be insufficient for the needs of the BO if the data collecting agencies have not used consistent, rigorous protocols as defined by the RME program.

The proposal anticipates however that there will be concurrent improvements in data quality through implementation of other elements in a regional RME program and the benefits of those improvements will roll up to the RME repository.

The Action Agencies' RME program calls for the systematic, rigorous and directed collection and maintenance of data for status and effectiveness monitoring as defined by the framework. The framework implicitly distinguishes data and information. Information is developed from data through the use of analytical and decision tools. Preferably one develops the tools, and then one seeks the data for the tools. Sometimes there is feedback in that the data suggest new tools. The NWFSC has developed tools such as SWAM which direct the collection of data. However it is unclear how the Council's subbasin planning process and the Action Agencies' RME program would use SWAM and other NWFSC analytical tools. The appropriateness of the tools for the RME program needs resolution before the required data layers can be identified.

RPA 180.

The NWFSC proposed pilot proposal provides a solution to a part of the challenge of "development and implementation of a basinwide hierarchical monitoring program", it does not propose the "ground truthing of regional databases" or a "draft program including protocols for specific data to be collected". The proposal offers a way to bring together the RPA data from many different RPA databases and provide access to it through a single web and GIS environment. It is a basinwide repository of all monitoring and evaluation data.

RPA 198.

The NWFSC proposal does propose to be repository for regional RME data. It also proposes to use a development called SDM web for an RPA tracking pilot at the Regional Office of NMFS.

Pros:

1. The proposed pilot RME database would be helpful to assess the potential problems in developing a larger database. The OWEB database for the coastal salmon restoration program most likely represents the best example of data that was collected consistently with the RME guidelines. Since the NWFSC has previously collected this data, the NWFSC pilot project could assess the OWEB data and database, and propose changes to the OWEB project that would satisfy a BO data management program.
2. The proposal extends badly needed, recently-developed corporate data / information management system.
3. The proposal consolidates fish data collected from numerous sources and tied to metadata.
4. It provides on-line access to NWFSC data and information; it will apply prototype systems technology to allow web access to databases used and needed inside and outside NWFSC.
5. It is a distributed data system, with broad selection capabilities.
6. The data are closer to some of the key regional researchers;
7. The Salmonid Data Management (SDM) Web allows researchers to share all project information and includes a project tracking utility.
8. The project may be consistent with SAIC recommendations if data access tools are the same; it promises to incorporate SAIC findings.
9. It will model similar capabilities without duplicating DART;
10. It will use FPC smolt data.
11. It obtained StreamNet backup files in March 2002.
12. It will develop tools to enhance distribution of data and other info.
13. It proposes linking and making available via the web the Center's Genetic and Evolution Database and the centers Salmonid database.
14. It includes substantial in kind services (approximately 40%).

Cons:

1. It has the potential to be inconsistent with approach of slow-moving SAIC project because of timing differences.
2. Data / information will be collected but not necessarily standardized. It will be a repository, no guarantee of data integrity.
3. Its deliverables may lack Data Exchange Formats to make data comparable from State-to-State and agency-to-agency?
4. It duplicates part of StreamNet responsibilities without being a part of it. For example, thirty spatial data layers needed (including status information) might duplicate some new StreamNet data layers and will need integration. Will the States and Tribes cooperate?
5. SDM prototype tool appears to duplicate StreamNet's (and USFS?) restoration project databases from OWEB and PRISM.
6. It lacks resident fish data that Action Agencies need for other BOs. Not part of agency mission.
7. How will data be kept up to date? By periodic re-collection or update from sources? Two versions may be on the Web simultaneously.

ISRP Remarks on RME Group Comments:
In general the ISRP agrees with the RME comments and specifically, that the project is not designed to ensure that agencies that submit the data have a quality control and quality assurance program that would meet the RME requirement. Hence data may be insufficient for the needs of the BO if the data collecting agencies have not used consistent, rigorous protocols. However, some elements of the comments are very troubling to the ISRP. The comments imply that the consistent, rigorous protocols are to be defined by the RME program and that concurrent improvements in data quality through implementation of other elements in a regional RME program and the benefits of those improvements will roll up to a "…RME repository of data." The comment that "The proposed pilot RME database would be helpful to assess the potential problems in developing a larger database." indicate to the ISRP that the RME Program participants need to carefully consider and evaluate the roles of: 1) databases for storage of primary data, versus 2) databases for second tier analysis of primary data using various assumptions. In short, the ISRP strongly disagrees with the RME group implication under RPAs 180 and 198 that this project might be "… a basinwide repository of all monitoring and evaluation data." It is not clear to the ISRP that efforts within the Council's FWP to develop consistent, rigorous protocols for monitoring and evaluation and long-term storage of data are well coordinated with the RME program. It seems that the RME program has significant potential for fragmentation and duplication of efforts within the region.

Monitoring and Evaluation: Systemwide and Habitat Action Effectiveness

ProjectID: 35033

Collaborative, Systemwide Monitoring and Evaluation Program.
Sponsor: CBFWA
FY03 Request: $998,763
5YR Estimate: $2,996,293
Short Description: This project proposes an integrated effort of state, tribal and federal fisheries managers to catalogue, make available, critically assess, and improve system-wide monitoring and evaluation for fish and ecosystem status.
Response Needed? Yes
ISRP Preliminary Comments:
This proposal addresses one of the major management deficiencies in the basin, the lack of a top-down basin-wide monitoring protocol. Such a protocol is of critical importance for assessing changes in stock and environmental conditions and the effectiveness of restoration and mitigation actions. Thus, this proposal is potentially a high priority for funding. Several issues, however, need to be addressed by the sponsors.

Implementation-related issues:
1. Independent oversight of the project is needed to track progress and identify potential problems before they get out of hand. The ISRP should rigorously review the progress of this project annually if it is funded. All major work products such as the Design Plans and Data Analysis Reports should be subject to independent peer review by reviewers selected by the ISRP. The reports of the peer-review panels should be submitted to the ISRP and included in their annual review of the project. The sponsors should comprehensively respond to each concern raised in the ISRP's annual review. The ISRP's recommendations for future funding will be based in part on these annual reviews.
2. To what extent does the proposed work overlap, duplicate, or complement other ongoing or planned monitoring and evaluation projects within the basin? If this project is funded will it replace the M&E component of other projects? If so, how will coordination be accomplished? How would this project affect the dedicated RME proposals submitted in this province? Action agencies may need to modify their current M&E protocols to conform to the recommendation of the basinwide program. Is there a firm commitment from state, federal, and tribal entities to adopt the monitoring protocols resulting from this project? The USFS and the BLM are not listed as cooperators in the proposal, yet they have management responsibility for the bulk of federal lands in the basin. How will coordination with these agencies be achieved?

Project Organization Issues:
1. The key questions developed for each Tier should be explicitly related to general recovery goals and objectives for the basin and subbasins. For example, what are the basin-wide goals and objectives for salmonid recovery and how will addressing the key Tier 1 questions ensure progress toward meeting those goals? The same question could be asked for provinces, subbasins, and ESU's.
2. The proposal focuses principally on development of a basinwide monitoring program but the evaluation of the data collected through monitoring is barely discussed. Evaluation is a critical component in the M&E process without which the key questions cannot be answered. The proposal needs to explicitly address how the evaluation component (i.e., analysis of the

monitoring data) will be incorporated into the process. Specific methods for analysis are not required in the proposal but a general plan for the conduct of analyses is needed. Perhaps the proposal should be retitled "Collaborative, Systemwide Monitoring Program" with the monitoring data to be available to the region for evaluation?

Methodological Issues:
1. The key questions mostly appear to address system state, for example, biological and physical habitat "condition." Physical (e.g., geomorphic and hydrologic) and biological (e.g., species interactions, habitat relationships) processes determine system state and are subject to modification by human actions. Critical ecological elements such as habitat stability and connectivity, metapopulation dynamics, and genetic and life history diversity are barely touched upon, if at all. The key questions and, in fact, the entire protocol development should be more process-based, explicitly emphasizing ecological processes and functions as much as states.
2. Tier 3 is their "effectiveness monitoring of recovery projects" and is in direct competition with the BPA-RME program. The sponsors approach to effectiveness monitoring is an attempt to standardize research experiments from the top down, which may not be possible. Effectiveness monitoring (research) should be called for in RFPs to answer specific questions. For Tier 2 monitoring, impacts of non-native species need to be explicitly considered.
3. The proposal needs to more clearly define "classes" of management actions (page 6).
4. A monitoring and evaluation plan for the project itself is needed.
5. What is meant by the statement "…Tier 1 data layers are intended to be coarse-scale assessments that do not capture interannual variation and spatial variation in covariate magnitude." Specifically what does "in covariate magnitude" mean?

In addition, the Coded Wire Tag Programs that are among the primary monitoring and evaluation programs for stock identification in the harvest, magnitude of harvest on various stocks, etc. should be brought under this integrated effort to catalogue, make available, critically assess, and improve systemwide monitoring and evaluation for fish and ecosystem status. Other projects that should be brought under this overarching project to provide system-wide monitoring and evaluation include parts of or all of projects #198810804 (StreamNet), #198712700 (Smolt Monitoring), #199008000 (PTAGIS), #199403300 (FPC), and #199602000 (CSS).

Action Agency/NMFS RME Group Comments:
PLANNING GROUP - This project is well written and has several valuable objectives and tasks that are needed by the region. However, most all of the objectives and tasks are currently underway as part of other regional processes and associated contracts or proposals such as: 1) the NMFS Biological Opinion and the Federal Caucus' Basinwide Salmon Strategy RME Program; 2) NMFS and USFWS TRT Recovery Planning; 3) the NWPPC's Provincial Review Process;4) Data Protocols and Data Needs Assessment Contracts; 4) Subbasin Planning; 5) the Regional Analytical Advisory Committee; 6) USFS , BLM, and EPA Monitoring Programs; 7) Oregon and Washington State Monitoring Programs; 8) the Lower Columbia River Estuary Program; and 9) the Corps of Engineer's AFEP Program. The NMFS and Federal Action Agencies have developed a draft RME framework that overlaps much of the needs of the Fish and Wildlife Program and other Federal and state RME programs. A regional workgroup session in September, 2002 with the formation of an RME Regional Coordination Group is already planned to provide a collaborative process for coordinating these overlapping programs. The state and tribal fishery agencies, CBFWA, USFWS, and the NWPPC will be included in this Regional Coordination Group as well as other key agencies for the RME Programs identified above. This coordination effort will include resident fish RME needs under the USFWS BiOp. The work proposed by 35033 would be redundant to these other processes and associated contracts. The proposal also appears to duplicate current CBFWA support contract objectives of coordinating

the state and tribal fisheries agencies and the region. In addition, funding is proposed for federal and state employees that are already requirements under current programs and activities.

ISRP Remarks on RME Group Comments:
The RME Committee comments raise similar issues as those identified in the ISRP's question 2 under Implementation-related issues above.

ProjectID: 35016

A Pilot Study to Test Links Between Land Use / Land Cover Tier 1 Monitoring Data and Tier 2 and 3 Monitoring Data
Sponsor: NWFSC
FY03 Request: $436,000
5YR Estimate: $2,582,000
Short Description: Pilot test use of LU/LC spatial data in Willamette subbasin as Tier 1 monitoring data base, link to Tier 2 fish data in Willamette River floodplain and Tier 3 data for floodplain restoration projects; transfer lessons of same to John Day/Wenatchee
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not Fundable. No response needed. The project is designed to apply findings from the use of spatial data in the Willamette River subbasin to other subbasins. The main objective is to link LU/LC data to field data to improve understanding of changes in riparian and aquatic resources. This appears to be a good idea but the proposal does not provide enough detail to effectively evaluate its merit.

Action Agency/NMFS RME Group Comments:
STATUS MONITORING SUBGROUP -- This project is a pilot project to test the use of LU/LC spatial data in Willamette subbasin as Tier 1 monitoring data. The project will then link these data layers to Tier 2 fish data in Willamette River floodplain and potentially to Tier 3 data for floodplain restoration projects. Ultimately the approach will be applied to the John Day or Wenatchee River subbasins.

a. Does a proposal satisfy the objectives of RPA?

The proposed work directly addresses the landscape-scale monitoring component (Tier I) of RPA 180. The proposed work indirectly addresses RPA 181 through the work's dependence on remote sense (satellite imagery) data.

b. If not, explain what elements are lacking.

c. If the proposal partially satisfies the RPA objectives, suggest means or opportunities to strengthen the proposal.

The concepts put forth in the proposal lack significant detail to effectively evaluate exactly what would be done and what the specific outcomes would be. A significant effort will need to be undertaken to explain exactly what goes into quantifying and assessing ecosystem status, how this relates to fish distribution (habitat associations), and how they will be linked to form a more synthetic analysis of the two. As the proposal is currently written it appears to focus on large floodplain systems in the Willamette basin, a tributary-based focus will need to be added to improve the export of this approach to systems throughout the Columbia.

d. If a proposal is entirely satisfactory, indicate so and note the particular strong points.

e. Assess the feasibility of the proposed work in general terms.

Given the track record of the researcher's involved in this proposal and the general concepts they describe, the proposal shows significant promise in principle to address key aspects of RPA 180/181. Developing specific analyses linking population status and ecosystem status will be critical elements in the development of Tier 1-3 monitoring programs. This proposal potentially offers a significant opportunity to bridge some of these gaps to develop more quantitative and landscape-based analyses that inform managers about critical bottlenecks to population and watershed recovery. Development of a much more detailed proposal should answer just how the project would accomplish this.

ISRP Remarks on RME Group Comments:
The ISRP and RME Workgroup agree that the proposed project may have merit but a much more detailed proposal must be submitted before the project can be evaluated.

ProjectID: 35019

Develop and Implement a Pilot Status and Trend Monitoring Program for Salmonids and their Habitat in the Wenatchee and Grande Ronde River Basins
Sponsor: NMFS-NWFSC
FY03 Request: $270,000
5YR Estimate: $2,350,000
Short Description: This proposal seeks to develop, as subbasin scale pilot programs, status and trend monitoring efforts for anadromous salmonids and their habitat in the upper Wenatchee and Grande Ronde River basins.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal may be premature and appears to duplicate some efforts in ongoing projects in other provinces. The proposal should more clearly explain its relationship to the ongoing projects and the overall RME planning activities in proposal #35033 of which the PI is a cooperating member. For example, do objectives 1 & 2 of this effort duplicate parts of #35033? This project proposal is also linked to others being submitted: 35016 (A Pilot Study to Test Links Between Land Use / Land Cover Tier 1 Monitoring Data and Tier 2 and 3 Monitoring, Feist); 35020 (Regional Project Effectiveness Monitoring Program for Columbia River Basin Listed Anadromous Salmonids); 35048 (NWFWC Salmon Data Management, Analysis and Access for Research, Monitoring and Evaluation Programs). The relationship to these proposals should be more clearly specified, e.g., are any of these projects necessary for the success of this proposal? The proponent might consider combining this proposal with #35033 to provide pilot data in association with a systemwide monitoring and evaluation project.

The primary objective of this proposed status monitoring plan for Columbia River Basin is a statistically sound sampling design that when implemented will generate useful data with known analytical and predictive power. The primary complication arises from the enormous spatial scale and resulting heterogeneity of the sampling areas and indicators. The proponents propose to develop a modern and statistically rigorous sampling program informed by knowledge of demographic and habitat processes. In general the ISRP supports this effort to develop and test

status and trend monitoring approaches capable of the statistical rigor specifically required by the region's natural resource management agencies and personnel.

The ISRP recommends that the proponent consider modifying the proposal to include pilot projects in each of the four states (e.g., pilot projects for resident bull trout in Montana, anadromous species in a tributary of the Salmon River in Idaho in cooperation with the ongoing Idaho production surveys, cooperation with the pilot M&E work in the John Day Basin of Oregon and perhaps the Wenatchee Basin in Washington). In particular it seems that the John Day Basin could be included to eliminate duplication of effort, where we understand that a pilot program is underway on many of the objectives of this proposal.

The proponents should discuss the relationship of the habitat and riparian survey protocols selected for use and the protocols recommended in "Inventory and Monitoring of Salmon Habitat in the Northwest: Directory and Synthesis of Protocols for Management/Research and Volunteers in Washington, Oregon, Idaho, Montana and British Columbia" (Johnson, et., al. 2001).

Other points that need clarification are: 1) Is there a probabilistic sampling procedure for habitat surveys in Subtask 2.1.1. -- Test habitat assessment methods?, 2) Discuss the ongoing census based surveys that will act as the 'truth' in Subtask 2.1.2. -- Test adult population assessment methods. Are there no sources of error?, 3) How are data collected on juveniles in pools < 6 m2 in surface area or < 40 cm deep or in other pools where snorkeling is not feasible? 4) In Subtask 2.1.3 -- Test juvenile population/productivity assessment methods, it is unclear if abundance of juveniles is estimated or just presence/absence. How are abundance or presence/absence estimated if not all pools or other parts of the reach are not assessed? 5) What exactly is to be tested in Subtask 2.1.4 -- Test probabilistic sampling based approaches? 6) What do you mean by "Since stream network geometry is a strong function of gradient, geology and precipitation, the weighting of streams in the sampling scheme should be tested for each major subbasin."?, and 7) Develop a monitoring and evaluation plan. It is not appropriate for one of the most quantitative proposal to not have a quantitative monitoring and evaluation plan for itself.

Action Agency/NMFS RME Group Comments:
STATUS MONITORING SUBGROUP -- This proposal seeks to develop, as subbasin scale pilot programs, status and trend monitoring efforts for anadromous salmonids and their habitat in the upper Wenatchee and Grande Ronde River basins.

This proposal most directly addresses RPA 180, and supports elements in up to 10 additional RME RPAs.

RPA 180 – The objective is to develop and implement a basinwide hierarchical monitoring program, focusing on population and environmental status. This proposal is in direct response to that need. The approach is to initiate two pilot efforts in different subbasins to establish a foundation of suitable sampling protocols and estimation procedures. Our work group sees merit in this approach. Good thinking has gone into this product. However the proposal could be improved somewhat by providing more details on a few key issues. Those issues are specified as guidelines for implementing status monitoring, in a draft RME framework document that has had limited circulation (RME Framework for the 2000 Biological Opinion – NMFS and Action Agencies). Those guidelines are useful in proposal develop, as well as implementation. Clearly this proposal has adopted some of the guidelines. But we recommend the full complement of guidelines be considered. Separate guidelines were compiled for adult, juvenile life stages and environmental attributes. As an example we reproduce the population status adult life stage guidelines from that document here:

Proposed Guidelines -Adult Life Stage:
1. Clearly identify the demographic scale (e.g. population, ESU, deme; wild/natural or hatchery origin) for which abundance estimates will be produced.
2. Demonstrate that the target unit is readily distinguishable from other sympatric population units (e.g. spawning location, timing, etc.).
3. Identify the performance measure or indicator that will be monitored/enumerated (e.g. redds, carcasses, weir counts, dam counts etc.) in order to estimate spawner escapement. If multiple methods (e.g., weir counts and redd counts) are used to enumerate the same population, specify.
4. Describe the method used to enumerate the indices, e.g., aerial or ground surveys, peak or cumulative (repeated) counts, and the error associated with the method.
5. Specify any expansion factors (e.g. spawners/redd, expansions beyond index areas) or other adjustments (e.g. harvest removals, passage mortality) that need to be applied to the raw counts. Provide the rationale supporting the use of those expansion factors, how the factors change over time, how they are estimated, and assess their reliability.
6. Provide estimates of the annual age structure of the sampled population, and how this is estimated.
7. Provide an assessment of the accuracy and precision associated with the proposed methods for estimating spawner escapement, or total numbers of returning adults.

Data will be collected on an annual basis at the sub-basin scale:
· Adults, Spawners, or Redds
· Age structure of spawning population
· Sex ratio of spawning population
· Fraction of naturally spawning fish that are of hatchery origin, (CV should be specified.)

ISRP Remarks on RME Group Comments:
In general the ISRP agrees with the RME group comments. It is useful to have pilot efforts in different subbasins to establish a foundation of suitable sampling protocols and estimation procedures. The proposal could be improved by providing more details on key issues identified in the draft RME framework document (RME Framework for the 2000 Biological Opinion – NMFS and Action Agencies).

ProjectID: 35020

Regional Project Effectiveness Monitoring Program for Columbia River Basin Listed Anadromous Salmonids.
Sponsor: NMFS-NWFSC
FY03 Request: $475,000
5YR Estimate: $2,010,000
Short Description: This proposal seeks to coordinate the design and implementation of experimental monitoring projects aimed at determining the impact of specific habitat actions. As part of this effort, it will coordinate and implement 2-3 pilot projects.
Response Needed? Yes
ISRP Preliminary Comments:
The proposal is too brief to allow complete scientific review. For example, the basic ideas are presented elsewhere, but there are no methods in the section f. “Proposal objectives, tasks and methods.” Methods should be included for each task, especially with respect to the proposed Task 4: Implement 2-3 pilot studies of effectiveness monitoring. The proposal should be better coordinated with other M&E proposals from the same agency. The proposal does not provide

sufficient information to indicate that it can accomplish its objectives. The proposal must have a monitoring and evaluation section. It is not appropriate for one of the most quantitative proposals to monitor project effectiveness to not have a quantitative monitoring and evaluation plan for its own effectiveness.

If funded, Proposal #34008 in the Innovative Solicitation "Use a Multi-Watershed Approach to Increase the Rate of Learning from Columbia Basin Watershed Restoration Projects" would seem to overlap the objectives of this proposal. This is an awkward situation because funding decisions on proposals submitted under the Innovative Solicitation may not be complete.

This proposal may be premature and appears to duplicate some efforts in ongoing projects in other provinces. The proposal should more clearly explain its relationship to the ongoing projects and the overall RME planning activities in proposal #35033 of which the PI's agency is a cooperating member. This project proposal should also linked to others being submitted: e.g., 35016 (A Pilot Study to Test Links Between Land Use / Land Cover Tier 1 Monitoring Data and Tier 2 and 3 Monitoring, Feist); 35019 (Develop and Implement a Pilot Status and Trend Monitoring Program for Salmonids and their Habitat in the Wenatchee and Grande Ronde River Basins); 35048 (NWFWC Salmon Data Management, Analysis and Access for Research, Monitoring and Evaluation Programs). The relationship to these proposals should be more clearly specified, e.g., are any of these projects necessary for the success of this proposal? A primary contribution of this proposal would be to implement 2-3 pilot studies of effectiveness monitoring projects. This seems to overlap the objectives of proposal 35019 from the same agency. The proposals should be coordinated to avoid duplication of effort.

Action Agency/NMFS RME Group Comments:
HABITAT ACTION EFFECTIVENESS RESEARCH SUBGROUP -- Does the proposal satisfy the objectives of RPA 183?

The proposals intent to provide a mechanism to coordinate and prioritize implementation of projects, provide design guidelines for monitoring, and implement several pilot projects does not fully satisfy RPA requirements.

Elements that are Lacking.

Much of the work proposed here is already underway within the Action Agencies RME framework. What this proposal offers that the AER team is not currently doing is the implementation of several pilot projects. These pilot projects can be used to test the methods and guidelines established by the AER team. In addition, the pilot studies can test cause-effect linkages between management actions and the proposed indicators. Reviewers believe this is an important component of AER.

Means and Opportunities to Strengthen Proposal.

The study proposes to develop pilot projects aimed at grazing control, barrier removal, and installation of irrigation diversion screens. Providing information on how these studies will be developed or the methods that will be used would clearly strengthen the proposal. It is not clear if the pilot studies intend to test the protocols (and selected indicators) developed by the AER team, or if the pilot studies will "intensively" investigate the web of mechanistic relationships in the stream ecosystems (the latter is referred to as "intensive effectiveness research" by the AER team).

Feasibility of Proposed Work.

More information on the development of the pilot studies is needed to ascertain the feasibility of the proposed work. It is not clear how the studies will be developed, nor is it clear if the sponsor intends to implement and test the protocols developed by the AER team. Reviewers sense that the sponsor intends to develop their own monitoring criteria and guidelines.

OCEAN AND ESTUARY SUBGROUP -- Action item addressed - 183. Pilot projects have already been chosen that do not include the estuary. Unless that focus is going to be expanded, this proposal does not address the estuary.

ISRP Remarks on RME Group Comments:
The ISRP agrees with the RME group assessment that "More information on the development of the pilot studies is needed to ascertain the feasibility of the proposed work" and it is unclear if the proposal would meet the needs of RPA 183.

ProjectID: 35017

Inventory and Synthesis of Physical Process Models and Methods to Supplement Habitat Conditions Analysis and Subbasin Planning
Sponsor: KWA and Golder
FY03 Request: $769,609
5YR Estimate: $1,730,082
Short Description: Engage earth scientists, civil/systems engineers, geomorphologists, hydrogeologists and others familiar with the science of physical processes. Conduct a synthesis inventory of tools and develop a Landform Library, database, web based app. and model.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not Fundable. The proposal is inadequate. This long rambling proposal did not provide adequate detail in the critical Section f. Proposal objectives, tasks and methods to allow review of methods (methods are too brief). In future proposals the proponents might consider reducing the level of effort and propose to produce a directory of and synthesis report containing protocols and recommendations for how and when physical process methods should be used. Proposals must include a monitoring and evaluation section. It is not appropriate for one of the most quantitative proposals to not have a quantitative monitoring and evaluation plan for success of the project.

The proponents propose to link the biological and physical worlds through cause and effect processes and develop an overarching "model" called the Physical Process Method (PPM) process. The project would provide input to the EDT process of evaluating aquatic habitat and predicting effects of habitat changes on anadromous fish populations. The ISRP is not convinced that a highly sophisticated mathematical approach in combination with EDT is appropriate at this time. The sub models are available (and some were listed in the proposal) for many of the processes they want to link. Users may be better off to leave them unlinked and use them as needed, based on the combined expertise of several disciplines working together. An overarching Physical Processes Model may gain little not available from individual models for discrete processes. However, part of Phase 1, a directory of and synthesis report containing protocols and recommendations for use of individual physical process models in subbasin planning, may be useful. The ISRP agrees that a useful form for this inventory would be the style of presentation of protocols in the report "Inventory and Monitoring of Salmon Habitat in the Northwest:

Directory and Synthesis of Protocols for Management/Research and Volunteers in Washington, Oregon, Idaho, Montana and British Columbia" by Johnson, et al. 2001.

Action Agency/NMFS RME Group Comments:
STATUS MONITORING SUBGROUP -- This proposal would engage earth scientists, civil/systems engineers, geomorphologists, hydrogeologists and others familiar with the science of physical processes to conduct a synthesis inventory of tools and develop a Landform Library, database, web based application, and model.

a. Does a proposal satisfy the objectives of RPA?

This proposal is vaguely linked to RPA 180 in the narrative but no specific linkages are established by the proposal. The proposal is really aimed more at supporting subbasin planning than monitoring, although data derived from monitoring will be necessary to model development and application.

Proposal indicates applicability to RPA 180 as it would provide new overall subbasin analysis and planning capability similar/parallel to EDT, SSHIAP, and/or GIS-based analytical functionality. The primary purpose appears to be to provide tools that translate habitat treatments into specific changes in habitat attributes, which could then be used by EDT or other habitat analysis tools. Relevance to RPA 180 appears to be in which habitat attributes might be monitored.

b. If not, explain what elements are lacking.

Explicit linkage to RPA's 180/181 is lacking. The proposed models/tools to be developed under this proposal would need environmental data developed under RPA's 180/181, in addition to providing some synthesis of the potential and/or realized benefits of restoration actions. The proposal is long on concepts but very sparse on the details, particularly in the objectives section.

This project appears to relate more to RPA 183 (effectiveness monitoring) by identifying the physical attributes that might respond to specific habitat actions and predicting the potential magnitude of the responses.

c. If the proposal partially satisfies the RPA objectives, suggest means or opportunities to strengthen the proposal.

The authors need to integrate biological processes (riparian vegetation) into their conceptual framework of what processes control the environment. Ecosystem processes and structure are not simply based on physical processes controlling the environment. A more holistic conceptual framework would be useful. In addition, treatments need to be expanded to consider passive processes in addition to engineered solutions. Sometimes the best solution is just taking the human disturbance off the land, not just mitigating or engineering around it.

d. If a proposal is entirely satisfactory, indicate so and note the particular strong points.

e. Assess the feasibility of the proposed work in general terms.

This proposal is highly ambitious as it attempts integrate significant known and unknown elements of putting together physically-based models and tools to quantify cause and effect in biophysical processes. The direction of their approach is based on physical processes and an

engineering-oriented perspective on how to address recovery of watersheds. There doesn't seem to be much emphasis on the biological processes (e.g. riparian vegetation) that also shape and form the habitat template. While the problem statements addresses by this proposal are laudable, it is unclear how the proposal will address many of these lofty goals.

ISRP Remarks on RME Group Comments:
The ISRP is in general agreement with the RME review comments on this project.

ProjectID: 35022

Habitat Mitigation Tracking System
Sponsor: STEWARD AND ASSOCIATES
FY03 Request: $462,131
5YR Estimate: $1,372,107
Short Description: Assist BPA in meeting its habitat mitigation obligation and, if appropriate, receiving credit, as specified under RPAs 180 and 183 in the FCRPS Biological Opinion.
Response Needed? Yes
ISRP Preliminary Comments:
This proposal outlines work designed to ensure that mitigation projects make a positive, measurable contribution towards salmon recovery, that BPA receives credit for its efforts, and that additional mitigation opportunities and constraints are identified and communicated to fish and wildlife managers and the public. This project would introduce another level of M&E that may overlap with the responsibilities of the Council's FWP.

A response should include a description of provisions for monitoring and evaluation of the results. There should be a clear strategy for obtaining feedback from users of these products to determine if the project has been successful. More information on the relationship of this project with other ongoing activities is necessary.

Action Agency/NMFS RME Group Comments:
HABITAT ACTION EFFECTIVENESS RESEARCH SUBGROUP -- Does Proposal Satisfy RPA Objectives?

Principally, this proposal is not RPA 183 relevant because it doesn't address monitoring or implementation of specific projects as identified under RPA 183 of the BIOP. Rather it requests funds to develop a programmatic structure.

What Elements are Lacking.

This proposal is weakened by a lack of specific information on what the developed products will look like. For example the proposal includes large scale quotes of the Paulsen et al (2002) document that describes what projects should look like, but does not identify current habitat projects that it would coordinate.

This project received primary review by the Data Management Subgroup. Like 35001, 35020 and 35050, it proposes to organize a project management team to track, prioritize, and coordinate projects within the Columbia River Basin. This project has three objectives: 1) develop a framework to track project implementation, 2) develop a system to confer credit on those doing the projects and 3) to develop habitat indicators as surrogates for fish responses. The criteria

above indicate that programmatic proposals that lack any supporting intention to do some monitoring will receive low priority. In addition.

Means and Opportunities to Strengthen Proposal.

This proposal would be strengthened by more detailed information on what habitat improvement projects are currently out there to be monitored. If there were some assessment of current projects, then one might be able to provide some more details within the proposal to allow the reader to know that the proposal sponsors are constructing an appropriate team and that they know what they are getting into.

DATA MANAGEMENT SUBGROUP -- Does the Proposal meet RPA needs?

The Action Agencies have an urgent need for tracking habitat related projects to meet its obligations under the Biological Opinion. This proposal addresses those obligations directly. The project seems to be designed particularly to address RPA 183 and the evaluation of the benefits of offsite mitigation habitat actions. The proposal does not seem to meet the Action 198 goal to develop a Cooperative Information System.

Elements the Proposal is Lacking

The proposal does not state that it will provide a structured hierarchical program for status monitoring. There is some lack of clarity in the proposal. At one level it is described as a project compliance system. On the surface, this is a relatively simple data collection task: was the proposal completed as planned? At the next level the proposal plans to gather information about the success of these projects. This is a much more difficult task, especially since, as the proponents state, the indicators for success have not been developed or agreed upon. These issues need to be clearly resolved.

Means and Opportunities to Strengthen Proposal

The proposed information system, to be successful needs to be designed to at least reference other project data. While the proposed data collection system is focused on BPA funded projects there are potentially other projects that would need to be considered before the effectiveness of a particular BPA funded project could be evaluated. Stating the provisions for data retention and protection would greatly enhance this proposal. Private operation and maintenance of the database implies a long term and ongoing obligation for this service. On one hand the proposal is for private data management while the proposal also claims that the tracking system will reduce the BPA's overall liability. On the surface these claims appear contradictory. More information on coordination with other ongoing projects would alleviate potential for duplication of other work currently in progress. For example, this proposal appears to duplicate the RME work group's "Protocols for Monitoring Habitat-Based Environmental Indicators" study by Hillman and Giorgi. Broadening the project focus to a wider constituency beyond BPA Program Managers, Scientists, and Administrators for needs gathering and evaluation would strengthen the proposal.

Feasibility of Proposed Work

There is no indication of adoption of metadata standards.

ISRP Remarks on RME Group Comments:
There is agreement between the ISRP and the RME Workgroups that additional information is needed to explain the relationship between this project and other ongoing activities. The RME Workgroups indicated that more specific information was needed in order to strengthen the proposal and evaluate its benefits. This lack of detail may explain why one RME Workgroup comments that this proposal is not RPA 183 relevant while another Workgroup states that the proposal is designed particularly to address RPA 183.

ProjectID: 35045

Modeling and Information Management System to Assess Effectiveness of Alternative Actions
Sponsor: PNNL
FY03 Request: $500,000
5YR Estimate: $1,500,000
Short Description:
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal is to develop a model and information system (MADIMS) to support the RME program by developing 3 functional capabilities: spatial and temporal scale changes in data, information and models; hypothesis testing; information exploitation. The goal of building a complex model to allow alternative actions to be evaluated without experiments is laudable. The difficulty is in the details of building a model that is realistic enough to be useful, yet tractable for solution. Models may predict cause-effect relationships but to establish such relationships requires links to empirical data.

The proposal does not provide a clear picture of how the model building will be done. The response should provide more details such as exactly how neural networks and fuzzy logic will be used to obtain models. The response should describe how the project could contribute to the CBFWA (or other) systemwide design based M&E project by providing modeling aspects for making predictions based on data.

This is an expensive project with a budget that is suspiciously rounded.

ProjectID: 35050

UW Offsite Habitat and Fish Survival Effectiveness Monitoring
Sponsor: UW
FY03 Request: $177,048
5YR Estimate: $1,074,065
Short Description:
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
The proposal is inadequate. The proposal is not clearly written, is not well-coordinated with action agencies and other proposed and ongoing monitoring programs within the basin, and it does not have enough methodological detail to provide a clear understanding of how the work will be done and what the products will be like. It isn't clear from the regional perspective why this project should be the one to do the activities described or that the activities described are even appropriate or possible.

Action Agency/NMFS RME Group Comments:
HABITAT ACTION EFFECTIVENESS RESEARCH SUBGROUP -- Does the Proposal address RPA Objectives?

Overall, the proposal offers a useful approach to developing a central design that provides guidance and criteria for monitoring management actions within the Columbia Basin. However, much of what is proposed is already well established or is currently being developed by the Action Effectiveness Research (AER) The proposal also intends to develop and coordinate a WEB SITE that will centralize monitoring protocols, guidelines, data, and information. Reviewers believe this is necessary and beneficial, as it will help the Action Agencies coordinate current and future projects, provide quality control of data, and provide a central location for sharing information. This site would provide potential sponsors with all the information needed to develop a valid effectiveness monitoring study.

What Elements are Lacking.

This proposal lacks specific information on what the developed products will look like. There is not a clear indication of what investment the authors have made in determining which monitoring needs exist and what percent could be feasibly executed.

Means and Opportunities to Strengthen Proposal.

This proposal would be strengthened by some more detailed information on what habitat improvement projects are currently out there to be monitored. The development of a centralized WEB SITE is an excellent idea. The proposal should describe in more detail how it intends to develop the site, how it will be managed, and how data quality will be controlled. A simplified outline or structure of the WEB SITE would be useful.

Specific Comments: The proposal needs to provide more information on how it intends to evaluate past and current projects. The proposal needs to define the criteria by which it intends to evaluate the projects. For example, a checklist of questions that will be asked of each project is needed. Reviewers think the following list of questions could be asked of each project:

1. What hypothesis is the project testing?
2. Where is the project located (province, subbasin, etc.)?
3. What type of project was implemented (e.g., road closure, addition of LWD, etc.)?
4. How many sites were sampled?
5. Where were the sites located?
6. What was the sampling design (sampling in test and control sites, sampling only in test sites, etc.)?
7. How were sites selected (e.g., random selection)?
8. What fish species were targeted?
9. What factors were measured (include both physical/environmental and biological)?
10. Where were these factors measured?
11. How were these factors measured?
12. How frequently were factors measured?
13. How were the data analyzed?
14. What are the key conclusions?

A simple checklist of questions like these will not only help rank the validity of projects, but will also identifying gaps in our understanding of effects of management actions on fish populations within and across watersheds or provinces.

ISRP Remarks on RME Group Comments:
The RME comments are generally more positively disposed toward the proposal than the ISRP. It would seem that the RME comments on proposal 35033 also would be relevant to this proposal.

Harvest

ProjectID: 200100700

Evaluate live capture selective harvest methods for commercial fisheries on the Columbia River 2001-007-00.
Sponsor: ODFW and WDFW
FY03 Request: $579,039
5YR Estimate: $3,199,548
Short Description: Evaluate the use of live capture commercial fishing gears and methods to capture hatchery-produced spring chinook and minimize catch of, and impact to, bycatch including ESA listed species.
Response Needed? Yes
ISRP Preliminary Comments:
The development of selective fishing methods for commercial fishermen was supported by the ISRP in the FY2001 Innovative proposals and again by BPA in 2002. This proposal is a continuation of work begun under those proposals. The statement objectives of this proposal were (target species is spring Chinook and bi-catch issue is winter steelhead):
"Objective 1. - Determine effects of varying net mesh size on species-specific catch rates, condition at capture profiles, immediate-, short-, and moderate-term survival rates.

Objective 2. - Investigate the feasibility of using live capture fishing methods and gear in a full fleet commercial fishery."

However, while this proposal is now substantially more expensive than previous version, it is not clear what, if anything, new would be gained by this research. One reviewer summarized the proposal as more socially motivated than scientifically driven. There are significant issues with the current proposal:
a) While the general background and broad results are summarized from past work, there are no actual data or analyses presented, nor are there any experimental designs presented for the proposed research. The way that past research results are presented is confusing and limits the understanding about what is known, what is unknown, and the quantitative results. There is also no sense of an integrating experimental design to this project.
b) The results of the 2002 study of a commercial fishery are initially used as the basis for suggesting more research in 2003 since the bi-catch of winter steelhead was so large and inadequate data on mesh size were collected. However, in task 2, these same 2002 data are to be used in establishing the 2003 regulations but in the absence of any results from the 2003 research. How then does the 2003 commercial fishery "experiment" build on new information and how would the steelhead bi-catch issue be addressed? For example, what mesh size is proposed for the 2003 fishery?

c) Given (b), what is new that would allow improved protection of steelhead in the commercial fishery? What allowable mortality of steelhead and unmarked spring Chinook is provided for the experimental commercial fishery and how will it be incorporated in the regulations and monitored? If the fishery is limited to 1-2% of the winter steelhead return, how would you known when such a limit was met?
d) A commercial fishery introduces an additional mortality that small test sampling does not involve, i.e., the potential for multiple encounters and cumulative mortality of the released fish. This issue was asked at the presentation but there did not seem to be a plan to addresses this in the proposed monitoring.
e) While the committee could infer the definitions of immediate, short-term, and moderate-term mortality; clearly, such fundamental terms should be defined in the proposal. Further, the ISRP has previously asked how delayed mortalities would be measured.

This proposal is driven by a need to find ways to increase gear selectivity in order to be able to continue in-river commercial fishing on hatchery fish while continuing to protect co-distributed weak stocks. The strategy is to find more selective harvest methods and effective live-release techniques. Although the proposal says it is to evaluate aspects of live capture commercial fishing gears and methods, the project is limited primarily to a single gear (tangle nets) methods of using and configuring that gear (drift length, mesh size, the use of recovery boxes for fish to be released) and the degree it can be used successfully by gillnet fishermen.

Reference is made to data from previous experiments not being adequate to address certain questions, but it is not clear whether the proposers have a plan to ensure that the proposed work does deliver data adequate to answer the questions. The structure of the experimental design does not seem to have been clearly thought about. What statistical analysis is proposed to determine significance of differences? What are the data requirements of this analysis? What sample design follows from the data requirements? How does the beach seine function as a control? It is not clear from the proposal the extent to which the proposed work is new versus a repetition of previously conducted experiments. Objective 2: Continue to investigate feasibility…creates the impression of an ongoing project that will never end.

Reference is made to enforcement and compliance – how does this fit with the full observer coverage on vessels? Is enforcement a post-project issue? Further, enforcement and compliance are fishermen behavior issues that the fishery should pay, or at least, contribute to. The development of these fishing techniques clearly are to the benefit of those fishers, have they been approached to monitor their fishery.

Why does this need to be a five-year project? A strong justification would be needed for 5 years!

The ISRP clearly sees the merit in developing new fishing techniques given the number of factors limiting fisheries in the Columbia River. However, the provision for these fisheries must stand-up to technical review and compliance with ESA limits on protected stocks. Based on the material presented in this proposal we cannot make that assessment and cannot, at this time, conclude that this new proposal would provide a sound scientific basis for such an assessment.

NOTE: Objective 1 of this study is very similar to the study proposed by WDFW (#35018), both use radio tagging of fish captured and released from experimental fishing but differ in the methods proposed to capture fish for control treatments. Objective 2 is specific to this proposal. It should not be necessary for the Council to consider two essentially identical research projects on this issue. The proponents should reconcile these two proposals before any further funding is provided, including their respective definitions of soak times.

ProjectID: 35018

Evaluate recreational and commercial mark-selective fisheries.
Sponsor: WDFW; UI
FY03 Request: $797,420
5YR Estimate: $2,292,260
Short Description: Estimate post-release survival of steelhead bycatch in tangle net fishery. Evaluate post-release spawning success of spring chinook and steelhead. Measure hooking mortality in recreational salmon fisheries.
Response Needed? Yes
ISRP Preliminary Comments:
This proposal is similar to proposal #200100700 (ODFW) and addresses incidental mortalities associated with mass-mark selective fisheries in the Columbia River. Fishery managers have implemented mark-selective fisheries in both the commercial and recreational sectors to preserve declining and listed salmonid populations while providing harvest on healthier stocks. In these fisheries, the marked fish (hatchery-origin) may be retained while the unmarked portion (which would include listed wild stocks) must be released. The assumption is that the survival of the released fish is high enough that they will contribute to rebuilding weak populations. The ODFW proposal considered mesh-size to use in tangle nets and evaluation of a "full fleet" commercial fishery on spring Chinook.

The objectives of this WDFW proposal are:
1) to estimate the survival of steelhead captured and released from a tangle net that would be suitable for harvesting spring chinook salmon;
2) to estimate the effect of capture and release from a tangle net on the condition and spawning success of spring chinook salmon and steelhead in the Kalama and Cowlitz river systems; and
3) to estimate the survival of spring chinook, coho and fall chinook captured and released in a mark selective recreational fishery conducted below Bonneville Dam.

The proposal would estimate these survival rates using a series of mark-recapture experiments over the next three years.

Objective 1 is very similar to the study proposed by ODFW (radio tagging of fish captured and released from experimental fishing) except for differences in the methods proposed to capture fish for control treatments. Objective 2 and 3 are specific to this proposal. It should not be necessary for the Council to consider two essentially identical research projects on this issue. The proponents should reconcile these two proposals before any further funding is provided, including the respective definitions of soak times.

This proposal provides more background on past studies and presents some analyses. The reviewers particularly noted the difference between comparisons of short term survival estimates by gear type and the results of the long-term survival studies. Short term survival rates of released spring Chinook were quite comparable between three treatments but long-term survival of fish released from the conventional gillnet were only 50% of the control compared to 91% for the tangle nets (section 9b). Consequently, Objective 2 seems a logical extension of these longer-term studies and merits support. We also agree with the author's comments concerning the variability in catch-and-release mortalities in recreational fisheries and would support the Objective 3, following consideration of our comments on the use of controls (below).

In Objective 1 and 3, the committee had concerns about the source of the control fish and whether they are comparable to the treatment fish. Objective 1 involves radio-tagging released fish caught in tangle nets fished downstream from Bonneville Dam. The proposed controls would be captured in the Bonneville fishway, radio-tagged, and released back to the fishway. While the authors acknowledge concern about this comparison they do not offer a solution. We recommend this be considered further and offer the following suggestion:

To improve the control, consider taking half the experimental fish up to the Bonneville Ladder and release half at the net site or half of the control fish downstream to be released. The Null hypothesis is no difference in survival of the two groups. If there is significant loss between the two groups, the assumption would be violated and the control procedure compromised.

Similarly, Objective 3 involves capture of control fish in the fishway but the tags proposed in this study are colored jaw tags, not radio-tags. This situation is more difficult to assess since any loss of tags released downstream from the fishery could be due to emigration from the study area, tag loss, or mortality. A response is required on both control issues.

There are two other specific points for consideration:
a) Task 1a states that for each steelhead captured, they will note the net type (mesh size) it was captured in and estimate the depth from the top of the net at which it was captured. Unless this depth definition is very general, quantification of this is variable and slow when handling a gillnet. A more direct means to investigate the depth of steelhead encounters would be to use variable depth "weed" lines, as conducted by CDFO, or to apply depth monitoring tags (the former is much cheaper). Weed lines allow the gillnet to be set at varying depths below the surface to investigate changes in the encounter rates with steelhead. Were these other methods considered and/or how will depth of capture in the gillnets be measured?
b) Hypothesis 1, Objective 2 appears to establish an acceptable difference in egg-to-fry survival of winter steelhead and spring chinook salmon released from tangle nets. What is the basis for "will not be greater than 10% different than that of fish not captured". Is 10% based on other studies, measures of variation, etc.?

Two budget concerns are notable. First, Task 2c. Compare spawning success of tagged and untagged spring chinook salmon in Kalama River is contingent upon funding of proposal #35041. Secondly, the budget presented in section 8 should include more justification/explanation for the 14 FTE and fringe rate applied, the very large travel budget ($163k per year), and the equipment to be purchased with the capital is very generally mentioned in section 9g but should be more explicitly stated.

ProjectID: 35004

Harvest Model Development
Sponsor: UW
FY03 Request: $278,398
5YR Estimate: $794,416
Response Needed? No, Not Fundable (but response welcome)
ISRP Preliminary Comments:
Not Fundable but see comments and respond if appropriate. This proposal caused some confusion among ISRP review team. The PI began his presentation by stating, "do not fund this proposal", because apparently the managers (the Chinook Technical Committee - CTC) who would use the products of this proposal aren't ready for the proposal; consequently, the proposal

won't be effective. However, on paper, the proposal looks generally acceptable and the development of new models to reflect new management needs for selective fisheries as expressed in the BiOp RPAs appears to be a reasonable need. The proposal makes an effective argument for the benefit of models that will provide managers with information they need to minimize catch of protected stocks. The proposal explains how existing data will be used to model the new questions about harvest management. The description of steps to model reconfiguration is adequate.

The ISRP review raised several issues:

1. The rationale for producing two basically similar (but not identical) models seems to be based on whether one organization has the technical ability to deal with the C++ model code. This calls into question whether harvest managers are either duplicating each others work, or running different models and computing different harvest scenarios that later create conflict over management decisions. How did the issue of two models develop and what model specifications have been used in developing this proposal?
2. We have been informed that the task of re-coding the CTC model has already been assigned to two CTC committee members and advancements in the capabilities of the model are being addressed through a separate contract. Who requested the CTC work and have you the support of that committee to submit this request?
3. The needs of the BiOp model were not described in the proposal but ISRP understanding is that they are very similar to the CTC model and that NMFS has proceeded with an RFP for this work. Is this proposal in response to a request from NMFS and if so, why has it been submitted to the Council?
4. The point is made about accessibility of the code: why do managers need to understand the code? Please explain why option 2 is not selected: models developed in a simplified C++ format and harvest managers learn to use C++? Why shouldn't harvest organizations be fluent in the tools of harvest management? The CTC is not a committee of managers but rather technical experts from each management agency associated with the Pacific Salmon Treaty. The issue of coding languages has been a trade-off in the committee since the committee frequently must modify code at meetings to complete an assessment and cannot have 3rd party software or advanced languages that CTC staff is not fully proficient in. Further, transparency of the model and the ability for others to use is an important consideration when agencies coastwide use one model for assessment of important harvest management decisions.
5. Problems developing harvest model: The main question relates to the availability of data on by-catch and incidental mortalities resulting from that by-catch. What data exist on gear selectivity, incidental catch, and incidental catch mortality?

Summary

The proposal is reasonably clear in its goals but it implies some conflict in the modeling/harvest management community on how to proceed. It appears that the level of effort and hence cost may be doubled due differences in preferences for coding languages. Further, the ISRP is uncertain of the necessity for this proposal since the CTC is proceeding with modifications of their model and the basis of the request for a BiOp model is not presented. The ISRP has no intention of generating a potential problem of alternative models and should not consider this proposal unless the proponent can clearly demonstrate support of the user community for this proposal and the ability to develop one model for useful in the Basin for assessment of harvest alternatives as an effective recovery tool. Further, the proposal does not comment adequately if the data is available to support the developments suggested.

Finally, a programmatic note: some connection to enforcement goals of the region should be coordinated with harvest management tools. Previous M&E (Peters et al., 1997) have shown enforcement is most effective when harvest rules are simple and easy to enforce. Suggest funding one model if it is possible for involved organizations to work together with cohesive effort.

ProjectID: 35040

Determination of post-release survival of spring chinook salmon in a mark-selective sport fishery
Sponsor: PNNL
FY03 Request: $268,745
5YR Estimate: $844,795
Short Description: Determine the effects of capture and release by angling on the post-release survival of spring chinook salmon and steelhead. Different groups (one control, one treatment) will be radio-tagged and tracked through spawning.
Response Needed? Yes
ISRP Preliminary Comments:
A response is needed. This proposal presents a generally very good study design for the purposes intended with a good technical background and thorough knowledge of past literature and current issues. Highly relevant to NMFS RPA's. The selection of the Yakima as study site is appropriate since the facilities exist to capture the fish, to track them throughout the system, and to assist in concerns about fishery impacts in this system (as noted in the proposal). Further, these tags would aid in the study of spring Chinook use of the upper river for holding. Although this study may have several benefits, the proposed variations for future years do not seem as justified. Why should the study be multiple-year? Funding this year should not be automatically committed to a multiple year study unless researchers have defined the rationale. Out-year rationale is inadequate in this proposal.

1. Given the multiple studies that have been conducted on hooking mortality, discuss the potential for estimating losses in terms of existing mortality data rather than collecting more field data. For example, the proposal references a study on hooking mortality of recreationally caught fish on the Willamette. Why is this study not sufficient to answer the question about the effect of catch-and-release on spawning success? Using existing data and literature, suggest you establish best and worst case scenarios (for example pre-spawn mortality is twice as high as worst hooking mortality and equivalent to best survival rates). Then estimate the acceptability of hooking losses on different run sizes. This would enable some a priori hypotheses about the impacts of hooking mortality. The proposal does not address the fact that in low run years, sport harvest of wild and even hatchery fish may have far greater impact than on high run years. Thus, harvest should be keyed to a worst-case scenario and limited such that sufficient escapements occur, especially in low run years. Comments?

2. The proposal does not address whether mortality might vary by timing of the run. It assumes that mortality will be constant over time. Is this reasonable? Will the timing of tags allocated to the control fish be matched to the tagging of the angled fish? How will the tags be allocated through the season? In Task 1a, Methods states that fish length would be estimated to the nearest 10 cm. Is this correct and if so, what is the value of such a broad size range?

3. There will be concerns expressed about the use of selected anglers as opposed to the use of public anglers that may not handle the fish as carefully, etc. How will the anglers used be instructed to fish and what gear would be used? The length of time a fish is played and handled by experts and science techs may be less of an impact than inexperienced fisherman that take longer to handle and may grab fish by gills and flop it on the bank. How can the study control for

differences between experiment and reality? How do you separate effect of tagging from angler handling when assessing post-release survival? It is not clear in the methods whether every sport caught fish would be tagged, or how the tagged fish would be chosen? Will this be a random selection process or will certain wounds be eliminated from the study?

4. The study has potential for coordination and cooperation from Law Enforcement perspectives and studies. For example, public outreach programs, publicity, tracking ultimate fate of fish. And catch and release of wild fish. Could you integrate efforts with Law Enforcement proposals?

5. Existing PIT tags from smolts may provide additional information upon return as adults. Discuss the potential value of this information.

6. Discuss the alternative value of live capture and spawning of some wild fish in the hatchery as opposed to release of wild fish. Are there some highly concentrated sport areas where wild caught fish could be taken live from anglers and transferred to hatchery? These anglers could be rewarded with money or receive two hatchery fish for one wild fish. This also could reap benefits in publicizing recovery and having the public actually have hands on support of such actions. It would also benefit some of the goals of the Law Enforcement programs of CRITFE.

8. If passage is an issue at the dams, receivers upstream and downstream could provide valuable information on time to pass, fall back etc. and potentially provide data as to whether fish delay passing ladders/dams after hooking. Cost for additional equipment and analysis might be very cost effective and could be coordinated via passage studies by U of Idaho.

9. Why are agencies using a variety of hook types in their regulations? Rationale? No analysis of different hook types was suggested. Are there no potential differences? Has this been studied?

10. Harvest can be selective if more fish are caught early or late in the run. Additionally, since run size is not confirmed until mid to late in the season, it seems that harvest should be more restrictive early in the run to assure escapement goals will be met, then allow more fishing mid run. If the runs follow bell shaped curves, harvest in the middle of the run will create “stabilizing selection” rather than “directional selection” of run-timing.

11. Water temperature is a key component of stress mortality. What temperature variations occur over the proposed time of the experiment? Should the experiment be restricted to conditions at or below 10 C or some comparable standard?

12. Run sizes are anticipated to be adequate for experiment, but no data are provided for comparison (top of page 7). What are the expected run sizes for 2000 outmigrants versus 1998-99?

13. Is the number of radio-tags sufficient? The sample sizes seemed small. The proposal refers to several classes of fish that would be considered in the analysis: marked vs. unmarked, size classes, sex and environmental conditions. There will be 100 sport tags allocated per year and only 50 controls. Given the number of categories potentially used in these analyses, how was a sample size of 100 tags determined? If there are widely distributed spawners, will there be no behavioral information for the time between catch and spawning.

ProjectID: 35053

Biological Feasibility of Reintroducing Fishwheels in the Columbia River
Sponsor: STEWARD AND ASSOCIATES
FY03 Request: $236,260
5YR Estimate: $292,770
Short Description: This project will determine whether a fishwheel can be successfully constructed and operated as selective harvest and sampling gear.
Response Needed? Yes
ISRP Preliminary Comments:
This proposal is to test the efficacy of using the fish wheel as a selective terminal fishing gear in the Columbia River System. The intent is to use the fish wheel to catch hatchery salmon and American shad. The goal is to provide economic and cultural benefits to tribal fishermen while providing appropriate protections to protected species.

As the ISRP indicated in its review of an earlier version of this proposal under the "Innovative" solicitation, the re-introduction of fish wheels as a selective fishing technique would be useful for the Columbia River Basin allowing harvestable numbers of healthy stocks of salmon or steelhead to be captured and kept, while allowing fish from other stocks to be released alive to continue to the spawning grounds or hatcheries. The ISRP supports a test of fish wheel feasibility. There are locations where the wheels are very effective and could be used as a selective fishing tool, but their success is site-specific.

The feasibility questions surrounding this gear do not pertain to the gear's technical or economic performance as much as to whether fish wheels are a feasible harvest method in the current regulatory context of ESA protected species, and whether acceptable allocation mechanisms for fish wheel harvests can be developed.

Fish wheel gear makes fishing a collective, rather than individual operation. This is a fundamental change. It will require a cooperative, rather than competitive, approach to fishing and will also require that some sharing mechanism be worked out among fishers to allocate the catch. The proponents should address how this will be done: who will use the gear, how it will interact with other gear, and how harvest will be allocated.

More detail should be provided about objectives, tasks and methods. For example, why is a literature review of fishwheel design necessary? How much is already known? What factors will be considered in identifying design characteristics of a Columbia River fishwheel? More detail should also be provided about how the experiment will be conducted and about the criteria to be used to evaluate performance. What gear types would it be compared against, and what metrics will be used to measure effectiveness?

Coded Wire Tag Monitoring Program

ProjectID: 198201301

Coded-Wire Tag Recovery Program
Sponsor: PSMFC
FY03 Request: $2,989,812
5YR Estimate: $16,132,108
Short Description: Recovery of CWTs and PIT Tags from salmonids sampled in the commercial/sport fisheries (Col. R and Oregon ocean), spawning grounds and hatcheries. Provides critical stock identification information required to evaluate the status of Columbia Basin stocks.
Response Needed? Yes
ISRP Preliminary Comments:
A response is required. First, let us acknowledge that this is a huge program that annual conducts a large number of activities that are essential to the Basin, and the data provided has been widely utilized over many years. However, this proposal is a huge mixing pot of activities that needs to be more clearly delineated with corresponding budgets and BPA funding. The current proposal requests $3 million from BPA and matches this with $2.5 million from 26 other sources! Given the use and value of the CWT data to regional assessment and monitoring, it is appropriate that BPA funds make a significant contribution to the program, but we should ensure that the CWT effort is linked/integrated with the CBFWA M&E proposal (35033). There are a lot of aspects of the CWT program that are of great interest for coastwide harvest management agencies including commitments in the Pacific Salmon Treaty (PST), researchers in fisheries, oceanography, and climate, and for monitoring of hatchery production, stock status and salmon recovery. Unfortunately, many of past ISRP comments seem to still be appropriate and the technical review issues do not seem to have been undertaken.

For example, our Programmatic comments from the past review included:
"The entire CWT program needs a programmatic review at regular intervals to confirm priorities and efficacy. We strongly recommend a technical/peer review to confirm the validity of the critical assumptions (e.g. current adequacy of the 20% sampling rate goal, and 30 tag recoveries per group, adequacy of using hatchery stocks as surrogates for monitoring wild stocks). Other key assumptions also need to be verified: 1) marked (CWT) fish suffer the same natural mortality as unmarked fish, and 2) marked fish do not lose their marks."

This proposal does respond adequately to the key assumptions but the ISRP was particularly surprised that the recommended statistical advisor position has not been staffed nor the technical review reported. Further, the 'CWT program' and management through the PSMFC is now much more than simply managing the CWT program and databases. This proposal covers analyses and data collection activities that are clearly the responsibility of state or Tribal agencies but for unstated reasons now seem to be managed through this program. The ISRP recognizes that there could be reasons of coordination and efficiency involved but technical review of the CWT program becomes substantially more difficult.

The coded-wire tag (CWT) program has been fundamental to the management of chinook and coho salmon coast-wide. Before the development of the CWT, catches of specific stocks were unknown and sustainable exploitation rates of stocks could not be assessed (other than by the trend in their spawning escapements). Trends in spawning abundance may result, however, from

over-exploitation or decreased survival, or the interaction of exploitation and declining stock productivity (habitat impacts). The development of the CWT program and the establishment of a coast-wide recovery program allowed for the development of quantitative assessments of life history statistics for chinook, coho, and steelhead. As noted in the proposal, this tool allows estimation of catch and age distributions in fisheries, exploitation rates and patterns by fishery, and estimation of annual survival rates (from point of release to adult return). By the early 1980's, the CWT had become an essential tool for stock assessment and management and provided the technical basis for rationalizing ocean fishery exploitation under the PST and domestic agencies. This tool though is now under increased pressures due to the development of mass-mark selective fisheries and the need to implement electronic sampling for coded-wire tags.

The rationale for this proposal is to provide comprehensive stock assessment and hatchery production monitoring to regional management entities and all researchers. The program requires two components: tagging of representative groups of fish (by species, stock, brood year, etc.), and recovery of the tags in fisheries and spawning escapements. In the mid-1970's, a coast-wide agreement requested all recovery agencies to sample 20% of commercial salmon catches for the recovery of CWT. While this percentage was not based on any statistical principle, it has been adopted as the "standard" rate of sampling in catches. As in any mark-recapture program, however, the rates of tagging and recovery should be dependent on the objective of the program. Consequently, the ISRP has previously recommended the CWT program review the "30 observed recoveries" guideline that is quoted in the proposal. That value was determined during a period of good marine survival and well supported sampling programs. During periods of poor marine survival and/or reduced sampling (due to budget constraints), agencies would be well advised to increase the numbers of tags released, depending on the accuracy and precision desired in their programs.

Further, we re-emphasize two points previously presented by the ISRP:

1) It is still not possible to place tagging and recovery programs of this CWT program in a Regional context. For example, we are only notified of the requests of additional tagging or existing sampling programs. How can this be examined in a technical context without a comprehensive description of the supported tagging programs and related objectives? Do the current tagging programs address all regional concerns, or are the best tagging programs being supported, are sampling programs meeting agency needs, etc.?
2) The clarity of presentation would be dramatically enhanced by the use of a flow chart or other device to visually depict overall program structure and how subprograms fit into that structure, overall budget, etc. With so many agencies and tasks role into one program, it is not possible to advice the Council on the use of BPA funds or the technical rigor of programs funded by these resources.

Rather than a list of specific points in this huge program, the ISRP requests responses to questions in the above text, and to five more general program issues:

1) Are the current tag allocations appropriate to meet the needs of Regional managers and the recovery priorities of the ESA stocks? In your opinion, how should this be assessed and presented for technical review?
2) Are the current recovery programs and associated data appropriate to meet the needs of Regional managers and the recovery priorities of the ESA stocks? In your opinion, how should this be assessed and presented for technical review?
3) Given the development of mass-mark selective fisheries, what are the additional costs imposed on this program, are the electronic sampling programs and equipment adequate and how is this

being monitored (e.g., verification of wand performance, checks for missed marks, sampling coverage of fisheries)?
4) The complex of tasks outlined in this proposal must be clearly identified into sub-tasks by activity, budget, funding source, and responsibility (i.e. which agency or group). Critical linkages should be identified and comment made on whether funding of these linkages is assured, at risk, etc. Are the data involved in these linkages adequate? For example, if PMSFC is responsible for run reconstruction (through this proposal), are escapement monitoring programs adequate for this assessment method, are inter-dam loss values included, etc.?
5) During presentations and discussion, reference was made to a Regional review of tagging programs. What other Regional reviews of tagging are being conducted, by who, and how is this proposal's staff integrated with any Regional reviews?
6) Given the importance of this program to Regional assessments and coastwide obligations for sampling, it is probable that funding for this program will continue. How will program managers ensure that recommendations that develop from this review and from past reviews are addressed?
7) Various aspects of this proposal are dependent upon other labs or agencies to complete their sampling, decoding, etc. Are there critical bottlenecks or consistent problems in these other programs that limit the success of this program and utility of the data?

Further, there are some specific questions concerning budget items that have been noted by the committee:
· the budget for statistical consulting (>$128k) seems high, how was this determined? Are Indirect cost is still being charged on the CWT purchase and if so, why?
· Task 1.b indicates that $20,000 is allocated to sampling SAFE fisheries, why does this program pay for that program and are there plans to recover these costs?
· With the comments about handle-held data loggers and need for electronic sampling for CWT, is zero the correct entry for Capital in Section 8? Do the agencies purchase that equipment?

Action Agency/NMFS RME Group Comments:
STATUS MONITORING SUBGROUP --
198201301 - Coded-Wire Tag Recovery Program
198201302 - Annual Stock Assessment - Coded Wire Tag Program (WDFW)
198201304 - Annual Stock Assessment – Coded Wire Tag Program (ODFW)
198906500 - Annual Stock Assessment - Coded Wire Tag Program (USFWS)

(These 4 proposals were considered as a block.)

These proposals do not claim relevance to either RPA 180 or 181; they list only hatchery-release groups as being tagged, although Short Descriptions and Abstracts for some proposals indicate wild populations will also be assessed. Proposal narratives indicate that the tagged hatchery fish should be fairly representative of wild fish in migratory patterns, timing in the fisheries, etc., but the proposals do not suggest which ESUs or wild stocks might be represented by which hatchery stocks being tagged. However, absent direct application to RPAs, CWTs may be very useful for estimating harvest of similar wild stocks in monitored fisheries, which would apply to status monitoring performance standards (e.g., stage-specific survival).

For many stocks addressed by these proposals, release locations are Bonneville Pool or below Bonneville, so groups are exposed only to small reaches of the mainstem/estuary migration corridor and part of the inriver fisheries. PIT-tagging projects are probably better for monitoring smolt-adult-returns of listed stocks than are CWTs.

Sponsor may wish to clarify which ESA-listed stocks, if any, might be represented by the proposed release groups and the type of resulting data that might be applicable to those listed stocks.

OCEAN AND ESTUARY SUBGROUP -- Potential action items addressed - 165; 166; 174; 179; 184. Includes estuary and part of ocean in sample area. This proposal needs to be coordinated with proposal 35046 and 30007 which may be more effective means of tracking movement and habitat use, and the work that John Ferguson of the Northwest Fisheries Science Center is doing on acoustic tags to assess potential duplication of effort and do a better job of developing trend data on delayed mortality. It also needs to be coordinated (it has to some extent in the past) with the Dept. of Fisheries Oceans Canada, US/Canada Shelf sampling cruises, funded since 1998 under project 1998-014 and now proposed as 30010.

ISRP Remarks on RME Group Comments:
RME comments concerning how representative tagged stocks are of an ESU should be addressed in a Regional review of tag allocations but some of the other RME comments are simply incorrect and/or poorly advised.
1) "PIT-tagging projects are probably better for monitoring smolt-adult-returns of listed stocks than are CWTs." These tags would only be better for data collected in-river but there is no sampling for PIT tags in ocean fisheries, there would be no historical perspective for perspective, and stock coverage comparable to CWT would be prohibitively costly.
2) The development of acoustic tags "which may be more effective means of tracking movement and habitat use" maybe true but that has never been the application of CWT. Such a statement demonstrates a misunderstanding of the value of different types of tags. Acoustics tags likely will provide a better research application for their intended use but they will never provide the monitoring capability of CWT.

The CWT program has been an integrated coastwide program since 1975 and is annually coordinated through the Regional mark coordination meeting and two technical committees of the Pacific Salmon Treaty. The CWT is actually a commitment in the Memorandum of Understanding of the 1985 and 1999 Pacific Salmon Treaty.

The ISRP agrees that there is a need to ensure that the CWT provides the necessary stock coverage and assessments needed for salmon recovery, but there must be a clear understanding of the applications of different tags and their relative importance.

ProjectID: 198201302

Annual Stock Assessment - Coded Wire Tag Program (ODFW)
Sponsor: ODFW
FY03 Request: $218,132
5YR Estimate: $1,157,132
Short Description: Apply coded-wire tags to production releases of coho and chinook salmon at ODFW Columbia Basin hatcheries for stock assessment of hatchery and wild salmon populations. Evaluate survival, contribution and stray rates of hatchery-reared salmon.
Response Needed? Yes
ISRP Preliminary Comments:

General ISRP comments on CWT Tagging #198906500, #198201302, and #198201304
These proposals are tagging components of the Columbia Basin coded-wire tag program (proposal #198201301) submitted by USFWS, WDFW, and ODFW respectively. The program goal for these three proposals is to tag enough coho and chinook salmon from each hatchery to estimate survival and distribution in the ocean, in freshwater fisheries and escapement areas. The proposals would provide continuation of a consistent time series of survival and distribution data to estimate abundance trends of selected hatchery stocks. In addition, the tagged hatchery stocks will be used to provide data relevant to the management of natural stocks, including many that are listed as threatened and endangered under the ESA.

The proposals are intended to create a comprehensive post-release production monitoring program for Columbia Basin salmon hatcheries. The projects were initiated to address the problem of incomplete basin-wide stock assessment that lacked representative tagging of hatchery production groups. The projects were also established to monitor and evaluate hatchery production in terms of adult returns. Each proposal provides an extensive description of the tagging program and how they related to regional programs and individual projects. The brief history of project performance focuses primarily on funding levels and numbers of fish tagged by each of these agency projects. Objectives and tasks are limited to tagging fish and the recovery of those tags. The description of tagging methods appears to be adequate. There is, however, very little to be reviewed from a scientific basis.

Any assessment of the stocks to be tagged should be considered within an overall Basin context and priorities set based on ESU information needs or other specified agency objectives. These tagging programs should be considered with the CBFWA M&E proposal (35033) and overall use of CWT within the Columbia Basin. There many not, however, be any need to change the tagging of the stocks included in these proposals since the overall costs are relatively minor. These costs though could increase substantially if mass-mark selective fisheries impact these stocks. If the stocks that are currently being tagged under these proposals are subject to any mass-mark selective fishery, then there is a need to implement double-index tagging (doubles tagged allocated) as recommended by the SFEC of the PST (Selective Fishery Evaluation Committee. 2002. Investigation of methods to estimate mortalities of unmarked salmon in mark-selective fisheries through the use of double index tag groups. TCSFEC(02)-1. Pacific Salmon Commission, Vancouver, BC., available at www.psc.org/Pubs/sfec02-1.pgf). If these stocks are not be included in the double-index tagging, then they must be associated with another DIT stock so that the difference between marked and unmarked mortality can be accounted for.

There are also small issues of differences in budgets that contract managers should review, but the only points for response to the ISRP are:

1) Are these tagging programs integrated with Regional tagging plans and how were these stocks selected for including in these proposals?
2) Since double-index tagging is not included in these proposals, how is the additional mortality in mass-mark selective fisheries being accounted for?
3) An issue not addressed in any proposal is how tagging quality is assessed, and how consistently application standards are being met? For example, how long are tagged groups held to evaluate tag loss before release? Is any effort made to inspect tagging quality (placement of the CWT, quality of fin clip, etc.)?

ProjectID: 198201304

Annual Stock Assessment - Coded Wire Tag Program (WDFW)
Sponsor: WDFW
FY03 Request: $334,412
5YR Estimate: $1,793,273
Short Description: Apply coded-wire tags to production of coho and chinook salmon at WDFW Columbia Basin hatcheries for stock assessment of hatchery and wild populations. Evaluate survival, contribution and stray rates of hatchery reared fish and compare to wild fish.
Response Needed? Yes
ISRP Preliminary Comments:
See general comments addressing #198906500, #198201302, and #198201304 under 198201302.

ProjectID: 198906500

Annual Stock Assessment - CWT (USFWS)
Sponsor: USFWS
FY03 Request: $119,268
5YR Estimate: $672,288
Short Description: Apply coded-wire tags to production groups of salmon at federal hatcheries not tagged by other programs. Prepare report on survival trends and distribution of anadromous stocks from 11 federal hatcheries for basin-wide stock assessment.
Response Needed? Yes
ISRP Preliminary Comments:
See general comments addressing #198906500, #198201302, and #198201304 under 198201302.

ProjectID: 35021

Purchase And Evaluation of Automated Marking and Tagging Systems (MATS)
Sponsor: ODFW
FY03 Request: $843,396
5YR Estimate: $2,564,454
Short Description: ODFW proposes to purchase and further evaluate equipment designed to mass mark hatchery reared juvenile fish. The technology for automated fin marking and/or Coded Wire Tagging has recently been advanced and new equipment is available.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
This proposal is technically inadequate. Do not fund, no response requested. The Oregon Department of Fish and Wildlife (ODFW) proposes to purchase and further evaluate automated systems for mass marking hatchery reared juvenile salmon and steelhead. The proposal would purchase 3 systems over the next 3 years at an annual cost of nearly $900,000.

However, the proposal provides no technical background to the mass-marking proposals or past evaluations of mass-marking, not even a description of what it is! There were essentially no methods presented only a short list of tasks. The presentation of this proposal contained much of the material that could have been incorporated into the proposal. For example, the oral presentation made clear that evaluation of the equipment has been adequate to justify incorporating the automated systems into current operations. Fundamentally, this proposal requests BPA to purchase 3 trailer marking systems that would save the State substantial funds each year. Unless there is an error in this simplistic logic, the State should purchase these systems and recover their costs over time.

Conservation Enforcement

General Comments on Conservation Enforcement Proposals: 35051, 35052, 200005500, 20005600, and 195505500

A response is needed for this set of law enforcement proposals. The set of law enforcement proposals stresses the interdependency between public education and effective law enforcement. A basic question these proposals should address is how to determine the best mix of enforcement personnel and education to produce the greatest net enforcement benefits.

The sponsors should also address concerns from the earlier BPA/Council review of the law enforcement program. Each proposal should justify the size of a core staff necessary for effective enforcement and place the current request in the context of core staffing needs. The Umatilla enforcement staffing level at .5 FTE appears to be the most deficient. The proposals should also describe the potential for matching effort; e.g. the Colvilles propose to train two officers from the existing force. Officers should be trained in fish and wildlife (as with the NPT).

More thought should be given as to how the impact of public education – e.g . changes in public awareness or increases in enforcement effectiveness – will be measured. Metrics to measure success and evaluate program performance need to be identified. These metrics and the monitoring program they enable should be described in advance of program enhancement.

ProjectID: 200005600

Protect Anadromous Salmonids in the Mainstem Corridor
Sponsor: CRITFE
FY03 Request: $455,787
5YR Estimate: $2,518,411
Short Description: Protect anadromous salmonids from illegal take throughout the Columbia Basin -- with emphasis on conservation of depleted stocks. CRITFE will concentrate protection in the Zone 6 migration corridor (Bonneville to McNary dams) and focus on adult spawners.
Response Needed? Yes
ISRP Preliminary Comments:
This is a well-written proposal to increase the level and effectiveness of enforcement in Zone 6 tribal fishery and tributaries. Its relation to the Fish and Wildlife Program is clear. Objectives, tasks and methods are clearly defined. The proposal takes an evaluative approach to the components of enforcement.

Last year the ISRP recommended that outyear funding be contingent on the provision of more complete information on the magnitude of the illegal harvest problem and the expected benefits to fish and wildlife from enhanced enforcement. The ISRP also asked for more detail on how efficiency and compliance will be improved and cross-zone enforcement coordinated through this project.

Statistics are provided on the increase in patrol effort enabled by the funding of last year's project. Number of contacts and violations reported both increased. Seizures of illegal gear and fish increased. More detail is also provided on the effectiveness of the enforcement activities in terms of inputs, outputs, and outcomes. Patrol hours, enforcement contacts and arrests all increased between 1999 and 2000. The inclusion of specific monitoring criteria in tasks is very positive.

This proposal seems to demonstrate a potentially successful enforcement program. The incidence of violations appear very low with the current effort. Law enforcement is an effective tool and component part of the region's effort toward recovery of endangered species. Compliance rate for harvest in Zone 6 appears high, which is laudable.

In addition to the general comments provided above, the proponents should address the following comments specific to this proposal:

- Development of the website (www.Eco-Law) is listed as a task in proposal 35052. How are the activities in the two proposals different?
- More information on outcomes of interagency coordination should be provided.
- The funding request appears to be primarily for four FTE plus associated equipment (cars, radios, boats and air support). The budget needs review for particulars as this amounts to about $115,000 cost per FTE. The total increase in patrol hours for similar funding in 2000-2001 resulted an increase in patrol hours from about 7700 hours to 9100 hours, or about 1400 hours. This seems like a relatively low amount of leverage for an additional 8000 FTE hours added to the budget. The response should address why four FTEs increases patrol time by less than 15% of the hours being paid for by BPA.
- The results show total numbers of contacts and citations increased proportionally to the increase in patrol hours. Thus, it appears that the arrest rate is directly proportional to the effort rate. This suggests there is no increased deterrence at current levels of patrolling or fishing. In examining the crime rate (arrest/contacts), it is very low with compliance reported

from 95%-99% (Table 10). Thus an important question is whether the costs of the BPA program dollars are significantly leveraging results over and above "normal levels of funding". For example, a very tangible benefit is number of illegal fish seized and live fish released. A total of 38 salmonids and 72 sturgeon were released alive. A total of 152 other dead fish were also seized. These are tangible benefits. But in proportion to the total run of fish or the total numbers of fish harvested, these represent an extremely small proportion of the population of fish. Assuming that without the additional funding, about 25% fewer fish would have been intercepted, the BPA dollars appear to be purchasing about 9 live salmon and 18 live sturgeon. This is based on the ratio of increased contacts and violations being about proportional to the increased hours of patrol.

- There is clearly a "tipping point" in law enforcement when insufficient force will facilitate a significant increase in violation. This is well known for automobile speeding. Unpatrolled highways have much higher violation rates than where motorists see patrol cars and citations issued. The question is how much is enough. It appears that CRITFE has been doing a good job historically in enforcing harvest. Compliance rates have been high and remain high. They should better justify why an additional half million dollars would be well spent considering the above numbers.
- The statistics that CRITFE uses to justify its operations are traditional and as such lack sufficient rigor to actually discern cause and effect questions and hence an effective "Adaptive Management" program. Quoting Peters et al., p.25, they use it to support the idea that law enforcement is a cost effective tool, which it is. However, the key phrase within the quote "while the outcomes are difficult to measure", places the problem front and center. They are difficult to measure because proper data have yet to be collected to discern effectiveness. These questions were evaluated at length in over 200 pages of Peters et al., including using new techniques of data collection, public involvement and experiments. If the proposal were clearly aimed at these new ideas and changes, it would be far more attractive. As it stands, much of the effort, data collection and M&E proposed is relatively unchanged from the historic approaches of the 1990's and critiqued in Peters et al.
- The proposal is vague about how it will actually accomplish "adaptive management". The author should explain in more detail what new data, and testable hypotheses can be used. Table 11 attempts to do this, however they are either untestable due to complex alternative hypotheses that could explain changes in metrics or the data already suggest that the program has reached a zenith in compliance at least for harvest violations. For example: Salmon passage through the FCRPS corridor is already as high as 98% to LGR and missing fish have not been statistically adequately accounted for because radio tag experiments are not designed to assess anything except "dam effects". Previous recommendations to track radio-tag harvested fish and tributary migrations were rejected primarily for policy rather than scientific reasons. Such experiments might have both scientific as well as crime deterrent value.
- Other metrics in Table 11 have not been historically recorded or analyzed but may be valuable such as compliance rates for pump operations, diversions and habitat destruction. However, no information is provided on enforcement in these arenas or the types of data that would be collected to demonstrate improvements over the status quo or baseline.
- Resident fish are generally not endangered, thus unless CRITFE has plans for bull trout, this is not supportable by the NPPC program. Although benefits accrued toward sturgeon management are also laudable, these too are not the primary goal of the NPPC program.
- Although interagency coordination/cooperation is an historic mode of operation, it is not clear how NPPC support enhances cooperation or leverages baseline efforts. Please indicate what metrics will be used to show the additional benefits of "more cooperation" over and above baseline cooperation.

- Peters et al.1997, recommended some new ideas for public involvement to enhance compliance. Few if any of those ideas appear within the proposed scope of activities.
- Removal of ghost nets or unmarked gill nets was considered a major task in the 1990's. Has this problem been solved? It represents a potential avenue of value for which a metric needs to be developed.

ProjectID: 200005500

Enhanced Conservation Enforcement for Fish & Wildlife, Watersheds of the Nez Perce
Sponsor: NPT-CE
FY03 Request: $511,210
5YR Estimate: $2,824,759
Short Description: Increase conservation law enforcement (CE) protection of fish, wildlife, critical habitats and other natural resources within watersheds managed by the Nez Perce Tribe. The CE program will be coordinated with all of the NPT resource enhancement projects.
Response Needed? Yes
ISRP Preliminary Comments:
This well written proposal is similar to those submitted by the Colville and Umatilla Tribes for increased and enhanced enforcement presence and education to protect T&E stocks and their habitat. It also takes an evaluative approach to the enforcement problem and builds in continual monitoring, evaluation, and adjustment. Project activities are evaluated in terms of inputs, outputs, and outcomes.

Last year the ISRP asked for a more complete background on the magnitude of the illegal harvest problem. This is provided in the form of identification of species of concern, trends in calls to enforcement and numbers of trespass. Pre-and post funding of enhanced enforcement activities are compared in term of numbers of contacts and reports of violations, but with specific note that linking the changes in enforcement effort to biological outcomes will require more evaluation, to be done in subsequent years of the project.

In addition to the general comments provided above, the proponents should address the following comments specific to this proposal:
· More detail should be provided on the metrics used to evaluate progress toward meeting objectives.
· How would you determine whether voluntary compliance is optimized, or whether enforcement efficacy and accountability is maximized? Probably the best that can be done is to measure improvement to some specified standard.
· Specify the type of coordination with other law enforcement units.

ProjectID: 195505500

Umatilla Tribal Fish & Wildlife Enforcement
Sponsor: CTUIR
FY03 Request: $178,073
5YR Estimate: $983,829
Short Description: Increase law enforcement (LE) protection to fish, wildlife, their critical habitats and other essential natural resources within watersheds managed by CTUIR. The program will be coordinated with all other resource enhancement projects of the tribe.
Response Needed? Yes
ISRP Preliminary Comments:
This proposal is similar to those presented by the Colville and Nez Perce. All include increased enforcement, enforcement coordination among agencies, and public awareness.

In addition to the general comments provided above, the proponents should address the following comments specific to this proposal:
· More detail should be provided on the metrics used to evaluate progress toward meeting objectives.
· How would you determine whether voluntary compliance is optimized, or whether enforcement efficacy and accountability is maximized? Probably the best that can be done is to measure improvement to some specified standard.
· Specify the type of coordination with other law enforcement units.

ProjectID: 35052

Conservation Enforcement to Enhance and Restore Fish & Wildlife Resources of the Upper Columbia River under Jurisdiction of the Colville Tribes
Sponsor: CCT
FY03 Request: $245,636
5YR Estimate: $1,357,294
Short Description: Protect anadromous salmonids from illegal take throughout the Columbia Basin - with emphasis on conservation of depleted stocks. We will focus fish & critical habitat protection - Chief Joe tailrace, Wells Pool and Okanogan R. fisheries/water diversions.
Response Needed? Yes
ISRP Preliminary Comments:
This is a well-written proposal to add enforcement personnel to the Natural Resources Law Enforcement Division of the Colville Tribes. The additional enforcement presence would be directed toward protection of ESA listed stocks and their habitat through training, fishing compliance monitoring, water regulation enforcement, inter-agency coordination and public education. The proposal states that the project aims not only to increase the level of enforcement in the 3 million acre jurisdiction but also to increase the efficiency of the enforcement through interagency coordination and to increase compliance through greater public awareness of threats to listed stocks.

The potential benefits to fish and wildlife seem high, and the cost reasonable. A strength of the proposal is that it emphasizes expected outcomes throughout all tasks.

An extensive technical background is provided, including a complete description of present and historical Colville Tribal fisheries that includes detail on the nature of the issues facing each

fishery and a history of the development of the Tribes' legal authority. Protection needs of critical habitat and water withdrawals are also detailed. The nature of the present enforcement effort is also described in detail.

The description of monitoring as a component of the existing enforcement program is thoughtful and evaluative enough to inspire confidence that an appropriate M&E plan will be developed for the enhanced enforcement program in its first year, as the proposal indicates. The quarterly schedule for producing monitoring and evaluation reports will ensure continual assessment of effectiveness and allow scope for in-season changes.

The rationale and significance to regional programs is clear. Objectives, tasks, and methods are adequately described. The proposed project had strong relationships with other enforcement and recovery projects that are implicit throughout but could be made more explicit in the "relationships to other projects" section.

In addition to the general comments provided above, the proponents should address the following comments specific to this proposal:

· Do enforcement plans currently exist?
· An important component of this proposal is education of the public and "conservation" training of enforcement officers. Detail is given on the educational tools to be used, but more thought should be given as to how the impact of that education – e.g . changes in public awareness or increases in enforcement effectiveness – will be measured. For example, will it be enough to have officers attend the ESA enforcement overview training, or will there be some evaluation of the effectiveness of that training?
· Are educational programs already in place? What has been learned from their successes and failures?
· Will coordination with other enforcement efforts be done primarily through the website or through other means? Is the website operational yet, to be developed during this project?

ProjectID: 35051

Evaluate Feasibility of a System-wide Multi-Agency Fish, Wildlife & Habitat Conservation Enforcement Web-Based Data Center
Sponsor: Steven Vigg & Company
FY03 Request: $41,347
5YR Estimate: $41,347
Short Description: Develop a Columbia Basin web-based data center - within a GIS framework - to facilitate conservation law enforcement data compilation & analysis and information sharing for enforcement programs, resource managers, and public information & education.
Response Needed? Yes
ISRP Preliminary Comments:
The existence of the web-based data center would probably increase the efficiency of interagency enforcement coordination and would most certainly improve the monitoring and evaluation within and across enforcement programs. The communication link could be valuable and could include an email alerting system.

However, it is not clear from the proposal what the web-based data center would provide over what is provided by the existing Eco-Law site. Could the Eco-Law website be expanded to meet

enforcement coordination needs? How does this proposal relate to the tribal enforcement proposals in terms of the www-based tasks?

The PIs experience with enforcement monitoring and participation in several related tribal enforcement projects make it likely that this proposal will achieve its stated objectives. The enforcement data center offers potential benefits to fish and wildlife at low cost.

The proposal lacks specifics about the data to be collected and its purpose. The effort seems primarily to place existing data and databases in a web accessible format. Large sums of money were expended during the 1990's for a law enforcement database. Much of that effort is no longer funded. Two projects remain related to tribal efforts on mainstem and tributaries. Peters et al. (1997) analyzed the previous databases and were generally supportive that law enforcement was a valuable tool in ESA recovery efforts. However, that report suggested significant inadequacies of the database to determine whether the efforts of law enforcement were being efficient and effective. That was because there was no direct link between cause and effect variables being collected. For example, if large numbers of hours of law enforcement resulted in high numbers of enforcement actions (positive correlation) then justification for the effort was deduced in high citation rates. If the opposite occurred with high enforcement hours and low citation rate (negative correlation) then law enforcement could take credit for lower numbers of violations because there was the "deterrent" factor. Such data make it impossible to "objectively" evaluate and manage law enforcement effort via statistics.

There is no doubt that law enforcement is needed and has both deterrence and a punitive effect. Logic tells us that without law enforcement (or the threat of it), poaching and illegal harvest commercial or sport, would likely get worse. "Community Policing" was offered as an alternative means to involve the public and fishers (Peters et al., op.cit.). The proposal suggests such data would be useful and valuable to educating the public. The proposal should clarify how the data would be used in public education. How will outreach be conducted to ensure that the existence of the web-based data center achieves greater public awareness?

The proposal suggests coordination with radio-tag efforts of University of Idaho. Unfortunately, unless specific hypotheses about illegal harvest, and experiments are designed to test those hypotheses, determining the loss rate of salmon as they migrate mixes all of the causes of mortality because the fate of missing salmon are generally unaccounted. Until a specific set of hypotheses outlining exactly what data should be collected, how it will test or evaluate law enforcement effectiveness, this effort proposed herein will be simply an extension of a old database that tracked effort, tracked crime rate, number of fish lost to poaching in illegal nets, expenditures, and total violations rates. But it will not tell us whether we need more, less or different forms of law enforcement actions.

Other concerns include the following: The level of future effort to populate, analyze and report on the database collection will be far greater than designing the pot in which to put the data. Thus, implied in this web database effort are large future investment costs. Those investments, to be worthwhile, must have a better handle on exactly why specific data will be collected, how it will be used. There is a high degree of value in law enforcement data if we design the proper framework for that data. Thus the key question for the researchers focuses on the findings of Peters et al. A future proposal should carefully weigh those recommendations and incorporate them into the "new" law enforcement database.

Fish and Wildlife Program Coordination, Analysis, and Communication

ProjectID: 199800401

Electronic Fish and Wildlife Newsletter
Sponsor: Intermountain Communications
FY03 Request: $179,800
5YR Estimate: $993,511
Short Description: Delivers by e-mail (and posted on the web) to policymakers, Basin stakeholders, and general public a weekly electronic newsletter containing objective, timely, summary information about Columbia Basin fish and wildlife issues.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable. Last year the ISRP noted that although the Columbia Basin Bulletin is widely distributed and respected as a quality product, the proposal to fund the effort was inadequate. This year the proposal corrects those weaknesses by establishing the programmatic need for information to enhance public involvement, coordination of recovery programs, and adaptive management. The proposal presents some summary statistics representing various components of CBB use, as an indicator of demand.

Mechanisms of data collection are described, but details about quality control are lacking, as is M&E methodology to assess the impact of CBB. The oral presentation was very informative about quality control, and some of this information should be included in the proposal.

ProjectID: 35026

On-line Subbasin Planning/Watershed Newsletter
Sponsor: Intermountain Communications
FY03 Request: $115,200
5YR Estimate: $635,903
Short Description: Delivers on-line news, information about Columbia Basin subbasin planning and other locally based fish and wildlife restoration efforts to public and private stakeholders and interested parties.
Response Needed? No, Fundable
ISRP Preliminary Comments:
Fundable. This proposal is to extend the approach used in the Columbia Basin Bulletin to subbasin watershed planning. The project will provide an on-line subbasin planning newsletter for the use of agencies, watershed councils and the public in the 52 subbasins. It will build on the experience of the Columbia Basin Bulletin and share staff and equipment with the Bulletin.

The proposed newsletter, as an information clearinghouse, is clearly relevant to regional programs, and, based on the performance of the Bulletin, is likely to provide a timely, useful communication product that will enhance information transfer and education within and among subbasins. The budget is extremely modest for an effort of this magnitude. By sharing facilities and personnel with the CBB the newsletter would be able to be a cost-effective way to add value to the subbasin planning process.

The oral presentation was informative about methods to be used to monitor and evaluate performance of the newsletter. The proposal would be strengthened by adding a description of these methods.

Suggestions for the newsletter:
· include a calendar of upcoming events or be linked to the NPPC or other regional coordinating calendar
· develop an appendix to the newsletter listing new publications (popular, grey literature and professional publications) on topics that are of interest to subbasin planning.

ProjectID: 199800800

Regional Forum Facilitation Services
Sponsor: NMFS
FY03 Request: $153,300
5YR Estimate: $766,500
Short Description: Provide professional facilitation services to enhance communication, assist in conflict resolution, and improve decision-making capabilities among participants in the NMFS Regional Forum Process which addresses hydropower operations for salmon.
Response Needed? NA
ISRP Preliminary Comments:
The proposal is to continue to provide facilitation to the Regional Forum and all its teams. As with last year's proposal, the proposal does not establish why such extensive facilitation services are needed, nor does it provide any evaluation of success from past facilitations. The ISRP has made similar review comments for the past three years.

ProjectID: 199803100

Implement Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Assessment and Restoration Plan Now
Sponsor: CRITFC
FY03 Request: $314,093
5YR Estimate: $1,735,562
Short Description: Provide effective and efficient watershed restoration through coordination and support of tribal restoration planning and project implementation consistent with the Wy-Kan-Ush-Mi Wa-Kish-Wit and the NPPC Fish & Wildlife Program.
Response Needed? Yes
ISRP Preliminary Comments:
This proposal submitted for mid-term review is to continue the coordination of tribal watershed activities, the previous review asked that more detail be provided on activities to be conducted by subcontractors. A brief technical background is presented. The project is relevant to several regional programs and tied to other projects. A summary of project achievements to date is presented. Detail is presented on the types of activities conducted by the CRITFC Watershed Department.

The project would be improved by taking a more targeted evaluative approach to coordination. New activities should be prioritized to reflect what has been learned about watershed restoration. A plan to monitor and evaluate project effectiveness is needed. How does the project determine whether coordination processes are effective?

More detail should be provided in the proposal on project results and accomplishments to date. Provide details and evaluation of the restoration handbook. Methods should be described with more specificity. Responsibility to other tribes if any should be clarified.

The budget should be evaluated. Several budget components seem high.

Action Agency/NMFS RME Group Comments:
STATUS MONITORING SUBGROUP -- Proposal indicates applicability to RPA 180.
Objectives and tasks that appear relevant (paraphrased):
3.b. Promote incorporation of standards in Tribal Restoration Handbook…
4.c Cooperate with StreamNet to gather digital data (GIS) on watersheds to identify and address data gaps.
5.b. Train and use Salmon Corps members to collect necessary field data where gaps exist for assessments and project monitoring.
7.b. Coordinate development of a comprehensive water quality monitoring program for the Columbia River, develop a protocol and coordinate installation of a comprehensive thermograph system in the lower tributaries and dam reservoirs throughout the Columbia and Snake rivers to monitor water temperature.
Proposal lacks technical details, reports and documents (e.g., Handbook) describing project methods and results apparently are not available on either BPA or sponsor web pages, so cannot evaluate how any of these activities might satisfy RPA 180 or compare to RM&E guidelines being developed regionally. Need results and data.

OCEAN AND ESTUARY SUBGROUP -- Potential action item addressed - 180. This proposal claims to support 23 different RPAs but is so broad and vague it is not possible to clearly establish that support. It could possibly be focused on estuary and RM&E needs as the CRITFC Wy-Kan-Ush-Mi Wa-Kish-Wit report is one that the NMFS BO has supported.

ISRP Remarks on RME Group Comments:
The ISRP agrees with the RME comment that the proposal is so broad it is difficult to assess its support for particular RPAs. More information should be provided to support the claim of RPA support, specifically with regard to RPA 180

ProjectID: 35056

Develop Human Resources Necessary to Exercise Co-Management Responsibilities
Sponsor: CRITFC
FY03 Request: $405,024
5YR Estimate: $2,217,111
Short Description: This proposal will assist the tribes to develop human resources necessary to exercise their co-management responsibilities, effectively manage production facilities and implement ecologically sound artificial production programs.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not fundable. This proposal is to coordinate and implement artificial production training programs for members of the Warm Springs, Umatilla, and Nez Perce tribes. The Yakama Nation is submitting a separate proposal for training programs. Training includes community college courses, university courses, short courses and workshops.

The basic tasks of this project are to establish goals and objectives for a training program and to see that students are recruited and the program is implemented. The proposal is brief and does not provide detail as to how these tasks will be accomplished. While the ISRP supports the idea of providing educational opportunities in artificial production to tribal members, we question whether it is necessary to develop custom programs rather than using existing educational programs followed by internships at tribal hatcheries.

The budget is large and does not include explanation of its various components. The project is very heavy with administration costs. For example, the training coordinator is budgeted at more than $100k. What is the reason for this large a budget? The responsibilities of this person are to be a liaison between tribal education programs, colleges and universities, and CRITFC.

ProjectID: 198906201

Fish and Wildlife Program Implementation
Sponsor: CBFWA
FY03 Request: $2,217,415
5YR Estimate: $11,744,354
Short Description: Coordinate fish and wildlife participation in regional mitigation activities in implementation of the FWP, annual project and funding recommendations, rolling provincial review, subbasin planning, program amendment recommendations, etc.
Response Needed? NA
ISRP Preliminary Comments:
Not applicable, not amenable to scientific review.

ProjectID: 35054

Engaging the Public in Watershed Planning; A Tool Box for Cultural Shift
Sponsor: CBFWA
FY03 Request: $278,391
5YR Estimate: $941,612
Short Description: WATERSHED LEGACY will demonstrate the principles of participatory planning in partnership with Walla Walla and Tualatin communities in developing a set of face-to-face and web-based tools and processes for citizen engagement in watershed planning.
Response Needed? No, Not Fundable
ISRP Preliminary Comments:
Not fundable. This proposal seeks funds to develop strategies to increase public participation in watershed planning. It proposes to test the Watershed Legacy approach that it asserts has proven effective in Walla Walla. We agree with the proponent that the subbasin planning process, as it currently stands, is fragile.

While the watershed legacy approach might be successful in facilitating grassroots support that subbasin planning will require and to help gain local acceptance of solutions to the decline in fish and wildlife resources, the likelihood of success cannot be determined from the information presented in the proposal.

The proposal is inadequate for scientific review. It takes the approach of selling the success of Watershed Legacy rather than evaluating its effectiveness. No explanation is provided about the measures of effectiveness or why further tests are necessary in a different subbasin. Methods to

be used to accomplish the tasks are absent. E.g. how is a "needs analysis" done? What does it contain? How are the elements measured?

The claim is made that lack of efficient tools and processes embedded in local organizational and communications infrastructure is the primary problem in watershed planning. However, the tasks and method to develop the tools and databases and to monitor and evaluate the project are underdeveloped.

It is not clear that this group has a high probability of success in designing and implementing web-enhanced analytic and communication tools. Success probably depends on the enthusiasm and direct work of the proponent more than the tools they describe. The "bottom-up" collection of disparate datasets is problematic in terms of generating data useful for analysis.

No analysis of present problems or past success is provided. Observation of "control groups" is supposed to provide a test of the strategy's effectiveness, but no details on observational variables or metrics is provided. How is the participatory planning modeled? What are the ecological, economic, and social indicators?

ProjectID: 35005

Independent Economic Analysis Board
Sponsor: NPPC
FY03 Request: $170,000
5YR Estimate: $870,000
Short Description: Analyze the cost effectiveness of fish and wildlife projects as requested by the Northwest Power Planning Council. Help fulfill NW Power Act requirements for cost effectiveness determination of Fish and Wildlife Program and projects
Response Needed? NA
ISRP Preliminary Comments:
The proposal is a reasonable description of the background and context of he IEAB. The IEABs reviews have been of high quality and provide information useful to NPPC decisionmaking.

ProjectID: 199600500

Independent Scientific Advisory Board
Sponsor: CBFWF
FY03 Request: $681,876
5YR Estimate: $3,649,876
Short Description: Provide independent scientific advice and recommendations on issues related to regional fish and wildlife recovery programs under the Northwest Power Act, the Endangered Species Act, and tribal treaties.
ISRP Preliminary Comments:
Not applicable, conflict of interest.

ProjectID: 198907201

Independent Scientific Advisory Board Support
Sponsor: DOE/ORNL
FY03 Request: $100,027
5YR Estimate: $300,027
Short Description: Provide support through contract with DOE for Dr. Charles Coutant for the Independent Scientific Advisory Board (ISAB), for scientific advice to the NWPPC's FWP, NMFS's ESA program, and the Columbia River Basin Indian Tribes fish and wildlife programs.
ISRP Preliminary Comments:
Not applicable, conflict of interest.