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# **Review of Revised Mainstem Systemwide Proposals for Research, Monitoring, and Evaluation**

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# ISRP Review of Revised RME Mainstem Systemwide Proposals

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## **ISRP Review of Revised RME Mainstem Systemwide Proposals**

### **Background**

At the request of the Council and BPA, the ISRP reviewed five revised proposals from the Mainstem Systemwide project selection process that were modified to address research, monitoring, and evaluation requirements under the National Marine Fisheries Service's (NMFS) 2000 Biological Opinion (BiOp) on the Operation of the Federal Columbia River Power System. This is the second in our series of 2003 reviews related to Research, Monitoring, and Evaluation (RME) that are scheduled over the next few months. The first was our review of Request for Studies (RFSs) on hatchery and extra mortality BiOp gaps (see ISRP 2003-4).

Although this review was on a quick timeline (10 business days), a majority of ISRP members, including the Mainstem Systemwide review team, participated in the review, shared comments, discussed the proposals in detail, and reached the recommendations in the report by consensus. As with all ISRP proposal reviews, the ISRP reviewed the proposals 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.

The revised proposals reviewed here include one database related proposal (35048), three action effectiveness related proposals (35016, 35019, 35020), and one pollutant/water quality related proposal (35024). All the proposals are sponsored by NOAA Fisheries' Northwest Fisheries Science Center. Because these revised proposals were initially submitted in Mainstem Systemwide process, the ISRP reviewed the proposals in the context of other Mainstem Systemwide proposals. Specifically, there were five RME proposals related to action effectiveness in the mainstem-systemwide (35033, 35017, 35022, 35045, and 35050) and three proposals related to regional databases (198810804, 199601900, 35010) that were not revised for this review (see [www.nwcouncil.org/library/isrp/isrp2002-14.htm](http://www.nwcouncil.org/library/isrp/isrp2002-14.htm); pages 73-83). In addition, we conducted this review in the context of our ongoing dialogue with the NOAA Fisheries and Action Agencies' RME group, including our April 19, 2002 ISRP review of the March 27, 2002 "Draft Guidelines for Action Effectiveness Research Proposals for FCRPS Offsite Mitigation Habitat Measures" and the RME group's response to our review.

### **Recommendation**

The ISRP finds proposal 35019, "Develop and Implement An Integrated Subbasin-scale Status and Watershed-scale Effectiveness Monitoring Program for Salmonid Populations and Habitat," to be fundable, but finds the other four proposals "not fundable." They are not technically justified and do not make a convincing case that they will satisfy the requirements in the BiOp RPAs. Specific comments and recommendations for each proposal are provided below following general comments on the set of proposals and the process.

## General Comments

### *Conflict of Interest*

The ISRP continues to flag the issue of appearance of conflict of interest, which we have repeatedly raised in our reports and memos related to the RME group effort. Specifically, NOAA Fisheries' staff members are authors of the RPAs, key participants in the RME group and plan, and the sponsors of these revised proposals (the likely recipients of significant long-term funding). This active participation in all stages creates the appearance of conflicts of interest, which requires a deliberate process with independent review and open discussions between the Action Agencies, Council, NOAA Fisheries, and the fish and wildlife managers to alleviate concerns. There is no question that the Northwest Fisheries Science Center has a capable scientific staff that must play a strong role in recovery implementation and monitoring. However, like other proposals funded under the Council's Fish and Wildlife Program, proposals selected to meet RME/RPA needs should meet the scientific criteria of the ISRP's independent review.

### *Fairness of Iterative Review Process*

We continue to raise a fairness issue with the RME group selecting certain proposals to be reworked to meet RPA needs. In the Mainstem Systemwide review, the ISRP found some proposals designed to meet RPA/RME needs technically inadequate, but these proposals were selected for revision. This was the case for three of the revised proposals (35048, 35016, and 35020). This selectivity creates an iterative fix-it-loop for select projects that raises fairness issues with other projects, given the single pass through of the fix-it loop for other FWP proposals under ISRP review.

For example, the primary competition (or collaborator) for this set of proposals is the CBFWA Collaborative Systemwide Monitoring and Evaluation Program (CSMEP) project (#35033). We are aware that the RME group, Bonneville, CBFWA, and Council staff, and others are having ongoing dialogue about the CBFWA proposal, on how it may be integrated with the regional RME effort and whether it can be broadened beyond current CBFWA members in order to achieve full effectiveness. The CBFWA proposal addresses one of the major management deficiencies in the basin, namely the lack of a coordinated basinwide monitoring program. This project proposes to provide an urgently needed umbrella framework to: 1) collaboratively develop systemwide standardized M&E protocols; and 2) coordinate data collection activities, protocols, and standards. The basic objective of the project is to provide a coordinating mechanism for individual M&E projects rather than assuming all M&E activities into itself. The ISRP recommended this proposal as "fundable," and the ISRP hopes this and other Mainstem Systemwide proposals are given due consideration for funding or the same opportunities for revision to better meet BiOp needs as the proposals reviewed here.

### *Integrated RME Program*

Specific to the five revised proposals, the March 11, 2003 letter from Bonneville's Sarah McNary requesting the ISRP review asked that the ISRP evaluate these proposals as component programs of a single, concerted effort. The revised proposals do not demonstrate or describe a well-coordinated effort toward the development of a systematic and thorough approach to RM&E. Also, the revised proposals do not provide a pilot project for coordination with other

regional RM&E programs. Despite claims that these five proposals form an integrated approach to RME, it is hard to see the integration (sections describing integration with other proposals are lacking in most of the proposals). In fact it is easier to see 35019 being better integrated with other proposals outside this packet that propose similar work. With the exception of 35019, higher quality research that addresses RPA needs is available in other proposals, and tying these five proposals together is artificial and counterproductive.

#### *Pilot Programs*

Most of these proposals claim to focus on development and testing of methods, using pilot projects, but they do not give clear criteria for evaluation of the methods. How will they know when their objectives of testing pilot programs are met, or how and how much they fail, or how they may be modified? How do they envision using pilot studies to get to larger scale programs and needs? Just because these projects are of a monitoring nature does not mean that they should not monitor and evaluate their own results.

#### *Costs*

These proposals estimate a combine cost of about \$42.5 million over five years. If this is the typical cost of Monitoring and Evaluation, then it seems no money will be left available for mitigation, remediation, conservation, and restoration. Must monitoring be so enormously costly? This program seems off base in failing to match reasonable costs to other very important work. Developing a reasonably priced monitoring and evaluation program is especially important because it needs to be implemented long-term and requires support from current and future administrators who often see more value in pursuing “on-the-ground” projects based on perceived best practices despite the need for monitoring and evaluation to quantify results and hopefully show cause and effect.

The budgets for these projects should be evaluated in the context of the entire Fish and Wildlife Program to see if this is the most cost-effective and balanced approach. Can some of the ongoing projects do some of the tasks at a lower cost than that proposed, for example, in 35019. The ISRP is concerned that other important and more qualified proposals will not be funded if this set of five is approved at the requested levels.

#### *Targeted Solicitations*

In our specific comments on the revised proposals below, we recommend that a national, targeted solicitation would be appropriate for the monitoring gaps that proposals 35016 (baseline land-use conditions with remote sensing monitoring) and 35024 (pollutant effects monitoring) intend to meet. Given the importance and expense of these monitoring activities, the ingenuity of the entire scientific community should be brought to bear through a targeted solicitation, and the most scientifically sound proposal selected for funding. A targeted solicitation with independent peer review of proposals would help to alleviate the appearance of conflict on interest.

The Bonneville letter requesting the ISRP review noted that NOAA Fisheries and the Action Agencies, at the request of the Northwest Power and Conservation Council (Council), attempted to address these BiOp gaps through revision of existing proposals rather than solicitation through a special, targeted request for proposals. However, there is a distinction between trying to address gaps through existing *projects* that are currently being implemented, have an

infrastructure, and a history of several years of ISRP, CBFWA, and Council review, versus entirely new *proposals* such as the ones here that do not have a history of implementation. A recommendation to use currently implemented projects motivates the RME group to review what is already underway in the basin, identify opportunities to utilize and modify existing projects to meet gaps, instill consistency, avoid redundancy, and thus work towards developing an efficient and cost-effective RME Program. As evident in the RME Framework document and the recent Request for Studies effort, the RME group has made an effort to identify ongoing projects that meet BiOp needs. However, in the case of new proposals that have not made it through the project selection process, and in fact have received “not fundable” recommendations from the ISRP, a fairer and likely more productive approach to generate the best projects to meet RPA needs would be for Bonneville to send out a targeted solicitation.

Finally, the ISRP recognizes that significant steps have been made by Bonneville and the Council to formalize the ISRP’s role in the RME process. We have not yet reviewed or discussed the final request for studies released by Bonneville, but we look forward to reviewing proposals submitted for those requests. In addition, we look forward to assisting the Independent Scientific Advisory Board in its likely review of the RME Framework document. We are pleased to have a role in this regional effort to establish a scientifically sound, cost-effective, and long-term RME plan for the Columbia River Basin which is an endeavor of paramount importance.

## Specific Comments on Each Revised Proposal

### Database Proposal

#### ProjectID: 35048

**Revised Title:** Research Monitoring and Evaluation Habitat Data Management and Federal Habitat Committee Project Tracking

**Original Title:** NWFSC Salmon Data Management, Analysis, and Access for Research Monitoring and Evaluation Programs

**Sponsor:** NMFS-NWFSC

**Revised FY03 Request:** \$392,000    **5YR Estimate:** \$2,071,000

**Original FY03 Request:** \$763,150    **5YR Estimate:** \$3,463,150

**Revised Short Description:** Develop web and GIS enabled database capability to consolidate new and existing data for RME Status and Effectiveness monitoring pilots in three subbasins and to track habitat project data in the Columbia Basin for the Federal Habitat Committee.

**Original 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.*

**ISRP Recommendation:**

Do not fund. The proposal is not technically adequate. The need for this project is not justified. The proposal is not convincing that the sponsors can accomplish the work more efficiently than a cooperative effort to establish a distributed database system utilizing databases of other state, federal and tribal systems in the Pacific Northwest.

The proposal is not technically adequate and this speaks poorly for the likelihood it will succeed in making data widely available in useful form. The proposal lacks clarity and is based on the assumption that QA/QC will occur at the level of individuals and agencies that enter raw data. Whether data will in fact be readily contributed to this group and database is uncertain. Another issue of concern is the continuing lack of evidence of clear collaboration with other efforts to form useful, integrated databases.

This revised proposal attempts to provide more information than its previous version, but the information is presented in a confusing way. A methods section usually begins with objectives, then provides some background to tasks and methods, then lists tasks and the methods to be used to perform the tasks that meet the objectives. This proposal divides objectives into categories, then lists a group of tasks, calling them objectives. The Task section is similarly divided in a disjointed and confusing way. Methods are scattered and confusingly presented.

The proposal states that while there is some overlap in RME programs at spatial and temporal scales, this proposal will not duplicate or replace existing efforts. This does not seem to be demonstrated.

The report lists eight ongoing data management projects. A detailed diagram is provided to show tasks to be undertaken under 35048 relative to other data management tasks. The question is whether this is the most efficient way to coordinate the needed RME data or does it introduce yet another layer of programming? For example, the same tasks might be performed under StreamNet's proposed additions (198810804). It is also unclear how this effort is distinct from that proposed by the Northwest Habitat Institute in its enhancement of the Interactive Biodiversity Information System (IBIS). The proposal does not make a convincing argument of the need for a separate effort. This entire project rests on the ability to see an integrated picture of data availability and data needs, and to develop the needed coordination and collaboration to integrate the two. The proposal does not present a clear picture of that global view nor does it create a picture of a systematic, sequential, and effective approach.

Notably absent is explicit discussion of the conditions and challenges of collaboration with existing efforts, a difficult task particularly when people are asked to change practices so that they can meet standardized protocols. Incentives and mechanisms to ensure effective collaboration among people in the three subbasins are missing.

## Action Effectiveness Proposals

### 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

**ISRP Recommendation:**

Do not fund. This proposal is poorly organized. Because description of the bulk of the work is embedded in the Technical Background and there is no systematic presentation of Objectives with associated tasks, methods and rationale it is difficult to see the larger structure and logic of the research approach. A proposal for a monitoring effort that is presented this haphazardly in the planning stage does not provide convincing evidence that it will be any more systematic at the implementation stage.

There is a clear need for work at the landscape scale outlined in the proposal, and the proposal offers to test some novel ideas and techniques. The proponents are apparently planning use of the latest satellite data to correlate with on-the-ground field surveys. The technology seems to be state of the art. However, the objectives are exceedingly general and are given at the very end of the proposal, numerous technical claims are unsupported either by literature citations or data, the details of methodology (particularly those related to the tier 3 work, its sampling design, hypotheses to be tested, and how it will be related to tiers 1 and 2) are lacking, and statistical analysis using correspondence analysis and multiple regression is referred to but no detail is given about how these techniques will be used. Many of the methodological details are mixed in with the technical background information and not clearly related to the objectives.

The proposal needs to provide better linkage to an overall monitoring program. The linkage to the RPAs is not as clear with this proposal as the others in the set. Their definitions of Tier 2 and Tier 3 monitoring do not seem to closely match the definitions in the BiOp and the other proposals of the set. Tier 1, 2, and 3 appear to be used to indicate spatial scales in this proposal, i.e., Tier 1 = subbasin, Tier 2 = intermediate scale, Tier 3 = local habitat. This proposal has no reference to pilot work to be conducted by the other proposals in the Upper Salmon subbasin. The proposal appears to be exactly the same as that submitted earlier in the Mainstem Systemwide Solicitation. This suggests that the proponents did not attempt to integrate their proposal with the other proposals in the set, as claimed.

The proposal does not clearly state how this work will be used for the BiOp's tier 1 monitoring and how it relates to project 35019 (status and trends monitoring) and project 35020, although all these projects are purported to form a package that will satisfy RPA's 180, 181, and 183.

Estimation of landscape scale habitat attributes over time is a necessary resource for benefiting fish and wildlife. One of the best uses appears to be that of suggesting priority locations for

conservation and restoration. However, the linkage to the other proposals is not clear. A tier one data sampling effort needs to be conducted and perhaps this need should have been included in the current call for proposals to meet specific needs. The proposal does not specify how it would be coordinated with other monitoring projects, nor does it indicate why it is necessary to address BiOp RPAs.

The proposal does not show a clear connection to the other projects for improved ground checking. Ground truthing should be coordinated with the Tier II status monitoring proposal 35019 and potentially 35020.

The proposal stated that an accuracy assessment of current work on the Willamette indicated a final map error of 26%. The overall map accuracy for 7 forest classes was reported to be over 80%. The proposal did not include a discussion of whether or not the monitoring requirements called for in the BiOp will be satisfied with these error rates. Will it be possible to detect changes of the magnitude called for in the BiOp?

**ProjectID: 35019**

**Revised Title:** Develop and Implement An Integrated Subbasin-scale Status and Watershed-scale Effectiveness Monitoring Program for Salmonid Populations and Habitat

**Original Title:** *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

**Revised FY03 Request:** \$905,000

**5YR Estimate:** \$20,525,000

**Original FY03 Request:** \$270,000

**5YR Estimate:** \$2,350,000

**CBFWA Adjusted FY03:** \$250,000

**3YR:** \$1,250,000

**Revised Short Description:** This proposal seeks to develop, as subbasin scale pilot programs, status, trend, and watershed scale habitat action effectiveness monitoring for anadromous salmonids and their habitat in the Wenatchee, John Day and upper Salmon River basins.

**Original 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.*

**ISRP Recommendation:**

Fundable. This is an excellent, well-organized proposal for Status and Trend monitoring and it addresses the question of monitoring the combined effects of multiple habitat actions over time. This version is expanded from the earlier version to include additional monitoring and evaluation components. The project would not only evaluate status and trend monitoring and include action-effectiveness monitoring but would also advance knowledge about the effectiveness of monitoring methods. Detailed objectives, tasks, and methods are provided. Extensive coordination with ongoing projects is described.

The ISRP strongly recommends funding of this proposal. However, we again raise the question of relationship of the proposal to not only the BiOp mandates, but also the monitoring needs of the Council’s Fish and Wildlife Program and other state, federal, and tribal responsibilities in the Columbia basin. At issue is the whole basinwide monitoring effort. To base the basinwide monitoring effort only on the NMFS BiOp mandates seems to be shortsighted and a sensitive issue. CBFWA’s proposal 35033 is similar in many respects, but they were apparently not asked

to update and integrate their proposal with the current set. To its credit, this proposal, 35019, explicitly mentions the coordination benefits of the CBFWA 35033 proposal and notes that the five proposals presented in this packet do not attempt to duplicate the large-scale coordination represented by that proposal. As yet, however, this coordination apparently has not been achieved. The ISRP trusts that the proposal 35033 is to be seriously considered for funding as the overarching coordinator for monitoring efforts in the Columbia Basin as previously recommended.

Verification of population and habitat parameters at very large geographic scales is badly needed. However, the proposed budget is very large and if a project like this is going to last for the long-term, it needs to be as cost-effective as possible. The costs do not seem to be well justified. The ISRP recommends that there be a thorough peer review by independent scientists once the plan is fully designed (i.e., after selection of study sites, development of protocols for indicator variables, development of error terms for determination of final sample sizes, etc.) and before implementation in the field. This project should also be reviewed in the future at certain milestones.

Comments and Questions to be considered during the contracting period.

The sponsors indicate that the sampling universe will be determined by the spatial extent of the fish species of interest. The success of the monitoring program depends on being able to track status and trend of populations and habitat over the long term including survey of current marginal habitat and habitat considered by biologists to be currently unacceptable to the species of interest. Species of interest are often found in unexpected locations when probabilistic sampling methods are used to select study sites. The need to sample more extensively is to be expected if overall abundance of the species is increasing due to global effects of, e.g., good ocean conditions, or if range expansion is anticipated to accompany extensive habitat restoration.

It is unfortunate, but understandable, that the monitoring effort is restricted to wadeable portions of streams. Non-wadeable segments, such as mainstem areas, could pose important survival bottlenecks for both juveniles and adults passing through or rearing in them. Indicators of upland processes (e.g., landslides) should be part of the monitoring protocol. The sponsors need to address habitat connectivity and how it will be assessed and monitored.

The sponsors state that relative abundance will not be assessed by snorkeling in habitat units where there is an extreme amount of cover. These areas could be important habitats for juvenile fish and a justification for their exclusion is needed. Could these habitats be electroshocked or sampled in some other way?

The sponsors propose to estimate error of snorkeling surveys by comparing the estimates of relative abundance from survey crews with those from “supervisory staff.” This rationale is not terribly compelling. Could electrofishing estimates rather than estimates by office staff be a more viable indicator of the “true” density of fish?

The proponents state that the key to testing the sampling-based approaches will be the ongoing census-based surveys that will act as the “truth” against which the sampling data can be

compared. It will be interesting to compare the sampling data to certain census data, e.g., dam counts, but the comparison is only useful for evaluation of bias in measurement techniques. Finite sampling theory provides unbiased estimates if the underlying measurement techniques are unbiased. Also, there are sampling and measurement errors associated with ongoing “census” work for population assessments as noted by the proponents. In some cases, the proponents may find that it is more appropriate to assume that the sampling based approaches proposed are unbiased and to use them to correct or stop collection of the current “census data.”

The exclusion of small pools and non-pool habitat is troublesome. While coho may be found predominantly in pools, juvenile steelhead tend to be more generalist in habitat use and can be found, sometimes in abundance, in smaller pools barely deep enough to snorkel. At least an initial survey of all channel unit types is warranted.

The proponents seem to have the terms interchanged in the following statement “...best estimator of status is thought to be from random sites fixed through time (drawn once, resampled annually), while the best estimator of trend captures both the spatial and temporal variance components and their interactions (drawn randomly each year).” The sentence should read: The best estimator of trend is thought to be from random sites fixed through time (drawn once, resampled annually), while the best estimator of status captures both the spatial and temporal variance components and their interactions (drawn randomly each year).

The proposed work would provide useful data for EDT, SWAM and other models for prediction of relationships between habitat and fish abundance, occurrence, and production, but there must be an explicit linkage for it to happen.

### **ProjectID: 35020**

Regional Project Effectiveness Monitoring Program for Columbia River Basin Listed Anadromous Salmonids.

**Sponsor:** NMFS-NWFSC

**Revised FY03 Request:** \$1,500,000

**5YR Estimate:** \$15,000,000

**Original FY03 Request:** \$475,000

**5YR Estimate:** \$2,010,000

**Revised Short Description:** Implement generic effectiveness monitoring guidelines as targeted, study designs for effectiveness research. These study designs will be applied to three pilot programs to fulfill the FCRPS BiOp call for 16 research projects on action effectiveness.

**Original 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.*

#### **ISRP Recommendation:**

Do not fund. The ISRP does not have confidence that the objectives of the proposal can be realized with the design and analytical methods proposed. The proposal has little potential for success for the following reasons: (1) it will be very difficult to find and match an adequate number of sites on a large number of important covariates, (2) it will be very difficult to maintain the “treatment” and “control” sites over the time period required, and (3) even in the best possible outcome, arguments will continue to rage over adequacy of the pairing and analyses – the paired sites will be found to be “different” after the study is underway. The proposed design

and analytical approach will not result in the desired scientifically credible data to adequately answer scientific criticism. In addition the costs are extremely high for an approach with a slim likelihood of success.

It is unclear that implementation of this proposal can do much more than 35019 in cooperation with the ESSA project (34008, as originally proposed). This proposal, 35020, claims to address the questions about whether classes of projects are effective, and whether a single project is effective, and differentiates these questions from the examination of effectiveness of “spatial classes” of projects conducted under 35019. However, monitoring conducted under 35019 may help address the single project and classes of projects questions within its spatial scope. The ISRP does not see the value added of this project over the ESSA project in cooperation with the status and trend monitoring in 35019. The proposal does not make the distinction clear, other than to purport that it will meet requirements of RPA 183 and to indicate that it will coordinate with the ESSA project.

The Council should carefully evaluate whether the ESSA project, 34008, as originally proposed has been compromised (or improved) during the Bonneville contracting process. Indeed, the author of this proposal, 35020, stated that he worked with Bonneville to draft the statement of work for project 34008. If the project 34008 was modified by the author of 35020, then the author may have a strong conflict of interest in the present proposal, 35020. Also, it may no longer be appropriate for the ISRP to recommend the ESSA project if the statement of work does not closely match the original objectives, tasks, and methods reviewed by the ISRP.

The BiOp RPAs relevant to this proposal put the Action Agencies in a no-win position with more-or-less an impossible task, namely to prove cause and effect relationships in an eight-year (now five-year) timeframe. Reaching this RPA goal is made even more difficult by the approach proposed here; i.e. the use of observational studies to prove cause and effect. A study of the type proposed in 35020 was instigated to prove that the oil spilled by the Exxon Valdez in Prince William Sound, 1989, caused certain injuries to the local floral and fauna. Fourteen years later, scientists are still arguing about the interpretation of results from those studies. It is now a widely accepted conclusion that “smoking causes cancer,” but one only has to look at the long history of arguments to see the difficulty of establishing such relationships based on observational studies. The proponents of 35020 and the authors of the BiOp have depended too heavily on inappropriate use of statistical tests of null hypotheses.

The ISRP recommends that they either: (1) rely on estimation of effects and build models for predicting effects based on measures of habitat improvement actions and other predictor variables, or (2) design a program similar to the Intensive Watershed Monitoring program developed in the State of Washington (described in the soon to be released ISAB report on tributary habitat). Estimates of effects and models might best be based on extensive data of the sort proposed in the status monitoring protocol, 35019. For example, data from randomly selected sites that are “used” by a species of fish could be contrasted to data from the “unused” sites to build models in the spirit of the NOAA Fisheries model SWAM. These models could include measures of habitat improvement actions as predictor variables. Rather than force an impossible task based on poorly formulated RPAs, NOAA Fisheries and the Action Agencies

might be better served by reviewing the RPAs with the objective of devising more workable interpretations.

Formal tests of null hypotheses are not appropriate for the stated objectives of the proposal and some of the tasks listed in the RPAs of the BiOp, because the test results depend not only on the magnitude of effects, but also on the sample sizes. In the present setting, tests of null hypotheses can result in a false confidence in the results, i.e., results may be statistically significant, but of no biological importance. Alternatively, effects may be important biologically, but results are not statistically significant because of high variances or small sample sizes. Instead, analytical methods should include estimation of effects with measures of precision of the estimates, perhaps expressed as confidence intervals.

The proponents propose to match treatment sites with control sites on a large set of covariates and remove hidden bias quoting Rosenbaum (1995). By definition, it is not a straightforward process to establish that comparisons are free from hidden bias because Rosenbaum (p. Vii) defines hidden bias as due to differences between the treated and control groups on variables that are not recorded. That is what makes it “hidden.” The adjustments that can be made are from “non-hidden” biases. Quoting from Rosenbaum (p. 136) “Still, all observational studies are sensitive to sufficiently large biases, and large biases have occurred on occasion ... A sensitivity analysis shows how biases of various magnitudes might alter conclusions, but it does not indicate whether biases are present or what magnitudes are plausible.”

The proposal indicates that a critical determinant of success in effectiveness monitoring is the rapid and free exchange of data. Given that the lack of data sharing among the entities listed is a serious problem, what mechanisms are in place to ensure that this takes place? In earlier comments we recommended coordination through #35033, but this CBFWA proposal is not explicitly mentioned in 35020.

## Pollutant Proposal

### ProjectID: 35024

Evaluating the sublethal impacts of current use pesticides on the environmental health of salmonids in the Columbia River Basin.

**Sponsor:** NMFS/NWFSC

**Revised FY03 Request:** \$493,070

**5YR Estimate:** \$2,493,070

**Original FY03 Request:** \$364,105

**5YR Estimate:** \$1,053,975

**CBFWA Adjusted FY03:** \$304,905

**3YR:** \$875,775

**Revised Short Description:** Monitor water quality parameters at specific sites that could impact resident salmon. Evaluate the effects of specific parameters on the physiology and fitness of at-risk salmon. Incorporate data into a site-specific model of salmon population viability

**Original 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.*

**ISRP Recommendation:**

Do not fund. This is a proposal to write a proposal. This proposal could definitely lead to a worthwhile project if it was focused and complete. The proposal provides a thorough and convincing description of the importance and the relative neglect (in a research/ mitigation context) of water quality. However, implementation of an undetermined plan is included in the outyear funding. As it stands, the proposal cannot be effectively reviewed or recommended.

This is no longer a focused “pesticide proposal” but a general water quality and land use proposal (the title is misleading). This change of focus is good in one sense, as it broadens the topic to other important features of water quality and the factors that affect them. The proposal further emphasizes salmon and drops zebra fish assays, which the ISRP had earlier questioned for relevance. However, in broadening the topics, the proposal lost clear focus and directed project planning. It lacks critical detail needed for evaluation of the soundness of its science and its likelihood of success. Even the water quality features to be analyzed are vague, and the proposal says that it is not going to be limited to those listed in the RPAs. The thrust is on two subbasins that partially match the three proposed for monitoring in the other proposals of this “integrated set.” If this collection of proposals is to be an integrated set, then why is this one proposing work in the Wenatchee and Yakima, when the others in the set propose work in the Wenatchee, John Day, and Upper Salmon? It is not clear how these proposals link together.

A working group including the RME group, EPA, State DEQs, etc., might be formed to plan and design a call for proposal on water quality before going forward with this proposal. The relationships of water quality to life history characteristics and life-cycle success of salmonids could be a good topic for a targeted solicitation.

The proposal lacks critical detail. As was commented upon by the ISRP for the first proposal, there is no evidence presented that pesticides (or any other water quality parameter) are actually a problem. We see only informed speculation. Are levels seen in the field within the range that cause mortalities, lowered growth, etc.? The ISRP recommends that a workgroup composed of

state and federal agencies familiar with water quality problems be convened to scope work on water quality before a targeted solicitation for the work is advanced.

In Part I, the proposal does not make clear the relationship to RPA 183 (Part II cites RPAs 180, 181, 183, and 198, not just 183, as justification). This is critical for the context of the proposal, especially its urgency in the Action Effectiveness process. A seemingly excessive amount of funding is requested just to select sites (\$370k). There are only very brief objectives provided in Part I, where the scope of the project should be clear through an outline of objectives. No cost sharing is anticipated in Part I, although Part II notes a large amount of cooperation with other agencies.

Part II notes that this proposal is tied to proposals 35019, 35020, and 35048 as a package, but there is no indication of what the linkages are. Is there an overall set of objectives for which each proposal has a part? If so, what parts do the other proposals play? As commented on for Part I, establishing a justification in RPAs and among related proposals is essential.

The ESUs selected for study are important, but the ISRP wonders whether they are the most appropriate for such a study. They have to be considered as pilot studies for the rest of the Columbia River basin.

Use of a life-cycle model is a good idea, as is attention to aspects of water quality that have not often been studied in the Fish and Wildlife Program. Use of specific quantitative models, parameterized with field-measured life-history data and linked to field-measured environmental characteristics (such as presence and levels of various pollutants or other determinants of water quality) could provide a powerful approach to better understanding the health of and threats to salmon in the Columbia River Basin. However, the strength of such a study would depend critically in details of sample design, measurement, and analytical details that are not given in the proposal.

The part of the proposal to “develop a new laboratory infrastructure for salmon health research” is not clear. It seems that the lab is to be funded for a major renovation of facilities. However, the amount of funds required is not carefully spelled out and contrasted with the funds for actual research and monitoring.

As an overall monitoring proposal, the CBFWA proposal (35033) is superior.

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