

2000 NMFS FCRPS Biological Opinion RME Implementation Plan Workgroup

Goal of workgroup

To cooperatively develop an Implementation Plan for the RME RPA Action Items in the 2000 NMFS FCRPS BiOp. To do so, staff from NMFS and the Action Agencies (AA: BPA, USACE, BOR) will work together to develop a mutually agreed upon plan for meeting the RME actions specifically called for within the FCRPS BiOp.

Scope of workgroup's actions

This workgroup's scope of action is the RME section of the 2000 NMFS FCRPS BiOp, RPA Action Items 179 – 199. In addition, this group will contribute to the development of performance standards (as specified in RPA 9, and Section 9.2) and the analytical approaches to evaluate these performance standards where required to meet specific RME needs, or where RME actions call for their development.

Structure of workgroup

The workgroup is structured as a collection of technical working groups with oversight from a technical/policy group. The structure allows the myriad RME aspects of the FCRPS BiOp to be handled by small groups with the necessary technical expertise. To facilitate these groups' activities an oversight group handles all coordinating actions and issues of context or scope. This structure was specifically designed to accelerate the progress on the RME Implementation Plan already underway by the original manifestation of this group. This structure is flexible in that it allows for the inclusion of all necessary parties where their input is most critical. Most importantly, this structure allows for the elevation of technical policy issues rapidly through identified channels of the decision making process.

- Technical/Policy Oversight Group

- § This group currently consists of one member from each of the four federal agencies involved in the implementation of the FCRPS BO. Current staffing is: Jim Geiselman, BPA (co-chair); Chris Jordan, NMFS (co-chair); Jim Athearn, USACE; Michael Newsom, BOR.

- § Identified pathway for decision support for technical policy issues:

- BPA, USACE, BOR, issues taken to Implementation Planning Steering Committee or senior management.
- NMFS, Issues taken to Dr. Michael Schiewe, then to appropriate ARA.

- Technical Working Groups (as identified by the current RME workgroup as a whole). Each workgroup that is currently in place has developed a statement of work/purpose. These documents, as well as the letters soliciting participation in these subgroups, are appended to this overall statement of work/purpose.

- § Status Monitoring

- This technical subgroup has been operating since 12/01. The current structure will be maintained, but the group will assess the need for additional members, or a change in membership given the expanding demands generated by additional technical workgroups.
- Currently this group consists of: Chris Jordan (chair), NMFS; Roy Beaty, BPA; Bruce McIntosh, ODFW; Al Giorgi, BioAnalysts on contract to BPA; Jim Geiselman, BPA.
- To date this group has contributed to the development of status monitoring guidelines for the CBFWA's program. A version of these guidelines that focuses on FCRPS BiOp status monitoring alone exists in draft form, but has yet to undergo any form of review outside of the RME workgroup.

- The most critical next steps for this groups will be to finalize the status monitoring guidelines, and develop an implementation plan for a status monitoring program that meets these criteria. The group may take advantage of the opportunities afforded by pilot studies to implement reduced scope versions of their plan and test specifically challenging aspects of its design.
- § Effectiveness Research
- This technical subgroup has been operating since 12/01. The current structure will be maintained, but the group will assess the need for additional members, or a change in membership given the expanding demands generated by additional technical workgroups.
 - Currently this group consists of: Steve Katz (chair), NMFS; Jim Geiselman, BPA; Tracy Hillman, BioAnalysts on contract to BPA; Al Giorgi, BioAnalysts on contract to BPA; Michael Newsom, BOR, Charlie Paulsen, on contract to BPA; Gustavo Bisbal, NWPPC.
 - To date this group has developed technical guidelines for effective monitoring programs. The guidelines are independent of the restoration action implementation process, but imply some degree of interaction between the implementation of the actions and the monitoring program.
 - The most critical next steps for this groups will be to finalize the action effectiveness research guidelines, and develop a plan for coupling the project and monitoring program implementation that meets these criteria. The group may take advantage of the opportunities afforded by pilot studies to implement reduced scope versions of their plan and test specifically challenging aspects of its design.
- § Hydro
- This technical group was formed in June and is working on several tasks. Currently this group consist of: Al Giorgi (chair), BioAnalysts on contract to BPA; Rock Peters, USACE; John Williams, NMFS; Bill Hevlin, NMFS; Marvin Shutters, USACE; Bill Maslin, BPA.
 - This group will address the hydro component of the RME RPA Action Items (185 – 196, 199), as well as the issue of hydro performance standards as required to assess the progress of the hydro RME Action Items.
- § Hatchery/Harvest
- This technical group was formed in June and is working on several tasks. Currently this group consist of: Larry Rutter (chair), NMFS; Jon Drake, NMFS; Gary Johnson, USACE; Steve Grabowski, BOR; Jeff Gislason, BPA; Peter Lofy, BPA; John Skidmore, BPA .
 - This group will address the hatchery and harvest components of the RME RPA Action Items (164 –168, 182, 184), as well as the issue of hatchery and harvest program performance standards as required to assess the progress of the hatchery and harvest RME Action Items.
 - This group will also act as an interface mechanism between existing hatchery RME activities (e.g., HGMP, Hatchery Biological Opinions) and the FCRPS BiOp RME Implementation Plan.
- § Estuary/Ocean
- This technical group was formed in June and is working on several tasks. Currently this group consists of: Gary Johnson, BPA contractor (chair); Steve Waste, BPA; Allen Ruger, BPA; Eric Braun, USACE; Cathy Tortorici, NMFS.
 - This group will address the estuary/ocean component of the RME RPA Action Items (186, 187, 194 - 197), as well as the issue of estuary/ocean program performance standards as required to assess the progress of the estuary/ocean RME Action Items.
 - This group will also act as an interface mechanism between existing estuary/ocean RME activities (e.g., LCREP, ERIC) and the FCRPS BiOp RME Implementation Plan.
- § Data Management

- This technical group was formed in June and is working on several tasks. Currently this group consist of: Stewart Toshach (chair), NMFS contractor; Chris Penny, USACE; John Piccininni, BPA, Michael Newsom, BOR.
- This group will address the data management component of the RME RPA Action Items (198), as well as the issue of data management performance standards as required to assess the progress of all RME Action Items.
- This group will also act as an interface mechanism between existing data management activities (e.g., StreamNet, FPC, ERIC) and the FCRPS BiOp RME Implementation Plan.
- Regional RME Coordination Group
 - This technical/policy group will provide regional coordination and points of interface between the BiOp required RME program and 1) the Federal Caucus All-H Salmon Recovery Strategy (including NMFS and USFWS TRT recovery planning efforts); 2) other regional Federal RME Programs (USFS, BLM, EPA); 3) regional state RME programs; and 4) NWPPC Fish and Wildlife Program RME (CBFWA, state/tribal fish agencies, Subbasin Planning). This group is planned to form through a regional workgroup session in September, 2002.

Mandate of workgroup

- The 2000 NMFS FCRPS BiOp calls for a number of distinct RME RPA Action Items that underlie the structure of the assessment and evaluation process of the entire BiOp. However, while the timeline for action is given, the design of the implementation plan for these items is left to be developed by the Action Agencies. Thus, a clear need will be met by the work of the RME Implementation Plan Workgroup.
- The process for the development of an FCRPS BiOp RME Implementation Plan as proposed herein implies a cooperative interagency effort between NMFS and the BiOp AA.
- The RME Implementation Plan Workgroup will proceed to develop, up to and including partial implementation through pilot projects, an Implementation Plan for the RME RPA Action Items in the 2000 NMFS FCRPS BiOp.

Products/Timeline

- The products of the RME Implementation Plan Workgroup will be those determined necessary by the group to meet the needs of the RME RPA Action Items of the FCRPS BiOp.
- The products of the RME Implementation Plan Workgroup will be generated to meet the timeline as indicated by the FCRPS BiOp.
- Uncertainty regarding products and timelines will be resolved by consultation between executives of NMFS and the AA.
- Alterations in products and their timelines will only be possible as the FCRPS BiOp is modified cooperatively by NMFS and the AA.

Status Monitoring Technical Sub-Group Scope of Work

A comprehensive monitoring program is called for by the 2000 NMFS FCRPS BiOp. However, the program is not fully specified in the BiOp, and thus requires further development prior to implementation. The BiOp proposes a cooperative framework for monitoring program development that involves NMFS, the Action Agencies (AA: BPA, USACE, BOR) as well as other Federal and State entities with experience in developing large-scale comprehensive monitoring programs. The Status Monitoring Technical Sub-group will act under this mandate, focusing its activities on the status monitoring component of the FCRPS BiOp monitoring program. This document outlines the scope of the status monitoring component of the FCRPS BiOp, and hence the scope of activities of this technical working group.

RPA Action Items

There are several specific calls for the development of a status monitoring program in the FCRPS BiOp. In particular, Action Items 180 and 181 outline the scope and scale of a hierarchical monitoring program with two levels of status monitoring (Tier1 and Tier2). The status monitoring program is further developed in Appendix G, but numerous specifics of the program remain to be developed. These as of yet undefined aspects of the status monitoring program include, but are not limited to: the form of the landscape scale monitoring, the statistical sampling framework of the habitat and population monitoring, the indicators to be measured in both the habitat and population, and landscape scale monitoring programs, the analytical framework for evaluating the data generated by the status monitoring program.

Performance Standards

The FCRPS BiOp uses Performance Standards as the metric by which implementation of the RPAs will be assessed. For example, the BiOp explicitly calls for certain biological information to be monitored in specifying tests that will be applied at the check ins.

- Is the annual population growth rate (e.g., lambda, or a future metric developed to replace it) greater in 2005 and in 2008 than the base-period value of lambda today?
- In 2005 and again in 2008, is the annual population growth rate greater than or equal to the projected growth rate based on improvements made and expected from actions taken in the 1995 biological opinion, reductions in harvest that occurred after the base period, and the survival standards in the Mid-Columbia Habitat Conservation Plan?
- Compare population growth rates in 2005 and 2008 against the rates needed to achieve the recovery metrics described in Section 1.3.1.2.2.
- As a true safety net test, make the simple comparison of stock size (abundance) against current levels.

Thus, the status monitoring program itself has a suite of Performance Standards, as well as being the critical component of the data collecting framework to generate Performance Standards for other RPA Action Items. However, the form of the Performance Standards, their definition and the analytical tools for their generation are not specified. The Status Monitoring Technical Sub-Group will contribute to the development of Performance Standards as they intersect with the status monitoring component of the BiOp.

Tasks for the Status Monitoring Technical Sub-Group

- Define the Status Monitoring component of the FCRPS RME program.
- Define the relationship of the Status Monitoring program to the other FCRPS RME components.
- Generate implementable guidance for a Status Monitoring program.

- Identify performance standards for the Status Monitoring program.
- Identify the degree to which status monitoring is currently being successfully implemented, including identifying the gaps in current work in terms of occurrence/non-occurrence as well as quality. Incomplete or inadequate monitoring programs need to be identified as gaps so that they may be improved or replaced as necessary to achieve a consistently adequate monitoring program.
- Identify the structure of handling, storing, disseminating the data generated by the monitoring program so that appropriate evaluation can progress.
- Identify strategies for design of evaluation or decision making and planning tools.

Mandate for Actions of the Status Monitoring Technical Sub-group

The Federal RME Planning Group expects the Hydro group will treat all of the elements described herein as they develop the detailed implementation plan. Thus, the Status Monitoring Technical Sub-Group will develop an Implementation Plan for the status monitoring components of the FCRPS BiOp that completely determines the scope, scale and application of the program. To do so, the group will need to enlist the participation of key personnel for certain activities (statisticians, modelers). In addition, the group will need to enlist the participation of key regional personnel to develop a program that can be implemented through State, Tribal and Federal Fish and Wildlife programs without duplicating current efforts. As such, the Status Monitoring Technical Sub-Groups must develop a FCRPS BiOp focused status monitoring program, the implementation of which requires a breadth of participation well beyond that of NMFS and the AA.

Offsite Mitigation Action Effectiveness Research Technical Subgroup

Action Effectiveness Research (AER) component of the FCRPS BiOp RME program

Monitoring is the collection of information, in the form of data, on the status of biological system dynamics. In the case of offsite mitigation actions undertaken as part of the FCRPS BO, effectiveness research is the collection of data on the impact of specific mitigation actions, individually and collectively, on ESA listed anadromous salmonid population health.

The FCRPS BiOp RME program has several tasks as defined by the RME RPA Action Items. Among them is the proscription to develop a multi-component monitoring program to assess the impacts of actions called for under the RPA section of the BiOp. A specific mandate for the monitoring program—both for status and effectiveness components of monitoring—is provided in section 9.4.2.8 of the BO

Action 9: The Action Agencies, with assistance from NMFS and USFWS, shall annually develop 1- and 5- year plans for research, monitoring, and evaluation to further develop and to determine the effectiveness of the suite of actions in this RPA.

Importantly, this section sets a timetable for the development of a monitoring program as well defining the scope to include effectiveness research.

Research, monitoring, and evaluation will provide data for resolving a wide range of uncertainties, including determining population status, establishing causal relationships between habitat (or other) attributes and population response, and assessing the effectiveness of management actions. Progress on resolving these uncertainties will be a primary consideration in the 1- and 5-year planning process as well as in the 5- and 8-year check-ins. (FCRPS BO page 9-31)

Within this overarching mandate for monitoring, research on the usefulness of off site mitigation efforts intended to improve salmon population health through improvements in habitat quality are specifically identified in RPA 183:

Action 183: Initiate at least three tier 3 studies (each necessarily comprising several sites) within each ESU (a single action may affect more than one ESU). In addition, at least two studies focusing on each major management action must take place within the Columbia River basin. The Action Agencies shall work with NMFS and the Technical Recovery Teams to identify key studies in the 1-year plan. Those studies will be implemented no later than 2003.

In addition, section 9.6.5.3.3 of the FCRPS BO states that

Each major habitat or hatchery management action should be assessed immediately to obtain enough information for a complete evaluation at the 5- and 8-year check-in points. (FCRPS BO page 9-170)

The AER Team is constituted to guide the development of the effectiveness research program that will satisfy RPA's 9 and 183. The AER team will craft this guidance within the timetable set by the 3, 5 and 8 year check ins, which are to occur in 2003, 2005 and 2008 respectively.

By placing effectiveness research within the context of Research Monitoring and Evaluation (RME) and explicitly identifying effectiveness research as research, the BO implicitly recognizes that recovery actions are manipulations of the environment and constitute ecological experiments. Identified as ecological experiments, the execution of effectiveness research is subject to the standards of scientific research. Specifically, data will be collected within an experimental design, results will be evaluated with respect to control or reference data, variability in the data is recognized and decision making is based on rigorous rules of scientific inference and statistical confidence.

Tasks for the AER

- Define the AER component of the FCRPS RME program.
- Define the relationships to the other FCRPS RME components.
- Identify the outstanding technical needs for the AER group.
- Generate useful guidance that empowers clients to monitor off-site mitigation actions.
- Identify performance standards for monitoring of mitigation actions.
- Identify the degree to which monitoring is currently being successfully implemented. This includes identifying the gaps in current work in terms of occurrence/non-occurrence as well as quality. Incomplete or inadequate monitoring programs need to be identified as gaps so that they may be improved or replaced as necessary to achieve a consistently adequate monitoring program.
- Coordinate Action Item 183 monitoring explicitly with implementation plans – project identification must happen in the context, and with the participation of, monitoring.
- Identify the structure of handling, storing, disseminating the data generated by the monitoring program so that appropriate evaluation can progress.
- Identify strategies for design of evaluation or decision making and planning tools. The effectiveness research program will generate information in the form of data. That data must be collected, organized and analyzed to inform both recovery planners and to evaluate the progress of the action agencies in meeting their FCRPS BO obligations as defined in the evaluation criteria for the 3,5 and 8 year check ins.

Users of Products

- Managers and project sponsors who are implementing monitoring programs.
- Managers who are implementing recovery actions and who need to design and implement a monitoring program to assess that recovery action.

The strategy for effectiveness research will offer guidelines such that as new recovery actions are conceived and proposed, monitoring can be developed as an integral component of the action design. However, in many cases offsite mitigation actions are already being funded to improve salmon population health as called for in RPA 183. As such, the strategy for monitoring these recovery actions will be to design *post hoc* a monitoring plan that can be applied to an on-going action by project sponsors. This is a particularly challenging task as it is not commonly the case that the recovery action was originally designed as a RME activity to answer RME questions and priorities. In these cases it may be particularly challenging to design adequate monitoring programs. In some cases it may be necessary to work with project sponsors to modify their recovery action project protocols to meet the demands of RPA 9 and 183. Among the tasks for the AER team will be to provide the guidance for these sponsors to allow them to design appropriate effectiveness research plans, capitalize on appropriate existing plans, or modify their programs to comply with RPA 9 and 183.

- Those who are reviewing proposals to fund effectiveness research efforts.

As project sponsors generate proposals to fund their programs, the proposals will be evaluated on their merit. This evaluation will include an assessment of the monitoring program to assess the recovery action. It is only fair that the proposals be evaluated on the basis of the design criteria and expectations of the Action Agencies and NMFS. Thus, those tasked with the review of the proposals need to be aware of the details of those standards.

Scope

The scope of the AER is particularly broad both with respect to the geography covered and the intellectual challenges addressed.

- Large Geographic Scale

The FCRPS BO addresses actions that occur within all 5 provinces of the Columbia River Basin (CRB) containing endangered anadromous salmonids. This area has immense diversity of administrative and institutional jurisdictions. Therefore, among the other activities of the AER team will be to develop strategies for implementation of effectiveness research that incorporate and capitalize on all of these diverse interests. This vast area also contains an immense diversity of habitat and ecoregion type. Therefore, the scope of the AER team will be to generate a strategy for effectiveness research that is diverse, responsive and appropriate to the potentially diverse technical requirements of this large, heterogeneous geographic scale.

- Diversity of Recovery Action Categories

The FCRPS BO identifies a large and diverse set of action categories. Identified on the basis of the activities for which sponsors will receive funding they are:

1. Instream Flow Restoration
2. Nutrient Enhancement
3. Barrier Removal
4. Water Diversion Screen Placement
5. Grazing Control
6. Road Closing
7. Buffer Improvement/Generation
8. Active Restoration
9. Stream Complexity Restoration

These actions cover such a wide diversity of human interventions no single set of criteria will satisfactorily define an effectiveness research program. Therefore, an objective of the AER team will be to identify a strategy for effectiveness research plan development that recognizes this diversity of action type and can successfully generate the information that can inform recovery planning as well as the check-in criteria for the 2000 FCRPS BiOp.

Detail

In addition to the breadth of the AER activities, the team will also be challenged to develop the monitoring program such that the fine detail of information called for by the FCRPS BO will be satisfied.

- Scope of Data Types

The FCRPS BO explicitly calls for certain biological information to be monitored in specifying tests that will be applied at the check ins. Explicitly, the primary study response needed to meet the check-in assessment needs of the BO is the change in fish survival at one or more life stages along with measures of fish abundance. Given the current date and the complex life history of the endangered anadromous fish, changes in productivity in terms of lambda based only on counts of adult returns will be difficult to determine. Therefore, other measures of productivity will be required to meet the 2005 and 2008 check ins. This will require the collection of measures of productivity based on correlated juvenile and adult abundance and survivorship.

In addition, there are explicit calls in the FCRPS BO for monitoring of habitat responses as well as fish population responses. In addition to the language cited above for RPA Action 9, there is the following:

The Federal Action Agencies, working with CRI and EDT analysts, have established preliminary hypotheses linking habitat strategies and measures to key habitat attributes. The next steps will be as follows:

- Establish an initial set of performance standards and measures—ecological and management indicators—expressed as desired habitat trends.
- Implement pilot studies designed to test and confirm key assumptions that relate habitat improvements to life-stage survival improvements for listed fish species.

The studies needed to assess the specific ecological and management targets will be integrated into Tier 3 of the Research, Monitoring, and Evaluation program described in Section 9.6.5. The studies and the objectives may be refined in the first few years through targeted research, subbasin assessments, and finer-scale analysis. Subbasin assessments will use available tools for evaluating habitat quality and quantity and salmon productivity, including EDT, the Salmon Watershed Enhancement Model, and the CRI analyses. The initial 5-year plan (due on March 31, 2001) must include tests of intermediate-stage (egg-to-parr, parr-to-smolt) survival in selected places to check the effectiveness of habitat actions. The tests must be designed to support assessments at the 5- and 8-year checkpoints described in Section 9.5. They will enable policymakers to evaluate and refine hypotheses, adjust habitat measures, and reach further decisions on the contribution to recovery of habitat protection and restoration. They are high priority projects for early implementation in fiscal year 2001. (FCRPS BO page 9-18)

In addition, because habitat actions may require time beyond the BO planning horizons to manifest fish survival effects, there is a need to establish cause-and-effect relationships between tributary actions and physical/environmental effects that may be more immediate. The information developed through these studies will be integrated with status monitoring, other types of action effectiveness research, and critical uncertainties research as part of the broader comprehensive RME Program that is called for by the BO, the Federal Caucus Basinwide Strategy, and the Columbia River Basin Fish and Wildlife Program, and outlined in the Action Agencies Implementation Plans. As such, it will be a task of the AER team to craft an

effectiveness research plan that addresses abundance and survivorship data for both adult and juvenile salmonids, as well as habitat indicators.

- Precision of Data

The Action Effectiveness Research program is a measuring device. The AER measures the environmental and biological responses to recovery actions. In the same manner that one would define the performance of a voltmeter in terms of resolution and precision, so must the AER team define the performance of the monitoring program. Given that the recovery actions are treated as ecological experiments, their evaluation will proceed as hypothesis tests and the mechanism for evaluating the performance of such testing is statistical power analysis. The FCRPS BO relies on standards established in the Federal caucus paper for power and performance of monitoring programs, where it says:

The number of adult sampling sites within each population will be determined by a power analysis that requires a 75% likelihood of detecting a 5% change in lambda over an eight year period.

Given the variability inherent in the indicators relevant for the effectiveness research program, this standard of performance for monitoring demands the use of an impractical number of replicates. It will be one task for the AER group to develop rational standards for the precision and performance of the monitoring program.

Scope of RME Hydro Technical Sub-Group

The Hydro Technical Sub-Group will develop an Implementation Plan for Hydro related RME issues proposed in the NMFS 2000 FCRPS Biological Opinion. This group will define the scope of activities and tasks they need to address. Three categories of FCRPS Biological Opinion elements will be addressed by this group: 1) RME RPAs that directly specify hydro activities, 2) Hydro-related Research Actions linked to RPA 199 and specified in Appendix H, and 3) performance standards and necessary compliance tests.

RPA Action Items

In the 2000 NMFS FCRPS BO, Research Monitoring and Evaluation efforts are identified in RPAs 179-199. Some of those deal with hydro related matters. That subset of the RME RPAs is presented here with a brief identifying descriptor.

RPA	Description
185	Calculate D
186	Determine where D-mortality is expressed
187	Examine the relation of D to timing of seawater (estuary) entry
188	Investigate hydro system (delayed) effects on stock productivity
189	Study effects of passage history on SAR
190	SRFC- early life history
191	Improve year-round adult counts
192	Install adequate # of adult detectors
193	Investigate new tagging systems
194	Construct a physical model of the Lower Columbia Plume
195	Estimate and partition post Bonneville mortality
196	Describe estuary use by salmon
199	Hydro Research Actions (RA) – Appendix H

Research Actions

One RPA (#199) details a number of specific Research Actions. These are described in Appendix H of the BO. Some of these are redundant with RPAs, but provide more detail on some points. Most refer to specific types of estimates (FPE, survival etc.) that need to be obtained at different dams. Others focus on migratory behavior, and general smolt monitoring. All of these (25) appear appropriate for review by the Hydro Group.

Performance Standard

FCRPS performance standards are prescribed in section 9.2.2.2.1 of the BO (table 9.2-3). They are in the form of life stage survival estimates. The timeline for attaining those Performance Standards is 10 years. However, the BO offers no guidance with respect to how attainment will be tested (quantitative tests). Also, there are no guidelines dictating the use of empirical data or models. Furthermore, it is not clear whether certain key standards can be estimated empirically. These will be important matters for the Hydro Group to resolve.

Mandate for Actions of the Hydro Technical Sub-group

The Federal RME Planning Group expects the Hydro group will treat all of the elements described herein as they develop the detailed implementation plan. The group may need to enlist the participation of key personnel for certain activities (statisticians. modelers).

Scope of RME Hatchery Technical Sub-Group

The Hatchery Technical Sub-Group will develop an Implementation Plan for Hatchery related RME issues proposed in the NMFS 2000 FCRPS Biological Opinion. This group will define the scope of activities and tasks they need to address. Two categories of FCRPS Biological Opinion elements will be addressed by this group: 1) RME RPAs that directly specify hatchery activities, and 2) performance standards and necessary compliance tests relative to hatchery issues raised throughout the Biological Opinion.

RPA Action Items

In the 2000 NMFS FCRPS Biological Opinion, Research Monitoring and Evaluation efforts are identified in RPAs 179-199. Some of those deal with hatchery related matters. That subset of the RME RPAs is presented here with a brief identifying descriptor.

RPA Action Item 182 – Determine the reproductive success of hatchery fish spawning in the wild.
RPA Action Item 184 – Develop a hatchery Research, Monitoring and Evaluation program to determine if hatchery reforms reduce the risk of extinction of Columbia River basin salmonids and to assess whether conservation hatcheries contribute to recovery.

Research Actions

Both RPAs identified above request that the Action Agencies work within regional priorities to develop and fund these activities. Therefore, the role of this technical team is to both work to develop an implementation plan for these Action Items, but also to act as a coordination mechanism between the FCRPS Biological Opinion agencies and the appropriate regional entities.

Performance Standard

The FCRPS Biological Opinion offers little guidance with respect to how hatchery related progress and mitigation effects will be assessed. Also, there is little guidelines dictating the use of empirical data or models. Furthermore, it is not clear whether certain key standards can be estimated empirically. These will be important matters for the Hatchery Group to address.

Tasks for the Hatchery Technical Sub-Group

- Define the Hatchery component of the FCRPS RME program.
- Define the relationship of the Hatchery program to the other FCRPS RME components.
- Generate implementable guidance for a Hatchery RME program.
- Identify performance standards for the Hatchery RME program.
- Identify the degree to which hatchery research identified in the FCRPS Biological Opinion is currently being successfully implemented, including identifying the gaps in current work in terms of occurrence/non-occurrence as well as quality. Incomplete or inadequate programs need to be identified as gaps so that they may be improved or replaced as necessary to achieve a consistently adequate program.
- Identify the structure of handling, storing, disseminating the data generated by the hatchery RME program so that appropriate evaluation can progress.
- Identify strategies for design of evaluation or decision making and planning tools.

Mandate for Actions of the Hatchery Technical Sub-group

The Federal RME Planning Group expects that the Hatchery group will treat all of the elements described herein as they develop the detailed implementation plan. The group may need to enlist the

participation of additional key personnel for certain activities (statisticians, modelers), as well as to broaden the scope of the group's activities.

Scope of RME Estuary/Ocean Technical Sub-Group

The Estuary/Ocean Technical Sub-Group will develop an Implementation Plan for Estuary/Ocean related RME issues proposed in the NMFS 2000 FCRPS Biological Opinion. This group will define the scope of activities and tasks they need to address. Two categories of FCRPS Biological Opinion elements will be addressed by this group: 1) RME RPAs that directly specify activities relevant to the Columbia River Estuary and nearshore ocean environment, and 2) performance standards and necessary compliance tests relative to estuary/ocean issues raised throughout the Biological Opinion.

RPA Action Items

In the 2000 NMFS FCRPS Biological Opinion, Research Monitoring and Evaluation efforts are identified in RPAs 179-199. Some of those deal with estuary/ocean related matters. That subset of the RME RPAs is presented here with a brief identifying descriptor.

RPA Action Item 186 – Determine causes of D.

RPA Action Item 187 – Evaluate relationship between ocean entry timing for SARs for transported and downstream migrants

RPA Action Item 194 – Develop a model of the lower Columbia River and plume.

RPA Action Item 195 – Investigate and partition causes of mortality of juvenile salmonids.

RPA Action Item 196 – Develop an understanding of adult and juvenile salmon use of the Columbia River estuary.

RPA Action Item 197 -- Develop an understanding of adult and juvenile salmon use of the Columbia River plume.

Research Actions

The RPAs identified above request that the Action Agencies work within regional priorities to develop and fund these activities. Therefore, the role of this technical team is to both work to develop an implementation plan for these Action Items, but also to act as a coordination mechanism between the FCRPS Biological Opinion agencies and the appropriate regional entities.

Performance Standard

The FCRPS Biological Opinion offers little guidance with respect to how estuary/ocean related progress and mitigation effects will be assessed. Also, there is little guidelines dictating the use of empirical data or models. Furthermore, it is not clear whether certain key standards can be estimated empirically. These will be important matters for the Estuary/Ocean Group to address.

Tasks for the Estuary/Ocean Technical Sub-Group

- Define the Estuary/Ocean component of the FCRPS RME program.
- Define the relationship of the Estuary/Ocean program to the other FCRPS RME components.
- Generate implementable guidance for an Estuary/Ocean RME program.
- Identify performance standards for the Estuary/Ocean RME program.
- Identify the degree to which estuary/ocean research identified in the FCRPS Biological Opinion is currently being successfully implemented, including identifying the gaps in current work in terms of occurrence/non-occurrence as well as quality. Incomplete or inadequate programs need to be identified as gaps so that they may be improved or replaced as necessary to achieve a consistently adequate program.
- Identify the structure of handling, storing, disseminating the data generated by the Estuary/Ocean RME program so that appropriate evaluation can progress.

- Identify strategies for design of evaluation or decision making and planning tools.

Mandate for Actions of the Estuary/Ocean Technical Sub-group

The Federal RME Planning Group expects that the Estuary/Ocean group will treat all of the elements described herein as they develop the detailed implementation plan. The group may need to enlist the participation of additional key personnel for certain activities (statisticians, modelers), as well as to broaden the scope of the group's activities.

Scope of RME Data Management Technical Sub-Group

The Data Management Technical Sub-Group will develop an Implementation Plan for Data Management related RME issues proposed in the NMFS 2000 FCRPS Biological Opinion. This group will define the scope of activities and tasks they need to address. Two categories of FCRPS Biological Opinion elements will be addressed by this group: 1) RME RPAs that directly specify activities relevant to the management of RME data, and 2) performance standards and necessary compliance tests relative to data management issues raised throughout the Biological Opinion.

RPA Action Items

In the 2000 NMFS FCRPS Biological Opinion, Research Monitoring and Evaluation efforts are identified in RPAs 179-199. Some of those deal with data management related matters. That subset of the RME RPAs is presented here with a brief identifying descriptor.

RPA Action Item 198 – Develop a common data management system for fish populations, water quality, and habitat data.

Research Actions

The RPAs identified above request that the Action Agencies work within regional priorities to develop and fund these activities. Therefore, the role of this technical team is to both work to develop an implementation plan for these Action Items, but also to act as a coordination mechanism between the FCRPS Biological Opinion agencies and the appropriate regional entities.

Performance Standard

The FCRPS Biological Opinion offers little guidance with respect to how RME related progress and mitigation effects will be assessed. Also, there is little guidelines dictating the use of empirical data or models. Furthermore, it is not clear whether certain key standards can be estimated empirically. These will be critical issues for the Data Management Group to address as they impact much of the FCRPS Biological Opinion's implementation.

Tasks for the Data Management Technical Sub-Group

- Define the Data Management component of the FCRPS RME program.
- Define the relationship of the Data Management program to the other FCRPS RME components.
- Generate implementable guidance for a Data Management RME program.
- Identify performance standards for the Data Management RME program.
- Identify the degree to which data management identified in the FCRPS Biological Opinion is currently being successfully implemented, including identifying the gaps in current work in terms of occurrence/non-occurrence as well as quality. Incomplete or inadequate programs need to be identified as gaps so that they may be improved or replaced as necessary to achieve a consistently adequate program.
- Identify the structure of handling, storing, disseminating the data generated by the FCRPS Biological Opinion so that appropriate evaluation can progress.
- Identify strategies for design of evaluation or decision making and planning tools.

Mandate for Actions of the Data Management Technical Sub-group

The Federal RME Planning Group expects that the Data Management group will treat all of the elements described herein as they develop the detailed implementation plan. The group may need to

enlist the participation of additional key personnel for certain activities (statisticians, modelers), as well as to broaden the scope of the group's activities.

APPENDIX A

Technical Sub-Group Memos to solicit participation

To: Potential FCRPS RME Status Monitoring Group Members
From: Chris Jordan
Subject: Objectives for the AA & NMFS Status Monitoring Sub-group
Date: 6 May 2002

The 2000 NMFS BO identifies a large number of issues that fall under the category of research monitoring and evaluation (RME). The Action Agencies (AA: BPA, USACE, BOR) and NMFS have assembled a RME Group to deal with these matters and develop a plan to satisfy RME requirements. The framework of the plan has been constructed. However, now that an overall frame is in place, many technical questions remain to be answered. To move the development of an RME Implementation Plan forward, the RME Group has restructured itself in the form of a technical/policy oversight group and a series of technical workgroups. The role of the technical/policy oversight group will be to coordinate the activities of the workgroups, as well as dealing with the policy questions raised by the process of developing a technical Implementation Plan.

A considerable number of the RME activities called for in the 2000 BO focus on Status Monitoring. To address these issues the NMFS and AA have formed a technical Status Monitoring sub-group. The objective of this workgroup is to ensure that these Status Monitoring RME matters are being satisfactorily treated and that they will provide the necessary information required at the periodic "checkins". You have been identified as a candidate for membership on this sub-group. This memo identifies the issues that the subgroup is to resolve.

What are the Objectives for the Status Monitoring Group?

1. Clearly define the scope and coverage of RME activities as explicitly or implicitly requested by Status Monitoring related RPAs (*e.g.*, 180, 181).
2. Conduct a gap analysis and develop a strategy for filling any observed RME gaps.
3. Develop protocols for testing compliance with performance standards prescribed in the BO.
4. Draft a detailed implementation plan that focuses on Status Monitoring RPAs and will satisfy expectations at the check-ins.

What are the goals of the Status Monitoring Group?

Guidance Products

1. Determine scope of the Status Monitoring program called for by FCRPS BO RPAs.
2. Determine scope of the Status Monitoring program required to meet status assessment check-ins.

Design/Implementation Products

1. Design a Status Monitoring program to meet the identified needs of the FCRPS BO.
2. Design an implementation strategy for the FCRPS BO Status Monitoring program.

Participation and Work products:

The sub-group will convene monthly. The principle product will be a design and implementation plan that explicitly addresses FCRPS BO status monitoring needs. The plan should thoroughly address the issues expressed herein and any related issues as deemed necessary by the work group. I have been asked to lead this group and take responsibility for compiling and posting materials generated by the group. The NMFS and AA are anxious to move forward on this matter and envision an initial meeting

in the next month. I will be contacting each of you to verify your participation and availability for proposed meeting dates. Representatives from the AA & NMFS offices, as well as from State and Tribal offices, are being asked to participate (4-7 individuals total).

To: Potential FCRPS RME Action Effectiveness Research Group Members
From: Stephen L. Katz
Subject: Objectives for the AA & NMFS Action Effectiveness Research Sub-group
Date: 6 May 2002

The 2000 NMFS BO identifies a broad range of issues that fall under the category of research monitoring and evaluation (RME). The Action Agencies (AA: BPA, USACE, BOR) and NMFS have assembled a RME Group to deal with these issues and develop a plan to satisfy RME requirements. The framework of the plan has been constructed. However, now that an overall frame is in place, many as yet unanswered technical questions have been identified. To move the development of an RME Implementation Plan forward, the RME Group has restructured itself in the form of a technical/policy oversight group and a series of technical workgroups. The role of the technical/policy oversight group will be to coordinate the activities of the workgroups, as well as dealing with the policy questions raised by the process of developing a technical Implementation Plan.

A considerable number of the RME activities called for in the 2000 BO focus on effectiveness research of specific recovery actions. To address these issues the NMFS and AA have formed a technical Action Effectiveness Research (AER) sub-group. The objective of this workgroup is to ensure that these recovery project-related RME matters are being satisfactorily treated and that they will provide the necessary information required at the periodic "checkins" identified in the BO. You have been identified as a candidate for membership on this AER sub-group. This memo identifies the issues that the AER subgroup is to resolve.

What are the Objectives for the Action Effectiveness Research Group?

1. Clearly define the scope and coverage of RME activities as explicitly or implicitly requested by AER-related RPAs (*e.g.*, 9, 183).
2. Identify the degree to which AER is now successfully implemented. This includes identifying the gaps in current work in terms of presence and quality.
3. Develop protocols for testing compliance with performance standards prescribed in the BO.
4. Draft a detailed implementation plan that focuses on AER RPAs and will satisfy expectations at the check-ins.
5. Develop outreach and organizational strategies for coordinated implementation of AER with the process of funding and execution of recovery actions.
6. Identify the structure of handling, storing, disseminating the data generated by the monitoring program so that appropriate evaluation can progress.

What are the goals of the Action Effectiveness Research Group?

Both the Guidance and the Design/Implementation Products of the AER sub-group will identify the potential clients for these products, and subsequently strategize to satisfy the needs that arise from this potentially diverse group.

Guidance Products

1. Determine breadth and detail of the AER program called for by FCRPS BO RPAs.
2. Determine breadth and detail of the AER program required to meet assessment check-ins.

Design/Implementation Products

1. Design an AER program to meet the identified needs of the FCRPS BO for all classes of action.
2. Design an implementation strategy for the FCRPS BO AER program that includes ongoing actions as well as design of new actions.

Participation and Work products:

The sub-group will convene in person monthly with additional electronic communications more frequently. The principle product will be a design and implementation plan that explicitly addresses FCRPS BO AER needs. The plan should thoroughly address the issues expressed herein and any related issues as deemed necessary by the work group. I have been asked to lead this group and take responsibility for compiling and posting materials generated by the group. The NMFS and AA are anxious to move forward on this matter and envision an initial meeting in the next month. I will be contacting each of you to verify your participation and availability for proposed meeting dates. Representatives from the AA & NMFS offices, as well as from State and Tribal offices, are being asked to participate (4-7 individuals total).

To: FCRPS RME Hydro Group Members
From: Al Giorgi
Subject: Objectives for the AA & NMFS Hydro RME Sub-group
Date: 2 May 2002

The 2000 NMFS BO identified a large number of issues that fell under the category of research monitoring and evaluation (RME). The AA and NMFS have assembled a RME Group to deal with those matters and develop a plan to satisfy RME requirements. The framework of that plan has been constructed. A considerable number of the RME activities called in the 2000 BO focus on Hydro-related issues. The NMFS and AA have formulated a Hydro RME sub-group. The objective of this workgroup is to ensure these Hydro-related RME matters are being satisfactorily treated and will provide information required at the periodic "checkins". You have been identified as a candidate for membership on this sub-group. This memo identifies the issues that subgroup is to resolve.

Within the hydro-corridor, research, monitoring and evaluation activities fall into three categories; status monitoring, effectiveness research, and critical uncertainty research. Refer to the draft RME Plan for details regarding those monitoring components (see on BPA Web page soon).

What are the Objectives for the Hydro Group?

1. Clearly define the scope and coverage of RME activities as explicitly or implicitly requested by Hydro-related RPAs.
2. Conduct a gap analysis and develop a strategy for filling any observed RME gaps.
3. Develop protocols for testing compliance with performance standards prescribed in the BO.
4. Draft a detailed implementation plan that focuses on Hydro-related RPAs and will satisfy expectations at the check-ins.

What BO-related issues does the Hydro Group need to address?

Status Monitoring-

- Clearly identify Hydro Performance Standards (survival estimates) and compliance tests envisioned in 2005, 2008 and 2010.
- Ensure that data/estimates necessary to conduct the tests are being acquired over the ensuing years- juveniles, adults, and physical/environmental indicators.

Effectiveness Research-

- Are there specific actions specified in the BO that require assessments of effectiveness?
 - a. Are those being adequately resolved under AFEP or other programs?

Critical Uncertainty (CU) Research-

- Which CUs identified in the BO and Action agency 5-yr Implementation Plan need to be resolved by research in the hydro-system?
- Is research being conducted on those topics, and is it adequate?

Participation and Work products:

The sub-group will convene monthly. The principle product will be an implementation plan that focuses on Hydro-related RME. It should thoroughly address the issues expressed herein and any

related issues as deemed necessary by the work group. I have been asked to lead this group and take responsibility for compiling and posting materials generated by the group. The NMFS and AA are anxious to move forward on this matter and envision an initial meeting in the next month. I will be contacting each of you to verify your participation and availability for proposed meeting dates. Representatives from the AA & NMFS offices are being asked to participate (4-7 individuals total).