

## Section 3

# COORDINATED IMPLEMENTATION, RESEARCH, MONITORING AND EVALUATION

The Council recognizes the need to employ a systemwide approach to address the needs of Columbia River Basin fish and wildlife. To accomplish this, a coordinated implementation, research, monitoring and evaluation process is essential. This process should be flexible enough to evolve over time. It should facilitate identification of priorities. It should provide coordination at levels needed to accomplish basinwide as well as local watershed objectives. Coordination also must encompass all programs, plans, policies and statutes that affect fish and wildlife produced in the Columbia River Basin. It must allow all affected parties meaningful participation, encourage local implementation and guidance and provide needed regional coordination. The approach should also provide a mechanism for accountability.

Considering all the functions that need to be addressed by coordinated implementation, research, monitoring, and evaluation at both the regional and local level, it is easy to envision a complicated system of committees with frequent meetings and numerous assignments. The intent of the Council is to avoid this approach as much as possible. Coordinated implementation, research, monitoring and evaluation should be lean on process and heavy on implementation of on-the-ground actions for fish and wildlife. Standing committees and meetings should be kept to a minimum. When meetings are needed, existing groups and committee structures should be used. If existing committees are not appropriate for topics that need to be addressed, informal gatherings or ad-hoc approaches should be used. The processes and committees that are created should be reviewed frequently to ensure they are still needed. In short, the Council intends that coordinated implementation, research,

monitoring and evaluation should expedite, not burden, actions for fish and wildlife.

### 3.1 COORDINATE IMPLEMENTATION OF FISH AND WILDLIFE PROGRAM

Development and implementation of the Council's fish and wildlife program are complex and expensive undertakings central to the survival of the region's fish and wildlife populations. The Northwest Power Act requires that the Columbia River Basin be treated as a system. This, in turn, necessitates close coordination between planners and implementors of the program. In addition, the Act recognizes the expertise of the fishery managing agencies and tribes, accords due weight to their views and requires that this program complement their activities. Program success depends on Council recognition of the fishery agencies' and tribes' priorities and their prompt inclusion in the plan. At the same time, the success of the program depends on prompt implementation of program measures by all implementors, including the fishery managing agencies and tribes.

#### 3.1A Basin Oversight Group

##### Council

- 3.1A.1 Organize and convene a Basin Oversight Group, consisting of policy-makers from the state and federal implementing entities and other interested parties, to aggressively pursue implementation of

this program. The Basin Oversight Group will meet at least annually to address progress, problems and issues regarding program implementation. This group will review the annual implementation work plan and the annual program monitoring report. It will make recommendations to the Council by July 31 of each year. Meetings of the Basin Oversight Group will focus on needed actions and implementation problems, not routine reporting. All other committees identified in this program will coordinate with the Basin Oversight Group.

- 3.1A.2 Consult as a full Council on a quarterly basis with the directors of the fishery managing agencies, and on a government-to-government basis with the leadership of the Columbia River Basin tribes. The Council expects the consultations will focus on program development, modification and implementation. In particular, efforts will be directed at expediting measures to improve the survival of the basin's anadromous fish, resident fish and wildlife populations and resolving any disputes that are hampering expeditious program implementation. As part of the consultations, the Council will also encourage the agencies and tribes to identify and resolve differences in their respective positions on Columbia River Basin fish and wildlife issues. The Council further expects regular contact will be maintained between the staffs of the Council and the agencies and tribes.

### **3.1B Implementation and Monitoring**

As the region moves forward to realize the ambitious goals of the fish and wildlife program it will pursue two closely related parallel paths. One is the implementation path -- that is, taking specific actions identified in the annual

implementation work plan. This path will include steps to address uncertainties and refine actions over time. The second path is evaluation. The evaluation path will monitor overall program implementation, evaluate the effectiveness of actions taken, and judge their scientific merits. One outcome will be an annual assessment of the program's performance -- the annual program monitoring report. This report can be used to determine the need, if any, for mid-course corrections.

A key component of program implementation is feedback, through implementation of actions and program monitoring, to facilitate the refinement of the program over time. For this, the program framework (described in Section 4) will act as a yardstick for evaluating the performance of the program.

There are many areas where current information is incomplete because we are unable to measure some key variables and because of the possibility of unforeseen events. The Council expects to revisit the schedules and targets, as necessary, based on information gathered by the monitoring program and evaluation of implemented actions. If progress toward the performance standards or meeting rebuilding schedules falls significantly short, the Council will revisit all or part of the program.

Bonneville's implementation of this program to date has been guided by an implementation planning process negotiated with the fish and wildlife agencies and tribes. Bonneville created a policy review group and a scientific review group to review implementation questions. Coordination and prioritization of actions occur in technical scoping groups that focus on different aspects of the program. In this section, the Council calls for this implementation process to be broadened to include land and water managers and other interested parties, to produce an annual implementation work plan and a monitoring report, and to provide for independent scientific review of the program and its implementation. The annual implementation work plan should reflect program goals and principles and any

prioritization of measures developed by the Council.

### **Bonneville, Fishery Managers and Others**

3.1B.1 Expand the implementation planning process so that participants prioritize and coordinate implementation of all program measures, including research.

Participants should include the Council, the National Marine Fisheries Service, fish and wildlife agencies, Indian tribes, Bonneville, river operators, land and water managers, utilities, citizen groups and others.

3.1B.2 Participants in this expanded process should prepare an annual implementation work plan that:

- details actions by all parties to implement program measures;
- prioritizes actions, using the six principles described in Section 4.1A and any other prioritization developed by the Council;
- identifies criteria used to select habitat actions;
- identifies and explains any conflicts with dates or schedules in the Council's program and suggests modifications;
- describes actions to deal with uncertainties identified by the independent scientific group; and
- estimates costs of implementing measures.

3.1B.3 The annual implementation work plan should include (but not be limited to) actions to address key scientific uncertainties associated with the program and its measures (see Section 3.2C).

3.1B.4 The annual implementation work plan should be submitted to the Council by June 15 of each year. In the course of its review, the Council will review the list of key uncertainties (see Section 3.2C) and the manner in which the work plan proposes to address these uncertainties. Unless the Council provides otherwise, responsible parties should proceed with implementation within 45 days of submitting the work plan to the Council.

### **Federal Government, States and Tribes**

3.1B.5 Review measures in this program that call for collective action by the states, tribes and other entities. Designate the appropriate entity to coordinate implementation of each measure. The designated entity should be responsible for preparing work plans and reporting progress. By June 30, 1995, report to the Council these designations. Where sources of funding are not identified, discuss the capabilities of the states, tribes and other entities to implement the measures with available resources. For each measure that cannot be met with available resources, and there is clearly no obligation of the Bonneville Power Administration under the Northwest Power Act, propose:

- an alternative funding source;
- the estimated cost for implementation; and
- the legal authority for allocating the necessary funds from the proposed source.

### **Federal Energy Regulatory Commission**

3.1B.6 For measures addressed directly to Federal Energy Regulatory Commission licensees, or that are otherwise relevant

to Commission decision-making, take measures into account to the fullest extent practicable.

### 3.1C Management and Coordination

Under the Northwest Power Act, the Council's role is to develop a regional fish and wildlife program. Implementation of this program is placed in the hands of others. The success of this program depends primarily on the willingness and ability of those implementing it.

The Council recognizes that implementation of this program will be a major challenge to the region. It is a program undertaken with great urgency and at great expense, and its successful implementation depends on the coordinated efforts of many separate groups.

To get major pieces of work under way quickly, this program establishes a large number of committees and working groups. The Council is especially concerned that these groups work closely together to achieve the primary goal of this program -- the successful recovery of the salmon and steelhead populations in the Columbia River Basin in a manner that is as fast, efficient and cost-effective as possible.

Effective management and coordination of this program is essential. The Council believes two measures will contribute significantly to management and coordination.

First, the Council urges Bonneville, as primary funding agency, to work with the agencies, tribes and other implementors to establish an appropriate management structure with clear responsibility and accountability for the implementation of this program. While the decision on exactly what this structure should be is one best made by the implementors, the ability to make prompt and effective implementation decisions is critical. In particular, the management structure should include an executive, whether an individual or a small team, who is responsible for results, can determine priorities, make final decisions, resolve disputes and avoid deadlocks.

Second, the Council agrees to take all steps possible to further implement this program. The Council recognizes that even the most carefully developed plans can be improved with

experience and will need adjustments and corrections as they are carried out. The Council intends to promptly take up and act upon any suggestions from implementors for changes in program measures that will improve implementation.

The Council also will use the extent of its powers, including both the legal authority given to the Council under the Act and its persuasive power with Congress, the states and the public, to encourage the full participation of implementing agencies. In the event that an agency is unwilling to cooperate in carrying out this regional program, the Council wishes to be advised immediately so that appropriate steps can be taken.

#### Bonneville

- 3.1C.1 Pursuant to the requirements of Sections 4(h)(5)(A) through 4(h)(11) of the Act, fund those program measures that have been approved for funding by the Council. To promote coordination and efficiency, and eliminate duplication, submit the following to the Council: notices of program interest, requests for proposals, proposed contracts and a statement explaining how each proposed contract will implement a particular program measure. Bonneville should inform the Council of any other fish-and-wildlife-related activities it plans to conduct, and should provide the Council an opportunity to comment on the design of such projects.
- 3.1C.2 The Council will continue to use its intergovernmental agreement with Bonneville to ensure an expedited review of all funding proposals in accordance with Section 3.1C.4, below.
- 3.1C.3 Where the Council calls on Bonneville to fund program measures at federal projects, the Council's intention is that Bonneville immediately initiate

discussions with the appropriate federal project operator and the Council to determine the most expeditious means for funding those measures. As provided by the Northwest Power Act, the amounts expended by Bonneville pursuant to this program should be allocated as appropriate by Bonneville, in consultation with the Corps of Engineers and the Bureau of Reclamation, among the various hydroelectric projects of the Federal Columbia River Power System. Those funds should be allocated to the various project purposes in accordance with existing accounting procedures for the Federal Columbia River Power System.

- 3.1C.4 Where the Council calls on Bonneville to fund a program measure upon Council approval, the Council's intention is that Bonneville fund that measure when the Council approves it for funding purposes. A program amendment will not be required prior to such funding.
- 3.1C.5 In selecting among alternative means for funding program activities on Indian reservations, choose a means that fully complements the activities of the affected Indian tribe and recognizes the unique rights and concerns of Indian tribes with respect to reserved Indian lands.
- 3.1C.6 Monetary costs and electric power losses resulting from the implementation of the program should be allocated by the Bonneville administrator consistent with individual project impacts and systemwide objectives of Section 4(h) of the Northwest Power Act.

### 3.1D Subregional Process

On June 1, 1991, the fisheries agencies and Indian tribes of the Columbia Basin Fish and

Wildlife Authority submitted to the Council the Integrated System Plan for Salmon and Steelhead Production in the Columbia River Basin. The building blocks for the Integrated System Plan are the subbasin plans prepared for the 31 major watersheds of the Columbia River Basin that produce salmon and steelhead. These plans, along with other resource management plans, will be the starting point for identifying actions to help specific salmon populations. Plans developed under the program, and otherwise, will be used to address other fish and wildlife species.

#### **Fishery Managers and Bonneville**

3.1D.1 Form subregional teams to assist in implementing fish and wildlife measures in the following subregions of the Columbia River Basin:

- below Bonneville Dam (Lower Columbia Subregion);
- Bonneville Dam to Priest Rapids Dam (Lower-Mid Columbia Subregion);
- Priest Rapids Dam to Chief Joseph Dam (Upper-Mid Columbia Subregion);
- above Chief Joseph Dam (Upper Columbia Subregion);
- Snake River from mouth to Hells Canyon Dam (Lower Snake Subregion); and
- above Hells Canyon Dam (Upper Snake Subregion).

Submit subregional approach for the upper Snake to Council by June 1995. Submit subregional approaches for the lower Snake and upper mid-Columbia to Council by June 1995. Submit subregional approaches for the remaining areas to Council by the end of 1995. These approaches should include list of participants, process for identifying projects, method for ensuring that

activities in subregion are coordinated to avoid inconsistency and redundancy, as well as addressing all items listed below. After approval of the Council, implement each subregional approach. Until subregional approaches are approved by the Council, submit individual high priority projects to the Council for consideration.

Participation on subregional teams should include appropriate fish and wildlife agencies, tribes, utilities, Bonneville, land and water managers, private landowners, citizen groups, the Council and others. For each subregion, the teams will use the Integrated System Plan, subbasin plans, other fish and wildlife plans and any other available relevant plans and information to prepare recommendations for the annual implementation work plan (Section 3.1B) and the annual program monitoring report (Section 3.2A). Each team will be responsible for identifying any conflicts with other resource management plans in the relevant subregion, along with options for resolving these conflicts. Recommendations should:

- Explain whether the measure would address factors that limit weak stocks. Rebuilding weak populations, especially populations listed under the Endangered Species Act, should be given priority.
- Provide reasons for concluding that the project would pose no appreciable risk to biological diversity among or within anadromous fish, resident fish or wildlife populations, using the best available tools (such as the Regional Assessment of Supplementation Projects, Chapter III.C of the Integrated System Plan, Habitat Project Selection Criteria) and data (such as the wild and natural

production data in Section 7.2C, hatchery analyses in Section 7.3B and cumulative impacts studies in Section 7.2D) to support reasoning.

- For proposed artificial production measures, explain whether the measure would make use of existing production facilities and, if not, why not.
- Approach the needs of target populations from an ecosystem perspective. Give special priority to projects that are part of model watersheds or other coordinated watershed programs.
- Expedite consideration of appropriate, locally based habitat projects.
- If a measure is designed to create harvest opportunities, explain whether those opportunities will be in tributaries or other areas where there would be no significant, additional harvest pressure on weak populations.
- Explain any steps needed to ensure that activities to benefit one species will not inappropriately harm another.
- Explain whether the measure would help address a critical uncertainty (Section 3.2C).
- Provide estimates of cost and biological effectiveness of proposed measures for the target fish and/or wildlife population. Relate biological effectiveness to success in meeting survival targets, rebuilding schedules, performance standards or other relevant, biologically based factors. Specify the time period over which improvement may be expected.
- Explain how the measure would be monitored and evaluated.

### **Fishery Managers**

3.1D.2 In coordination with the appropriate subregional team, periodically review and update each appropriate subbasin plan. The first updates will be completed as part of development of an implementation plan under Section 7.1C and will address the considerations, objectives, alternative strategies and recommended strategies sections of the plans. Subsequent updates should occur consistent with the needs of each subregion. Make subbasin plans available and update background information and data in the plans through the Coordinated Information System.

### **Bonneville**

3.1D.3 Fund development and implementation of the subregional approaches and updating, as necessary, of the subbasin plans.

## **3.1E Management Review**

This fish and wildlife program has, by necessity, been drawn in large part from science that is not yet fully developed, and its many complex measures constitute an immensely difficult and highly expensive undertaking for the region. In order then to realize the best value from this program, its component measures must be implemented and monitored in a coherent, well-organized and carefully disciplined manner. In developing the program, the Council has taken the first steps toward orderly implementation. The Council also acknowledges the efforts of Bonneville, the fish and wildlife agencies, tribes and others to organize and coordinate program initiatives as they are implemented. However, the Council recognizes that the program is composed of discrete parts. These separate measures need to be systematically directed under a comprehensive structure that facilitates adaptive management and ensures that the region receives the best possible return from its investments in fish and wildlife mitigation.

### **Council**

3.1E.1 For these reasons, not later than April 1, 1995, the Council will issue a request for proposals from recognized management consulting firms for an analysis of the overall management structure of the program, with particular attention to matters such as: 1) designing means to recognize and address key biological uncertainties, 2) developing measurable benchmarks and clearly identified objectives, 3) establishing a workable mechanism for setting program priorities and monitoring progress, 4) reducing costs and delays in the implementation process and 5) putting in place a clear system of accountability.

### **Consultants and Council**

3.1E.2 The consulting firm chosen for this study will be requested to complete the analysis and submit draft recommendations to the Council and the region for review and comment not later than October 1, 1995, with a final report within 45 days after close of comment. Based on this report, and the comments received on it, the Council intends to adopt an overall structure for the adaptive management of the program and its measures. Once adopted, this strategy will provide a basis for highly effective performance by ensuring that the Council focuses appropriate management attention on the key elements of, and the pivotal decisions required in, the fish and wildlife program.

## **3.2 MONITORING AND EVALUATION**

The goal of this program can be achieved only if all parties in the Columbia River Basin learn from its implementation. This policy of learning by doing is called “adaptive

management.” Faced with substantial biological uncertainty, the parties involved should act affirmatively to protect and enhance fish and wildlife affected by hydropower development and operations. They must design projects carefully so that information can be collected to improve future management decisions. Projects should test quantitative hypotheses wherever possible, taking into account the need for control or comparison cases and for statistical validity.

Adaptive management is a scientific policy. It calls for a conscious effort to improve fish and wildlife management, using elements of this program as experiments that can provide useful information not otherwise available. Adaptive management also is a system policy, combining monitoring, evaluation and research throughout the Columbia River Basin so that the aggregated effects of this program can be detected, assessed and improved over time. The system monitoring and evaluation process described below will aid adaptive management by providing feedback on program projects.

The purpose of these monitoring and evaluation activities is to ensure that the region systematically improves its knowledge of what measures work, what measures do not and why. To help identify areas where we most need to improve our understanding and to focus research and evaluation, the Council is calling on an independent scientific group (see Section 3.2B, below) to identify “key uncertainties”--questions whose answers are most crucial to the success of program measures in rebuilding salmon and steelhead populations. These questions will be used by the implementation process in identifying measures to be implemented, and by the Council and the region in reviewing the annual implementation work plan, to be sure that the approach to learning is well thought through. The Council sees this as a critical step in carrying out an adaptive management approach to salmon and steelhead rebuilding. The Council recognizes that the region cannot expect perfect knowledge before taking action and must act on the basis of the best information available at that time.

The Council expects to learn not only from program implementation, but also from the

Endangered Species Act and other federal processes, which will tend to focus federal agency implementation of the Council program, other salmon recovery measures and other analyses of salmon recovery. The Council does not expect to amend its program each time a new development occurs. Rather, over the course of several years, a group of program issues may emerge, and an amendment process can be initiated. This will require the Council not only to pay careful attention to this program’s evaluation processes, but to monitor the National Marine Fisheries Service’s consultation process.

## 3.2A Program Monitoring

### Council

- 3.2A.1 Coordinate monitoring efforts connected with this program. This includes the rebuilding schedules (Section 4.3), identification of index stocks and monitoring needs (**Section 4.3C**), and performance standards (**Section 4.3B**). The Council will facilitate the development and implementation of these measures and ensure that these monitoring efforts are coordinated with the program evaluation described in Section 3.2B. The Council will also ensure that information from these programs is transmitted to the coordinated information system (Section 3.3) and the annual monitoring report (Section 3.3B). Problems encountered in developing these sections should be brought to the Council for review and action.
- 3.2A.2 In consultation with fishery managers, prepare an annual report evaluating program progress. This report should be based on the annual monitoring report from the Coordinated Information System (**Section 3.3**), and should evaluate progress toward the rebuilding schedules, performance standards, and

other goals and objectives of this program.

## 3.2B Independent Scientific Evaluation

### Bonneville

- 3.2B.1 Expeditiously act to develop and fund an Independent Scientific Group to provide a biennial evaluation of the program on its scientific merits and to fulfill other tasks described in this program. The group should examine the scientific underpinnings of the program and evaluate the program as a vehicle to achieve the Council's goals and those of the Northwest Power Act.

The Independent Scientific Group should consist of people with strong natural or social science experience who have demonstrated an ability to provide independent review of complex environmental issues. The group (and contract or staff support for the group) should be organized and funded to ensure the scientific credibility of its evaluations, free of institutional constraints or biases. The initial members of the independent scientific group should be the present members of Bonneville's Scientific Review Group. Additional and future members of the group should be appointed by the policy group described in Section 3.2B.2 from a list of candidates submitted by the Independent Scientific Group. The group may suggest improvements in the program, in research projects, in the coordinated information system, or in the implementation process, including changes that would facilitate evaluation. Bonneville should take all steps necessary to ensure that this group is operational by January 1, 1995, including provision for support staff and other needed resources.

### Independent Scientific Group

- 3.2B.2 The group should make use of the past efforts of the Council's Monitoring and Evaluation Group. The Independent Scientific Group also should review questions submitted by the Council or through the implementation process. The group should be compensated fully for its time and travel.

### Bonneville, Fishery Managers and the Council

- 3.2B.3 To ensure the independence of the scientific group described in Section 3.2B.1, organize a policy group representing each of the three entities. The policy group will select members of the scientific group based on a list of candidates proposed by the Independent Scientific Group. The policy group should also provide a focus for policy issues related to the Independent Scientific Group and will assist the Independent Scientific Group in identifying appropriate issues and developing an annual work plan.

## 3.2C Key Uncertainties

### Independent Scientific Group

- 3.2C.1 Identify and revise over time specific key uncertainties associated with program measures. These key uncertainties should be those information needs most critical to the achievement of program goals, and rebuilding and survival targets. These uncertainties should be used to guide the prioritization and funding of research efforts conducted under this program.

### Council

3.2C.2 Refine and elaborate analyses of the relative contributions of various human activities to fish mortality. Circulate the resulting analyses for public review. There is continuing debate over the contribution of various human activities to salmon mortality. To a certain extent, this debate involves complex interactions that would lend themselves to evaluation only after lengthy, basic research and analysis. However, several parties have offered analyses that provide a general picture of relative contributions to fish mortality, and the Council believes it may be worthwhile to refine these analyses in an effort to arrive at a common understanding of these questions.

### **3.2D Endangered Species Act Monitoring and Coordination**

The National Marine Fisheries Service has responsibility for salmon populations listed under the Endangered Species Act. The Service's Salmon Recovery Team has recommended that the Service establish a Salmon Oversight Committee to oversee activities affecting listed populations. The Independent Scientific Group described above shares many features in common with the proposed Salmon Oversight Committee and could serve the needs of both the Council and the Service. The Council intends to work with the Service to coordinate any scientific and policy issues with the Council and the Independent Scientific Group.

#### **Council**

3.2D.1 Monitor the Endangered Species Act consultation process to ensure that program monitoring and evaluation results are considered, and that the Council is aware of developments in river operations, harvest, habitat and production activities that may suggest the need for program amendments.

### **3.2E Prioritization and Cost-Effectiveness**

#### **Council**

3.2E.1 Continue to review program measures for purposes of prioritization, cost-effectiveness and biological effectiveness.

### **3.2F Regional Analytical Methods Coordination**

To develop and assess regional strategies to rebuild fish and wildlife populations, and to make the program framework operational, analytical tools should be developed that are both understandable and credible. Computer models and other analytical methods are essential to the program framework. They provide a means to link program measures to survival targets, rebuilding schedules and rebuilding targets. A variety of tools may be developed that span legitimate scientific differences or reflect different approaches. This process should not stifle these differences, but instead should promote understanding of their implications. However, the region should integrate these tools into a unified approach. The Council applauds the considerable progress in this direction, and calls on the technical staffs of the various parties to expedite development of analytical tools and their documentation to assist decision-making.

All computer models are based on imperfect knowledge. They cannot fully represent the complexity of the Columbia River ecosystem, much less predict the future. There remain major uncertainties regarding the biological effectiveness of some measures. Models necessarily incorporate assumptions that are debatable, even where they are based on the best available scientific knowledge.

In the past few years, considerable progress has been made in the development of analytical

tools. Modelers and analysts have devoted considerable effort in coordinating their activities and increasing their understanding of each group's analytical tools. However, substantial inefficiencies remain that hamper development of needed analysis. These reflect the number of regional resources devoted to these activities and institutional structures that encourage each entity to develop its own unique analytical tools.

To deal with this, the Council calls for the development of a regional center for biological analysis. This center would provide the resources to house analysts and staff necessary to perform modeling and other analysis to support regional efforts, such as this program and activities in connection with the Endangered Species Act.

#### **National Marine Fisheries Service**

3.2F.1 Develop a center for regional biological analysis. This center should provide the resources and support necessary to develop regional analytical tools and to provide analysis needed to support regional efforts such as this program and activities in connection with the Endangered Species Act. Personnel for this center should come primarily from the various regional entities involved in these activities, on a limited fellowship basis. The mission of the center will be to foster a coordinated and objective approach to development of analytical tools and needed analysis. The analytical effort should be closely tied to the Coordinated Information System. For this reason, and to provide an administrative structure, the Council recommends that this center be administered through the Pacific States Marine Fisheries Commission.

#### **National Marine Fisheries Service and the Bonneville Power Administration**

3.2F.2 Jointly provide the funds and resources necessary for the development and operation of the center for biological analysis described in Section 3.2F.1. Develop a procedure for sharing the associated costs to ensure the efficient operation of the center over time.

### **3.2G Disseminate Research and Monitoring Information**

#### **Bonneville and Corps of Engineers**

3.2G.1 Annually publish a summary of results from all studies funded under the program. This should consist of concise descriptions of the project, results to date and future directions. Summaries should be prepared by the contractors, and compiled and published by Bonneville.

3.2G.2 Specify as part of the above task that summaries of research originating from the fish and wildlife program be submitted to the Coordinated Information System in appropriate form for incorporation into its research information data base. Fund the development of similar summaries for prior research conducted under the fish and wildlife program.

3.2G.3 Hold annual symposiums at which contractors present the results of their studies, beginning in March 1993. The purpose of these symposiums is two-fold: first, to promote the use of research and monitoring information funded under this program by managers and non-research personnel, and second, to provide peer review and coordination of research within the research community.

## **3.3 DEVELOP COORDINATED INFORMATION SYSTEM**

## **AND PREPARE MONITORING REPORT**

The Coordinated Information System is an integral part of the Council's monitoring and evaluation program. It is essential to the efficient collection and dissemination of information produced as a result of this program. The system also serves to increase the cost-effectiveness of research, monitoring and evaluation by ensuring that information produced by these programs is readily available to the region.

### **3.3A Fund Coordinated Information System**

#### **Bonneville**

3.3A.1 Continue to fund the development of the Coordinated Information System to promote effective exchange and dissemination of information in standardized, electronic format throughout the basin. The Coordinated Information System should be maintained as an objective vehicle for collection and dissemination of information to and from all parties. It should be developed in close cooperation with the fishery managers and other concerned parties. This development should include making available information from primary sources, such as fishery managers, and secondary sources, such as the Fish Passage Center and the Pacific States Marine Fisheries Commission. Standardizing data formats and establishing data needs will be an ongoing responsibility of those developing the Coordinated Information System. Include the data bases listed in Sections 3.3B through 3.3D.

#### **3.3A.2 Coordinated Information System**

Prepare an annual program monitoring report. This report should compile and summarize information in the anadromous fish data base (Section 3.3B), including information on program implementation, performance standards, harvest and stock status. The annual monitoring report should be the basis for the annual evaluation report (Section 3.2A) and the biennial scientific evaluation (Section 3.2B.1). The final report should be submitted to the Council and the National Marine Fisheries Service by June 15 each year.

### **3.3B Anadromous Fish Data Base**

#### **Relevant Parties**

3.3B.1 Those developing the Coordinated Information System should assemble and tabulate on an annual basis and make available in electronic format all data necessary to the production, updating and enhancement of information in the 1992 Stock Summary Reports. Those responsible for the Coordinated Information System should update the relevant data on a regular basis. Other types of natural, hatchery and system information requested for program monitoring and evaluation should be included in the anadromous fish data base. Hatchery data should be developed in cooperation with the Integrated Hatchery Operations Team and should contain all data necessary to ascertain the performance of Columbia River Basin hatcheries.

### **3.3C Scientific Information Data Base**

#### **Relevant Parties**

3.3C.1 Existing information from fish and wildlife program projects, other regional research efforts, and related national and international anadromous fish research should be compiled and made available to users in the form of a computerized bibliographic data base and a systematic, readily accessible, document retrieval system. Research data bases that are maintained by various fish and wildlife entities should be cataloged in a summary data base describing the information and detailed instructions on how to access this data.

tracking system developed to monitor and categorize expenditures by geographic location (Environmental Protection Agency River Reach System), species, type of action and other relevant categories. This database should be a part of the Coordinated Information System. Data base should focus on Bonneville expenditures, but also include other agencies' funding activities under the fish and wildlife program.

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### **3.3D Habitat Data Base**

#### **Relevant Parties**

3.3D.1 Information to permit evaluation of the status of anadromous fish habitat in the Columbia River Basin should be compiled and made available to Coordinated Information System users. The data base should include a hierarchical classification system. This should include information on carrying capacities, survival rates and habitat-related human activities. In developing and maintaining this capability, explore options to survey habitat conditions, such as analysis of aerial photographs, that could be more expeditious, less cumbersome and less costly than conventional methods. Also, explore using a standard organizing approach such as a geographic information system.

### **3.3E Project Accounting Data Base**

#### **Bonneville**

3.3E.1 In cooperation with the fishery managers, maintain a data base and