

DRAFT MEMO

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TO: Technical Work Group

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**SUBJ: Proposal for Accelerating the Development of a Long-term
Monitoring Plan for Native and Non-native Fish in the Colorado
River Ecosystem below Lees Ferry**

Introduction

The Grand Canyon Monitoring and Research Center (GCMRC) has the responsibility for developing and implementing a long-term monitoring plan for detecting and assessing changes, in response to dam operations under the Record of Decision (ROD) of native and non-native fish populations in the Colorado River ecosystem. GCMRC's current approach to developing a long-term monitoring plan was based on the advice of the Transition Work Group and is consistent with the protocols described in the FY 1997 – 2002 Strategic Plan. This approach calls for GCMRC to:

- Continue the Glen Canyon Environmental Studies monitoring program as a transition monitoring program;
- Conduct synthesis activities;
 - review the results of GCES commissioned synthesis activities (SWCA Data Integration Report and Patten GCES Phase II Biology Integration Report),
 - commission additional synthesis efforts (Gorman – FWS),
- Develop a conceptual model of fish and the Colorado River ecosystem;
- Consolidate existing fish data into a single database managed by GCMRC and analyze the data as appropriate;
- Develop a Draft long-term monitoring plan based on the activities outlined above;
- Conduct a PEP

- Revise the Draft long-term monitoring plan following the PEP and implement the Final long-term monitoring plan through the RFP process.

Recently, concerns raised over the value of the mainstem native fish data being collected through the existing monitoring program, difficulty in consolidating and analyzing existing data through a contract, and a desire to accelerate the development of a Draft long-term monitoring plan has caused GCMRC to re-examine its approach.

Background

Presently, GCMRC relies heavily on the knowledge and expertise of researchers in developing long-term monitoring plans. This presents a number of difficulties, including conflicts between this approach and the competitive process GCMRC uses to make awards, as well as differences in scientific opinion. These scientific differences, as well as the conflicts inherent in the competitive approach, became apparent during the recent workshop to evaluate the Temperature Control Device (TCD, November 8-10, 1999). At the TCD workshop it was suggested that the present monitoring effort is insufficient and lacks a sound statistical design for assessing resource responses to dam operations, and is not capable of addressing management questions. (Unfortunately, we are unable to separate speculation and opinions from empirical findings due to the lack of a consolidated database and a common scientific perspective.) Based on these discussions, a recognition of the past and current concerns of native-fish researchers for the resource, and an evaluation of the slow progress GCMRC has been making in developing our long-term monitoring program, GCMRC is proposing a new strategy to accelerate the development of a Draft long-term fish monitoring plan. This strategy calls on GCMRC to significantly scale back the native fish monitoring planned for FY 2000 and to reprogram those funds to the collation, synthesis, and analysis of existing fish data in conjunction with the development and testing of a long-term fish monitoring protocol. For the purposes of this paper, this strategy is labeled “Option 1: Accelerated Development.”

Alternatives to this strategy include “Option 2: Status Quo” and “Option 3: Do Both.” Each of these options is presented and discussed below.

Option 1: Accelerated Development.

This option would require GCMRC to withdraw the present FY 2000 RFP for native fish monitoring and focus our efforts and financial resources on developing a Long-term Monitoring Program. In order to meet endangered species compliance requirements this option would include an over-wintering monitoring trip to be conducted somewhere between January and March. It would also include an effort to monitor spawning in the LCR in FY 2000. The remainder of the native fish funds targeted for monitoring activities would be redirected to consolidating and evaluating existing data, and designing a long-term monitoring. The steps for implementing this option are described below.

Step 1 - Cancel Existing RFP and Negotiate Scaled-Back Monitoring Activities

Under this step, the existing FY 2000 Native Fish Monitoring RFP would be cancelled and GCMRC would instead negotiate with the FWS to continue its efforts to monitor overwintering mortality of humpback chub. GCMRC would also negotiate with AGFD to conduct monitoring of humpback chub monitoring in the LCR. These are the only monitoring activities that would be conducted. It is estimated that these would cost \$75,000 - \$100,000 for the monitoring and data analysis, exclusive of logistics costs. The remaining funds would be used to support the steps described below.

Step 2 - Establishment of a Fish Long-Term Monitoring Workgroup

GCMRC would initiate contracts with a number of researchers to work with GCMRC to:

- (1) consolidate existing data sets (see Table 1);
- (2) conduct additional analyses of those data sets;
- (3) develop a Draft long-term monitoring plan for evaluation by a PEP; and
- (4) produce a report that contains a revised Draft long-term monitoring plan.

The Fish Long-term Monitoring Workgroup (FLMW) will be led by GCMRC and will work over the course of nine-months to consolidate existing native and non-native fish data, analyze that data, and draft a long-term monitoring plan for review. Additional staff support will be provided by the Bureau of Reclamation's Upper Colorado Regional office in Salt Lake City. Potential members of the FMW include:

Potential Principal Investigators

Michael Douglas, Arizona State University

Josh Korman, Ecometrics, Inc.

Tim Hofnagle, Arizona Game and Fish Department

Bill Persons, Arizona Game and Fish, Department

Robert Simonds, U.S. Fish and Wildlife Service

Dennis Stone, U.S. Fish and Wildlife Service

Richard Valdez, SWCA, Inc.

Carl Walters, University of British Columbia

GCMRC Staff

Chris Flaccus, GCMRC (Oracle-DBMS)

Barbara Ralston, GCMRC

Mike Yard, GCMRC

U.S. Bureau of Reclamation

Rob Clarkson, BOR - Phoenix

Larry Crist, BOR-Salt Lake

Dennis Kubly, BOR-Salt Lake

The primary working group will be kept to approximately 8 individuals in order to facilitate the effectiveness of the group.

Step 3 – Scoping Meeting

The purpose for the FLMW scoping meeting scheduled for January 2000 will be to review AMP management objectives and information needs and translate these into long-term monitoring objectives to decide on the methods and approach to be used in developing a long-term monitoring plan. A discussion of the types of ecological indicators, response variables (i.e., target species, age class structure), data requirements, sampling design (spatial and temporal) and types of statistic analyses to be used will be conducted. Sub-groups may be formed, as appropriate. A schedule of tasks, individual roles and responsibilities, and a schedule of meetings and meeting dates will be established.

Step 4 - Data Acquisition and Collation

After the scoping meeting, the first activity of FLMW will be to consolidate the historical fishery data collected over the past 20 years of research and monitoring in the Colorado River ecosystem. This data consolidation process will require considerable effort and participation from each of FLMW members, as well as the primary representatives of the Federal and state agencies, universities and private organizations that have been or are presently involved in data collection and monitoring activities. The purpose of this effort is to centralize existing data into a common database for use in additional analysis and development of a long-term monitoring plan. Initially we intend on evaluating the data for data gaps or discontinuities (i.e., temporal, spatial or effort) that will assist us in developing a system wide approach to long-term monitoring. Having access to the collated data in its entirety is considered essential for reviewing the usefulness and importance of the ongoing data collection activities. Additionally, developing a common database will assist us in knowing where the data gaps exist, the underlying limitations and assumptions of this program, and in designing the long-term monitoring plan.

We recognize that certain databases are not complete and will require additional data entry or reorganization. Therefore, we expect to spend a few months where data will be appended and updated into the centralized database. In pursuit of developing this centralized database, we will provide financial assistance and/or personnel to complete this task. However, as part of this developmental process we feel that it is critical to evaluate the existing data in its present state, in order to determine where to direct our emphasis.

Step 4a - Data Use/Sharing Protocol

The FLMW together with GCMRC will develop a Data Use/Sharing Protocol to guide the use of this data once it is compiled. The Data Use/Sharing Protocol will recognize that the data has been collected as part of Government funded contracts and will address investigator concerns regarding intellectual property, proprietary use and data access. GCMRC will take the lead in drafting this protocol and will consider not including specific data in the fishery database, if we are unable to resolve specific concerns regarding stipulations and constraints on data access and use that are considered

not in the best interest of the Government. This action will result in GCMRC barring these individuals and agencies for future GCMRC contracts.

Step 4b - Compilation Process

The FLMW together with the GCMRC Oracle database manager will design the database. One approach that will be considered is using the process identified in the Grand Canyon Fisheries Integrated Database (Valdez 1996) as our initial organizational template to evaluate and develop the integrated database. GCMRC will request that the different data collection plans and other useful information pertinent to the type of data collected or the organizational structure of existing databases be provided to FLMW staff working on this effort. Each of the dissimilar databases will be evaluated and translational programs and field linkages will be developed. Upon completing this integration process GCMRC will transfer and merge all of the data into a database system supported by Oracle for use in subsequent analyses and in developing the long-term monitoring plan.

Step 5 - Analysis of Collated Data

Once the data has been collated into an integrated database, the FLMW will be expected to conduct additional analyses of the data to assess the status and trends of humpback chub as well as to conduct additional statistical analyses that will be useful in designing a long-term monitoring plan.

Step 6 - Development of a long-term monitoring plan

Parallel with the assembling and compiling of data into a functional database will be the concurrent drafting of a long-term monitoring plan. Substantial iteration between the analysis of the existing data and the development of the long-term plan is anticipated. The FLMW will draft a long-term monitoring program that specifically addresses the goals of the Adaptive Management Program (AMP) as specified in the principles, goals, and management objectives developed by the Adaptive Management Work Group and the Technical Work Group. Following the field testing outlined below, the FLMW will be expected to revise their draft long-term monitoring plan for presentation to a PEP.

Step 7 - Field testing and initial PEP review

Once the draft long-term monitoring plan has been developed, GCMRC will provide the logistics for the FLMW to go on the river and field test their proposed

sampling scheme. Members of the Protocol Evaluation Panel will be invited to join this field test so that they are exposed to the unique aspects of sampling in the Colorado River ecosystem that will need to be taken into consideration when reviewing the final draft long-term monitoring plan. In essence, this field testing can serve as an additional effort to monitor native fish in the Colorado River ecosystem in FY 2000.

Step 8 - PEP Review

Once a final draft long-term monitoring plan has been developed, a formal PEP will be convened and the plan will be presented to the PEP for review and comment. GCMRC will be provided a final report from the PEP regarding their suggestions for the structure and content of the final long-term monitoring plan.

Step 9 - Implementation of a Long-term Monitoring Plan

GCMRC will use the final draft long-term monitoring plan and the PEP recommendations to develop and propose to the TWG and AMWG a long-term monitoring plan for native and non-native fish in the Colorado River ecosystem. It is expected that this long-term monitoring protocol will be implemented as a prototype during the first one to two years where additional data collection and analysis may be used to refine the monitoring protocols. The long-term monitoring plan would be implemented using the GCMRC RFP process and evaluated by a PEP after five years.

Schedule

- Discuss strategy with affected parties, November 1999.
- Revise strategy and present to the TWG, December 7-8, 1999.
- Revise strategy and present to the AMWG, as appropriate.
- Pick members and staff for the FLMW January 2000.
- Contract with members of FLMW and convene first meeting in January 2000.
- Develop draft and finalize Data Use/sharing Protocol in January 2000.
- Complete database assessment process, January 2000.
- Second meeting of FLMW in March, 2000.
 - Preliminary data evaluation
 - Preliminary analyses and identify limitations and gaps
 - Determine spatial and temporal requirements
 - Evaluate preliminary draft plan outline

- Develop draft standardize collection guideline
 - Sampling design
 - Data collection (gear types, sampling effort)
- Development of pilot studies field testing
 - Validation tests
- Strategy for monitoring improvement
- Develop reporting format (status and trends)
- Complete development of centralized database by May 30, 2000.
 - Develop translational programs
 - Develop data linkages
 - Develop user interface
- Third meeting of FLMW in May 2000.
- Analyze data and develop draft long-term monitoring plan by August 2000.
- Conduct Field test and informal PEP on river in August 2000.
- Fourth meeting of FLMW in September 2000.
- Produce final draft long-term monitoring plan and present at PEP in October 2000.
- GCMRC obtains final PEP report and recommendations in November 2000.
- GCMRC issues RFP for long-term monitoring in December 2000.
- GCMRC issues five-year contract for long-term monitoring in May 2001.

Pros and Cons of Option 1

1. Reduces funding of monitoring activities of uncertain quality to meet minimum data requirements.
2. Redirects funds from data collection, to data consolidation and analysis and development of a long-term monitoring plan.
3. Focuses attention of critical PIs through GCMRC effort to consolidate and analyze existing data.
4. Significantly accelerates time frame for implementation of a long-term fish monitoring plan.
5. Provides a consolidated fish data base suitable for additional analysis.

Option 2: Status Quo

This option would call for GCMRC to continue the native fish monitoring work called for in the FY 2000 Work Plan. Efforts to consolidate and analyze the existing native fish data would be done as time permits within the context of limited funds. No effort would be made to develop a long-term monitoring plan in FY 2000. A PEP would be conducted in FY 2001, where the panel would be asked to evaluate existing monitoring programs without the opportunity to go into the field. A long-term monitoring plan would be developed in FY 2001 for implementation and field testing in FY 2002.

Pros and Cons of Option 2

1. Transition monitoring would be continued.
2. No guarantee that a consolidated data base would be developed without leadership from GCMRC and a commitment from the PIs that have the historical data.
3. No proactive analysis of existing data as a means of assisting in the statistical design of a long-term monitoring plan.
4. Relies on contractors to synthesize existing data.
5. Wait until FY 2002 to begin implementation of a long-term monitoring protocol.
6. May not result in a consolidated fish data base suitable for additional analysis.

Option 3: Do Both

Under this option, GCMRC would be asked to maintain the level of monitoring proposed in the FY 2000 Work Plan and to engage in the strategy for the accelerated development of a long-term plan described in option 1, above. This would require GCMRC to reprogram FY 2000 funds targeted for TWG Requests (\$50,000), Unsolicited Proposals (\$100,000), and some of the funds targeted for In-House Monitoring and Research (\$50,000) and would severely limit GCMRC's flexibility to respond to unanticipated requests in FY 2000. In addition, by maintaining the level of monitoring proposed in the FY 2000 workplan, the scientists needed to participate in the data consolidation and analysis, and the development of a long-term monitoring plan may not be available to participate fully in this activity.

RECOMMENDATION

GCMRC recommends the implementation of Option 1.