

I. Project Title: Research Framework for the Upper Colorado River Basin

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III. Project Summary: The overriding hypothesis of this work is that population dynamics of the four endangered fish are determined by intrinsic and extrinsic factors that affect reproduction, survival, and recruitment of juveniles to adults from year to year. These factors include environmental stressors that may limit population size and may be controlled through management actions; or these factors may include climate (such as, periods of drought) or other natural factors. The recovery program implements management actions through the RIPRAP that are designed and intended to remove or minimize effects of human-induced environmental stressors that threaten the endangered fish species. This project will determine if management actions are addressing these threats, as well as evaluate the effectiveness of these actions for each of the four endangered fish species.

IV. Study Schedule: This study was initiated in Phases. This schedule reflects a revision that was discussed at the Biology Committee (BC) meeting in early October 2006 and is found in a revised scope of work that was recently sent back to the BC.

#### PHASE I

##### Task I-1. Conceptual Life History Models.

October 30, 2006 This aspect is done.

##### Task I-2. Evaluation of RIPRAP Management Actions.

November 30, 2006. This aspect is yet being evaluated by the investigators. A draft report has been circulated and is under review.

Task I-3. Report Preparation.

Draft report to Recovery Program Office for coordinator review January 31, 2008; Draft Report to Biology Committee for review March 1, 2008; Final to Biology Committee May 1, 2008.

Phase II schedule is below.

Task II-1. Available Data Sets.

February 28, 2008

Task II-2. Quantitative Analysis of Prior and Recent Data to Identify Associations.

April 30, 2008

Task II-3. Report Preparation.

Phase II began October 5, 2006; Draft report to Recovery Program Office for coordinator review May 31, 2008; Draft Report to Biology Committee for review June 30, 2008; Final to Biology Committee September 30, 2008.

- V. Relationship to RIPRAP: This study relates to most major RIPRAP elements (below) because it was designed to integrate research and management study results and RIPRAP tasks.

I. PROVIDE AND PROTECT INSTREAM FLOWS (HABITAT MANAGEMENT)  
II. RESTORE HABITAT (HABITAT DEVELOPMENT AND MAINTENANCE)  
III. REDUCE NEGATIVE IMPACTS OF NONNATIVE FISHES AND SPORTFISH MANAGEMENT ACTIVITIES (NONNATIVE AND SPORTFISH MANAGEMENT)  
IV. MANAGE GENETIC INTEGRITY AND AUGMENT OR RESTORE POPULATIONS (STOCKING ENDANGERED FISHES)

- VI. Accomplishment of FY 2007 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings: The Biology Committee was updated on project progress in early October 2006. Principal investigators and Ann Widmer (SWCA) presented the conceptual model results which are completed except for internal review. Ann Widmer discussed and demonstrated the Access database. To date, over 125 citations and reports relating to Colorado pikeminnow *Ptychocheilus lucius* have been input. A demonstration query was made of the database that showed the BC how information could be extracted to evaluate how Recovery Program studies were addressing threats to early life stages of Colorado pikeminnow and management actions associated with minimizing those threats. The PI's, Dr. Tom Czaplá, and Ms. Widmer are now reviewing the final list of reports for inclusion in the database. The final remaining task is to link the conceptual models,

database capabilities, and the RIPRAP. A draft report is being circulated among the investigators for this phase of the project.

- VII. Recommendations: The BC has recommended continuing with Phase II of the project pending receipt of the newly revised and submitted scope of work. A main initial emphasis of Phase II will be analysis of existing data to understand reasons for recent declines in some populations of Colorado pikeminnow. This will be accomplished by analysis of historical Green River pikeminnow data that describes abundance of larvae, young-of-year and juveniles, and adults, and relating that to seasonal and annual river flows and abundance of nonnative fishes. We may also investigate relationships of native and nonnative fish abundance to flows, particularly related to the recent drought. Rick Anderson (Colorado Division of Wildlife) has accumulated a large data set that may be useful in that regard, and we are making requests to acquire it. The request has been made but the data are not yet available.

Data analysis to understand relationships between abundance of Colorado pikeminnow larvae, young-of-year and juveniles, and adults, and seasonal and annual river flows and abundance of nonnative fishes has also begun. There appears to be important trends related to abundance of larvae produced from the Yampa River spawning areas over time (decline in recent years) and with spring flow peaks (increase with spring flows). Abundance of larvae in 2000 was very high (2<sup>nd</sup> highest since 1990), a time associated with high abundance of adult Colorado pikeminnow in the Upper Green River Basin.

Completion of aspects of this report (Phase I) were delayed by difficulties in obtaining funds and data, and to some extent, coordination among investigators. This delayed initiation of Phase II. We are working to rectify these shortcomings.

- VIII. Project Status: On track and ongoing.

- IX. FY 2007 Budget Status

- A. Funds Provided: \$47,955
- B. Funds Expended: \$22,600
- C. Difference: \$25,355. SWCA has exhausted their portion of the funds. The LFL funds will be used to continue analysis for Phase II.
- D. Percent of the FY 2007 work completed, and projected costs to complete: 30% completed, funds are sufficient to complete Phase II work.
- E. Recovery Program funds spent for publication charges: None

- X. Status of Data Submission (Where applicable): NA

- XI. Signed: Kevin Bestgen and Rich Valdez 7 November 2007

Principal Investigator                      Date

(Just put name and date here, since you will be submitting the report electronically)