

Work Task G3: Adaptive Management Research Projects

FY16 Estimate	FY16 Actual Obligations	Cumulative Expenditures Through FY16	FY17 Approved Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate	FY20 Proposed Estimate
\$300,000	\$190,240.44	\$2,652,788.91	\$300,000	\$300,000	\$300,000	\$300,000

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Start Date: FY06

Expected Duration: FY55

Long-Term Goal: Effective conservation of native species and their habitats

Conservation Measures: All conservation measures relating to habitat creation, species research, system monitoring, and fish augmentation

Location: System-wide

Purpose: To develop tools to effectively evaluate conservation actions

Connections with Other Work Tasks (Past and Future): Research projects initiated under this work task may be continued as Species Research (Section C). Information obtained may be used for Fish Augmentation (Section B), System Monitoring (Section D), Conservation Area Development and Management (Section E), Post-Development Monitoring (Section F), or Funding Accounts (Section H) work tasks.

Project Description: The adaptive management process is an assurance that the conservation actions presented in the Habitat Conservation Plan are effectively accomplished. Tools by which the conservation actions can be measured will be developed and evaluated, and data to improve the efficacy of techniques to successfully create habitat will be provided.

The LCR MSCP will initiate priority research projects in a timely manner. For example, opportunistic research proposals (e.g., time sensitive, such as spawning or breeding-season dependent) can be considered and initiated during the funding year and then be elevated to full research or monitoring status (Section C, D, or F work tasks) the following year. Also, experimental techniques can be evaluated through research to assess their utility, and if found to be useful, they would be incorporated into monitoring activities.

Previous Activities: All previous activities were moved to other work tasks after the initial year of funding.

FY16 Accomplishments:

Contribution to Razorback Sucker Species Status Assessment (SSA): Funds were contributed for a cooperative adaptive management effort with the Upper Colorado River Basin recovery programs (Upper Colorado River Endangered Fish Recovery Program, San Juan River Basin Recovery Implementation Program, and Glen Canyon Dam Adaptive Management Program) to develop an SSA for razorback suckers. The purpose of the SSA is to characterize the species' current status, future condition, and long-term viability to the extent possible using existing data, expert, and currently available information under various scenarios and timeframes. The SSA will provide key information that can be used to help generate a 5-year status review (or other documents) by the U.S. Fish and Wildlife Service for assessing the species' status with respect to the Endangered Species Act.

Development of single nucleotide polymorphisms (SNP) markers: Part of an independent review of the LCR MSCP genetics program indicated that the genetic markers used for assessing razorback sucker genetics since the start of the program were outdated. In response, FY16 funds were obligated to fund the first year of this project, looking to identify potential markers (single nucleotide polymorphisms or SNPs) for sex determination and identification of parentage in razorback suckers. This process is expected to yield 600 million sequences and more than 5,000 SNPs. Once the sequences have been obtained, analyses will be used to identify (1) SNPs specifically associated with sex determination and (2) SNPs that are of sufficient variability for use in parentage analyses.

Construction of the draft razorback sucker genome will be initiated, with sequences generated. This will provide context of each marker, allowing for determination of the physical location of each marker. The location is important because it prevents pseudo-replication and maximizes the efficiency of markers developed. This research will be continued under Work Task C40.

FY17 Activities: Research questions identified during fish augmentation, species research, system-wide monitoring, habitat creation, and post-development monitoring will be evaluated for development into adaptive management research projects under this work task.

Proposed FY18 Activities: Research questions identified during fish augmentation, species research, system-wide monitoring, habitat creation, and post-development monitoring will be evaluated for development into adaptive management research projects under this work task.

Pertinent Reports: Reports will be posted on the LCR MSCP Web site upon completion.