

Work Task G4: Science/Adaptive Management Strategy

FY16 Estimate	FY16 Actual Obligations	Cumulative Expenditures Through FY16	FY17 Approved Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate	FY20 Proposed Estimate
\$600,000	\$420,190.00	\$1,449,317.62	\$400,000	\$400,000	\$400,000	\$400,000

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Start Date: FY06

Expected Duration: FY55

Long-Term Goal: To ensure successful and efficient implementation of the LCR MSCP conservation measures

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

Location: LCR MSCP planning area

Purpose: To define the procedure for implementing the LCR MSCP using the best available science and adaptive management processes

Connections with Other Work Tasks (Past and Future): All science-based work tasks

Project Description: The Habitat Conservation Plan conservation measures were designed to meet the biological needs of 26 covered species and to benefit 5 evaluation species. A science strategy, developed in FY06, defined the processes for ensuring implementation of the LCR MSCP using the best available science, and it described a two-tier planning process to ensure effective implementation of research and monitoring actions: first, a 5-year planning cycle and, second, annual work plans covering a 3-year cycle.

Every 5 years, a plan will be developed that describes the current knowledge of covered species, establishes the monitoring and research priorities for that 5-year period, and describes potential challenges that may inhibit successful implementation of the conservation measures. During each 5-year cycle, the accumulated data from ongoing research and monitoring will be reviewed along with existing species accounts.

Additional work may be generated from the evaluation of research conducted under Work Task G3.

The LCR MSCP will participate in interagency meetings and workshops held to discuss natural resource conservation along the lower Colorado River. These meetings bring together scientists, managers, and resource users interested in the lower Colorado River ecosystem. Additional special topic workshops will be held for covered species or their habitats as needed to revisit the status of one or more of these species within the LCR MSCP planning area.

Recently completed, ongoing, and proposed research and monitoring activities will be reviewed to ensure they meet the goals and objectives of the Habitat Conservation Plan.

Previous Activities: The Science Strategy was developed in August 2006 and finalized in October 2007. Colorado River Terrestrial and Riparian Group and Colorado River Aquatic Biologists meetings were attended. The *Habitat Creation Conservation Measure Accomplishment Tracking Process* was developed for tracking conservation measure accomplishment pertaining to the habitat creation conservation measures and approved by the Steering Committee in FY12. The report titled *LCR MSCP Five-Year Monitoring and Research Priorities: 2013–2017* was completed in FY13.

On October 27, 2011, the Steering Committee approved minor modifications to five conservation measures (RASU3, BONY3, BLRA1, STBU1, and THMI1) reported in the FY11 Accomplishments Report. Reported in FY14, three minor modifications to conservation measures were approved by the Steering Committee on April 23. Research and monitoring activities provided habitat information to adjust conservation measures WRBA1, BEVI1, and CRCR2.

Independent program reviews were completed on the bat and vegetation monitoring projects.

To accommodate the need to centralize adaptive management and data management activities, the LCR MSCP Office in Boulder City, Nevada, was reorganized to include a stand-alone Adaptive Management Group in FY15. The group is responsible for ensuring that projects, such as standardization of data collection and management activities and the evaluation of conservation areas in terms of conservation measure accomplishment, meet the strategic goal of the LCR MSCP.

FY16 Accomplishments: A habitat creation accomplishment analysis was conducted to show acreage totals for each species at each conservation area where applicable. These totals can be found in table 1-9 in the “Overview” section of this document.

The Adaptive Management Group conducted a scientific peer review of approximately 30 reports, which were posted on the LCR MSCP Web site in FY16. These reviews were accomplished through the established internal and external peer review process. The peer review process ensures that all research and monitoring complies with the LCR MSCP science strategy and the U.S. Department of the Interior Code of Scientific and Scholarly Conduct. This process also ensures that research and monitoring meets the needs of the LCR MSCP as outlined in the Habitat Conservation Plan and other program documents. The LCR MSCP writer's guidelines were significantly updated during FY16, providing internal staff and external partners a clear, standard template for issuing and publishing reports.

As part of the adaptive management process, an initial independent review of the genetic research was finalized in FY16 that provided an evaluation of the current monitoring methods and recommendations for future monitoring of razorback sucker (*Xyrauchen texanus*) genetics in Lake Mohave. This initial review was performed without consulting the genetic data collected to date by the LCR MSCP; therefore, an additional, independent review has been proposed to provide more detailed recommendations for future monitoring.

The Adaptive Management Group also provided feedback and input to other LCR MSCP groups on study plan design, statistical analyses of results, and technical and scientific writing standards. When appropriate, this information was shared with external partners to assist in their research, monitoring, and report writing activities.

Obligations were less than approved due to the quantity of reports and other documents needing review being less than expected.

FY17 Activities: Research and monitoring activities continue to be reviewed and evaluated internally as well as through independent, external reviewers. The analytical methods and survey intensity for system-wide avian monitoring (D6) will be reviewed, and the vegetation classifications for avian survey plots will be updated.

In coordination with Work Task G1, an independent review of the current data management and adaptive management processes is being conducted. This review will result in the development of broad-framing questions to inform the Adaptive Management Program (AMP). During this review, LCR MSCP managers will participate in a workshop to develop these overarching framing questions that will inform the AMP.

Preparation of the LCR MSCP Five-Year Monitoring and Research Priorities Report 2018–22 will begin in FY17. This report will describe the current

knowledge of covered species, establish the monitoring and research priorities for the next 5-year period (2018–22), and describe potential challenges that may inhibit successful implementation of the conservation measures.

Based on the results from the initial, independent review of genetic research (completed in FY16) for razorback suckers, an additional review will be conducted that will use the existing genetic data. The purpose of this expanded, more detailed review is to identify the level of effort and long-term needs for monitoring fish genetics and to address any additional questions that resulted from the initial review. Once this review is complete, a pilot study may be conducted to implement the recommendations provided in the review.

Information gained from the soil moisture monitoring effort initiated in FY15 under Work Task E34 and later covered under Work Task F1 is being used to draft a scope of work for expanding the soil moisture and salinity network across all LCR MSCP conservation areas. This information will be used in the adaptive management process to answer questions related specifically to habitat being managed for southwestern willow flycatchers (*Empidonax traillii extimus*) with different vegetation or hydrologic characteristics.

With the completion of the first editions of most species-specific conceptual ecological models, analyses will be conducted to better understand the impacts of management actions on habitat created under the LCR MSCP and the relationship between these actions and their effect on covered species. Development of decision support tools will also be initiated. These tools will help model the impacts that management actions have on created habitat and the covered species. These analyses and decision support tools will first be developed for select conservation areas using all relative data to assess proposed management actions. Once the analyses are complete, development of conservation area management plans will begin.

Coordination with landowners and agency partners for development of conservation area management plans will continue based on the results from the analyses described above.

Proposed FY18 Activities: Research and monitoring activities will be reviewed and evaluated internally as well as through independent reviewers. Specific programs may include avian, small mammal, insect, fisheries, and habitat monitoring programs.

Information from the conceptual ecological models will continue to be used for analyses of current and proposed management actions. Further development of decision support tools will also continue. Information from these analyses and tools will be used to develop additional conservation area management plans. Following the concurrence of management guidelines, each conservation area management plan will be developed and implemented accordingly.

The results from the data management/adaptive management evaluation performed in FY17 will be used to further refine the guidelines of the AMP. This will include the development of data-based adaptive management thresholds and triggers, which will be evaluated for the LCR MSCP conservation areas on an established schedule and will be the basis for considering management actions based on habitat conditions or species' responses.

Pertinent Reports: N/A