

Work Task G4: Science/Adaptive Management Strategy

FY15 Estimate	FY15 Actual Obligations	Cumulative Expenditures Through FY15	FY16 Approved Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate
\$400,000	\$212,457.02	\$1,137,386.64	\$600,000	\$400,000	\$400,000	\$400,000

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Start Date: FY06

Expected Duration: FY55

Long-Term Goal: 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.

LCR MSCP staff 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 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 FY06–07. 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 *LCR MSCP Five-Year Monitoring and Research Priorities: 2008–2012* 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.

FY15 Accomplishments: To accommodate the need to centralize adaptive management and data management activities, the LCR MSCP Office was reorganized to include a stand-alone Adaptive Management Group, which is responsible for ensuring projects meet the strategic goal of the LCR MSCP, such as standardization of data collection and management activities, evaluation of conservation areas in terms of conservation measure accomplishment, and development of conservation area management plans.

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.

Conceptual ecological models (CEMs) were completed during this fiscal year for the following species: bonytail, flannelmouth sucker, gilded flicker, western least bittern, western red bat, and western yellow bat. Development of CEMs for the following species began: Arizona Bell's vireo, California black rail, Colorado River cotton rat, elf owl, Gila woodpecker, MacNeill's sootywing, summer tanager, vermilion flycatcher, Yuma clapper rail, and Yuma hispid cotton rat. New CEMs for additional species or maintenance of existing CEMs will be covered under Work Task G6 after FY15.

Through recommendations from the independent program review of the bat research and monitoring program, it was decided to adjust system-wide acoustic monitoring to collect data seasonally when covered bats are most active as opposed to year round. An independent review was completed for the Elf Owl Home Range, Habitat Use, and Detectability Study (C24), with the recommendation to use a multi-scale occupancy approach to increase statistical power when detections are low.

A study designed to compare population estimates of razorback suckers using data from traditional trammel netting versus remote passive integrated transponder (PIT) tag scanners was implemented in Lake Mohave in 2015. This study was identified and initiated under Work Task G4; however, field sampling (scanner deployment and retrieval, data downloads, and netting efforts) are being covered under Work Task D8. This field work was conducted as part of the annual multi-agency razorback sucker roundup in March. Population estimates have historically required mark-recapture data from trammel netting during the March roundup, but these are imprecise due to low recapture rates, and they require handling fish during the spawning season. Remote PIT scanning started in 2010 and has provided more precise estimates due to higher contact rates. However, the accuracy of these estimates is uncertain because scanners have not yet been deployed at all sites targeted by netting at the same time of year. Over at least the next 3 years, the area sampled with scanning will be expanded to more closely match that of netting for the same time period used for developing population estimates. Scanning will also be done for a longer period of time to determine how population estimates vary with scanning effort and to track trends in fish activity on the spawning beds. Information from this study will be used to determine whether and how the frequency of trammel netting can be reduced to help avoid disturbing razorback sucker spawning activity. Data collected under Work Task D8 will be analyzed and evaluated under Work Task G4. A report will be completed at the end of the study and will include management recommendations.

Expenditures were less than the approved amount due to a delay in the completion of CEMs. Analyses scheduled for FY15 were not able to be conducted since the necessary information from the CEMs was not available.

FY16 Activities: Research and monitoring activities will continue to be reviewed and evaluated internally as well as through independent reviewers.

The comparison of population estimates of razorback suckers using data from traditional trammel netting versus remote PIT tag scanners will be continued in Lake Mohave in FY16. This effort is part of a multi-year study and is expected to continue for at least 3 years.

As part of the adaptive management process, an independent review of the genetic research was initiated to help identify the appropriate level of effort and long-term needs for monitoring fish genetics. The evaluation of the current monitoring methods and recommendations for future monitoring of razorback sucker genetics in Lake Mohave is expected to be completed in FY16.

Following the completion of all species-specific CEMs, 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.

Work will begin on drafting the Five-Year Monitoring and Research Priorities Report, which 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.

Proposed FY17 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.

Based on the results from the independent review of genetic research (to be completed in FY16), a pilot study may be conducted to assess the feasibility of expanding genetic sampling of razorback suckers to all fishes at the time of tagging. Some additional limitations must also be overcome before this is possible, including securing the appropriate off-the-shelf technology needed for rapid and accurate sampling as well as storage of genetic material. The change in collection protocols, combined with the expanded use of remote PIT

scanners, may greatly increase the precision of the genetic stock assessment of Lake Mohave by determining the parents of all larvae collected for hatcheries. This additional information is intended to assist the adaptive management process by measuring the percentage of released fish that contribute to the population each year.

Information from CEMs 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 Five-Year Monitoring and Research Priorities Report will be finalized during 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.

Pertinent Reports: The reports titled *Final Science Strategy; LCR MSCP Five-Year Monitoring and Research Priorities—2008-2012*, *LCR MSCP Five-Year Monitoring and Research Priorities—2013-2017*, and *Final Habitat Creation Conservation Measure Accomplishment Tracking Process* are posted on the LCR MSCP Web site.