

Work Task G1: Data Management

FY14 Estimates	FY14 Actual Obligations	Cumulative Expenditures Through FY14	FY15 Approved Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate
\$800,000	\$878,992.90	\$3,745,078.72	\$850,000	\$1,000,000	\$1,000,000	\$1,000,000

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Start Date: FY07

Expected Duration: FY55

Long-Term Goal: Data management will be an ongoing task for species research, system monitoring, habitat creation, post-development monitoring, and habitat maintenance programs.

Conservation Measures: All

Location: Program-wide

Purpose: To develop and maintain an accessible, multi-disciplinary, spatially referenced, relational database to consolidate, organize, document, store, and distribute scientific information related to the LCR MSCP

Connections with Other Work Tasks (Past and Future): Database management is integral for the successful completion of the work tasks undertaken: Fish Augmentation (Section B), Species Research (Section C), System Monitoring (Section D), Conservation Area Development and Management (Section E), Post-Development Monitoring (Section F), Adaptive Management Program (Section G), and Funding Accounts (Section H).

Project Description: Under this work task, the data management team manages all aspects of the LCR MSCP that are related to the database, data collection, applications development, and software management. To fully implement the program, a database management system is being developed to handle the data collected through the species research, system monitoring, habitat creation, post-development monitoring, adaptive management, and habitat maintenance programs. Database design, initial implementation, and maintenance are funded under this work task.

Previous Activities: Hardware was purchased to increase data storage for the implementation of the centralized database. The Intranet/document/calendar (SharePoint) management system was upgraded and modified to accommodate

the future needs of the LCR MSCP. Implementation of remote data collection from field data loggers began at Beal Lake for the fish program. The Native Fish Augmentation Database was maintained.

Database design and implementation of the LCR MSCP centralized database management system was completed. Data modules for the database were acquired and phased in according to priority for implementation of the HCP. The modules consist of an application for data entry that is standardized for input into the database. On an annual phased approach, all standardized projects will be incorporated into the database.

The Minckley Library project was completed in March 2012. The library is now available as a searchable database that houses over 11,000 total documents, including a variety of literature types, which were digitized and organized using bibliographic software. Error checking was performed not only to ensure consistency and accuracy when accessing the database but also to ensure that individual electronic copies of all documents had been received and serve as a backup.

The new LCR MSCP Web site was completed. The data management requirements document was drafted, which provided contractors with metadata standards.

It was determined in FY12 that the entire planning area needed to be delineated in terms of standardizing locations where data collection would be conducted using past and present site naming conventions. This delineation was completed in June 2012 and will be updated as needed throughout the LCR MSCP term. Data structures and Microsoft Access forms for 2012 bird monitoring collection protocols were developed and deployed. The data structures and forms for the 2011 and 2012 vegetation monitoring data collection protocols were revised.

The master LCR MSCP database was revised to reflect current schema environments and to develop a collection data import process and its supporting documentation. A developer program and project documentation were developed and maintained. FTP protocols for LCR MSCP form deployment and contractor data retrieval were developed and distributed. Contractors and Project Managers were assisted with the development of quality assurance queries and reporting.

Mobile data loggers and software for collection of data in the field were acquired. These units standardize all data collection across LCR MSCP projects. MEFFs/data dictionaries for data collection were developed and are now used while in the field. The development of remote sensing data collection from field data loggers will continue.

FY14 Accomplishments: Additional funds were expended under this work task to complete the previous years' work activities. The projects included: southwestern willow flycatcher system monitoring (D2), yellow-billed cuckoo monitoring (D7 and F2) and bat monitoring (D9 and F4). The Native Fish Augmentation Database continued to be maintained. Maintenance and updates to the LCR MSCP Web site continued. Support continued to be offered for users of Microsoft Access forms as well as for queries and reports as needed. Field data collection devices and supporting software were purchased to support data collection activities. Two training sessions were conducted for program staff related to the use of GIS technologies and MEFF GPS devices.

Data collection processes were reviewed, updated, and maintained, and MEFFs were tested for the following projects: southwestern willow flycatcher (D2, D3, and F2), lowland leopard frog (C62 and D12), Colorado River toad (C62 and D12), Colorado River/Yuma hispid cotton rats (D10 and F3), demographic studies (C27), bat surveys and research (C35, D9, and F4), yellow-billed cuckoo (D7 and F2), and vegetation monitoring (F1).

The LCR MSCP centralized database continued to be maintained and upgraded for location, species, project-related reference tables, and utility procedures to centralize processing of project data, with emphasis on the support of MEFF needs (e.g., MEFF locations, codes, etc.). Database schemas and data/photo import/conversion codes were designed, built and tested in support of the MEFFs for vegetation monitoring and bat monitoring. Support continued to be offered for users of Microsoft Access data entry forms, including form and code updates, data merging, internal quality queries, and assistance in the design and creation of contractor-required queries for vegetation monitoring and avian system-wide surveys. Quality assurance measures for the Structured Query Language (SQL) database were developed, with full audit trails from raw field data to final production data.

The use of remote and continuous data collection from data loggers continued to be developed and supported. An external SharePoint site was developed for U.S. Department of the Interior internal and external users of contracts in order to improve data flow. Sections of the LCR MSCP Data Management Plan were drafted, and additional sections are planned to be drafted in FY16.

FY15 Activities: The LCR MSCP Web site will continue to be maintained and updated. The planning, acquisition, and data modules for the LCR MSCP centralized database continues. LiDAR data and aerial image acquisition for selected conservation areas will be supported under Work Tasks F1 and G1.

MEFFs are being evaluated, developed, and tested for the following projects: elf owl (C24), MacNeill's sootywing (F6), fish augmentation (B1), and fish monitoring (F5). The data collection processes will continue to be updated and/or maintained, and MEFFs will be tested for the following projects: southwestern willow flycatcher (D2, and F2), lowland leopard frog (C62 and D12), Colorado

River toad (C62 and D12), Colorado River/Yuma hispid cotton rats (D10 and F3), demographic studies (C27), bat surveys and research (C35, D9, and F4), yellow-billed cuckoo (D7 and F2), and bat surveys and research (C35, D9, and F4). Support for the purchase of MEFFs, GPS devices, and supporting software will continue.

Under the LCR MSCP, the following will be reviewed and developed: (1) program-wide standards for data collection, (2) documentation for data collection processes in the field, and (3) automated data collection requirements when using mobile devices, which will ensure that data collection is consistent regardless of who is collecting it. Maintenance of the Native Fish Augmentation Database will continue, with other fish project data modules being constructed following standardization of individual projects.

Development of database schema, data mapping, and coding will continue in order to support importation of collected MEFF data into the standardized LCR MSCP SQL database for the following projects: fish (B1 and D8), bats (C35, D9, and F4), cotton rats (D10 and F3), yellow-billed cuckoo (D7 and F2), and southwestern flycatcher (D2 and F2). This effort included the creation of new and/or evaluation of queries to support each project. Accompanying process flow documentation was also created/updated for overall database maintenance and project-specific operations.

Proposed FY16 Activities: Existing MEFFs will continue to be updated, and new MEFFs will continue to be developed. Additionally, the search for and testing of more advanced methods of electronic field data collection methods will continue.

The LCR MSCP centralized database will continue to be maintained. In FY16, LiDAR data acquisition will be moved under Work Task F1, but the raw data will be managed and maintained under Work Task G1.

Database schemas and data import/conversion codes will continue to be designed or updated in support of the MEFFs for projects as appropriate. The Native Fish Augmentation Database will continue to be maintained, with other fish project data modules being constructed following standardization of individual projects.

Efforts to provision software that will enable project coordinators to access LCR MSCP SQL database tables and continue the import/conversion process of raw data will continue. LCR MSCP staff will design, establish, and test quality assurance procedures that provide the necessary audit trails from raw field data to final production data.

Drafting additional sections of the LCR MSCP Data Management Plan will resume in FY16.

Pertinent Reports: N/A