

Work Task C27: Small Mammal Population Studies

FY13 Estimate	FY13 Actual Obligations	Cumulative Expenditures Through FY13	FY14 Approved Estimate	FY15 Proposed Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate
\$50,000	\$20,514.72	\$346,609.16	\$50,000	\$50,000	\$50,000	\$25,000

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Start Date: FY08

Expected Duration: FY17

Long-term Goal: Identify distribution, genetics, habitat requirements, and establish monitoring protocol of covered small mammal species.

Conservation Measures: CRCR1, YHCR1, MRM1, MRM2.

Location: Reaches 3 through 7 from Davis Dam to the Southerly International Boundary with Mexico.

Purpose: To implement distribution, habitat, and genetics studies for system monitoring of LCR MSCP covered small mammal species. These studies are being conducted to identify geographic range limits of the Yuma hispid cotton rat and the Colorado River cotton rat, and to determine habitat requirements for these species. Data will be used through the adaptive management process to coordinate surveys of habitat creation sites and design habitat for covered mammal species.

Connections with Other Work Tasks (past and future): Data collected as part of Small Mammal Colonization (F3) will also be analyzed as part of the effort to determine species distribution of the two cotton rat species found along the LCR. Previous presence/absence surveys on small mammal populations were conducted under D10. This research will aid in developing a long term population monitoring protocol for small mammals and develop a habitat model for the two cotton rat species that can be used in restoration efforts (Section E) and adaptive management (Section G).

Project Description: Studies will be designed to identify the habitat usage, population status, genetic differentiation, and distributional range of two covered small mammal species: the Colorado River cotton rat and Yuma hispid cotton rat. Small mammals will be trapped in various habitat types along the LCR to collect genetic samples. Samples will be sent to a genetics laboratory for DNA analysis. Genetic differentiation data for animals captured along the LCR will also be compared with data from animals of different subspecies located within Arizona, east of the LCR MSCP planning area, to obtain genetic markers. These data will be used to compare and contrast specific subspecies and determine the distributional range of each species of cotton rat within the LCR watershed. Habitat use and population demographic analyses are currently being

estimated with mark-recapture analyses. A habitat model and population demography study will be implemented to identify habitat usage and establish a protocol for population monitoring at conservation areas.

Previous Activities: Cotton rats have been captured at seven localities along the LCR, including sites near Yuma, Arizona, Imperial NWR, Cibola NWR, PVER, and Pintail Slough on Havasu NWR. A study was initiated at the end of FY07 to determine genetic differentiation between covered small mammal species, distributional range for each species, and habitat usage along the LCR. In FY08, additional efforts were made to identify cotton rat populations, including sampling known populations along the LCR. Distribution and population genetic analyses have been conducted for these covered species. Population monitoring and habitat model development research began in FY10. In FY11 and FY12, a combine mark recapture and habitat study was conducted using trapping grids at three sites that had different population densities of Colorado River cotton rats.

FY13 Accomplishments: The habitat modeling and the initial mark-recapture data sets for the Colorado River cotton rat were analyzed. Mark-recapture surveys for the Colorado River cotton rat were put on hold during the analysis, in order to determine whether a sufficient sample size was available for statistical analysis. The results showed that additional data were needed, so mark-recapture was reinitiated mid-season.

No Yuma hispid cotton rats were studied in FY14 under this project. A population was found during conservation area monitoring (F3) at Yuma East Wetlands. This may be considered for future study.

FY13 obligations were less than approved, as a reduced number of surveys were conducted.

FY14 Activities: Mark-recapture surveys were conducted in the fall of 2013. A report will be finalized for this project.

Yuma East Wetlands will be evaluated to determine whether a population/habitat study for Yuma hispid cotton rat should be conducted to document LCR habitat characteristics. A study plan to identify desert pocket mice populations will be prepared.

Proposed FY15 Activities: A study plan will be developed to identify habitat requirements for Yuma hispid cotton rats to inform habitat management.

Pertinent Reports: The final report, *Colorado River and Yuma Hispid Cotton Rat Distribution and Habitat*, is available on the LCR MSCP website. The habitat modeling and population monitoring study design is available upon request.