

Work Task D9: System Monitoring and Research of Covered Bat Species

FY10 Estimates	FY10 Actual	Cumulative Accomplishment Through FY10	FY11 Approved Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate
\$150,000	\$162,881.50	\$648,195.67	\$150,000	\$150,000	\$150,000	\$150,000

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Start Date: FY04

Expected Duration: FY55

Long-term Goal: System monitoring and species research will be conducted for LCR MSCP bat species to determine distribution and to evaluate habitat implementation success.

Conservation Measures: MRM1 (WRBA, WYBA, CLNB, PTBB) WRBA1, and WYBA1.

Location: System-wide along the Lower Colorado River below Hoover Dam.

Purpose: Conduct system monitoring and research for the distribution of covered bat species utilizing roost surveys, acoustic survey techniques, and capture techniques following a protocol developed in FY06 and additional information gathered since then.

Connections with Other Work Tasks (past and future): System monitoring data will be used in conjunction with post-development monitoring (F4) to determine habitat needs and characteristics of covered bat species. Data collected will be used in future habitat creation projects listed in Section E.

Project Description: Several survey techniques will be utilized to detect covered species or provide equivalent data using indicator species. Acoustic surveys, conducted with Anabat or Sonobat technology, will be used to identify foraging behavior in native riparian stands for covered bat species. Roost surveys will be conducted to track bat populations and to survey species that are not readily detected by acoustic technology, such as Townsend's big-eared bat and California leaf-nosed bat. Individual bats will be captured using techniques such as mist netting to obtain reference calls for bat identification and to verify reproductive status.

Previous Activities: Indigenous bat species were surveyed annually along the LCR from 2001 to 2006. A Lower Colorado River Bat Monitoring Protocol was produced to assist in the development of a system-wide distribution and demography monitoring plan for covered bat species. A system-wide acoustic monitoring program was implemented

through the Arizona Game and Fish Department (AGFD) that coordinated the collection and analysis of acoustic bat data for system-wide monitoring of the LCR. Four permanent acoustic detector stations were placed along the river and are providing data that may be useful for analyzing migration movements along the river as well as correlating bat activity with environmental variables.

FY10 Accomplishments: A set of 72 sampling locations were surveyed for two-night periods during each of four seasons. Placement of these detectors was stratified in three reaches of the LCR across four vegetation types (cottonwood-willow, saltcedar, mesquite, and marsh). All four covered species have been detected in all three reaches, although detection rates are fairly low. Results showed a strong correlation between western red and western yellow bat detections with cottonwood-willow habitat. A weak correlation for distance to mines was found for California leaf-nosed bats and Townsend's big-eared bats. No habitat correlations were found for these two species. A final report was completed for this project.

Data collected from permanent stations placed strategically throughout the study area suggest that bat activity was low during the winter but increased in early spring and remained high through fall. Mist-netting surveys were conducted at six different areas in 2010. A western red bat was captured at Mineral Wash on the Bill Williams River NWR. A western yellow bat was captured at Imperial NWR. California leaf-nosed bats were captured at the Bill Williams River NWR, Imperial NWR and Betty's Kitchen. Out-flight counts were conducted in February and May 2010 at most of the known roosts of California leaf-nosed bats and Townsend's big-eared bats.

FY11 Activities: The four permanent Anabat monitoring stations will continue to operate to provide year-round data. Outflight counts will be conducted at various mines along the LCR in the winter and early summer. These counts will be used to determine trends in California leaf-nosed bat and Townsends big-eared bat populations. Archived California leaf-nosed bat banding data will be compiled and entered into a single database. Archived acoustic data will be organized, analyzed, and compiled so that it may be entered into a single database.

Proposed FY12 Activities: The four permanent Anabat monitoring stations will continue to operate. Data will be collected and analyzed. The Sonobat software that is used to analyze and identify calls from a different type of bat detector is now becoming automated. This new technology will be researched and tested, which may result in switching from Anabat to another bat detector that uses this new technology. Outflight counts will be conducted at various mines along the LCR in the winter and early summer. These counts will be used to determine trends in California leaf-nosed bat and Townsends big-eared bat populations. Banding and acoustic data will continue to be compiled for the database.

Pertinent Reports: *Monitoring of Covered and Evaluation Bat Species for the Lower Colorado River Multi-Species Conservation Program, Annual Report, 2010* will be posted to the LCR MSCP website. A final mine survey summary report for years 2002-2010 will be prepared and posted to the website.