

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

FY09 Estimates	FY09 Actual	Cumulative Accomplishment Through FY09	FY10 Approved Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate
\$130,000	\$139,417.88	\$485,314.17	\$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.

**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.

**FY09 Accomplishments:** The Arizona Game and Fish Department (AGFD) coordinated the collection and analysis of acoustic bat data for system-wide monitoring of the LCR. AGFD finished sampling the first 72 sampling locations and started sampling the second set of 72 sampling locations, each of which is active 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 likely to be affected by restoration activities. All four covered species have been detected in all three reaches, although detection rates are fairly low. 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.

Data collected from permanent stations suggest that bat activity was low during the winter but increased in early spring and remained high through fall. AGFD also conducted mist-netting surveys at five different non-restoration site areas. Western yellow bats were captured at Planet Ranch and on the Bill Williams River NWR. California leaf-nosed bats were captured at Planet Ranch, the Bill Williams River NWR, and Betty's Kitchen. Townsend's big-eared bats were captured at the Bill Williams River NWR, and one western red bat was captured at Planet Ranch. Out-flight counts were conducted in January and April 2009 at most of the known roosts of California leaf-nosed bats and Townsend's big-eared bats.

**FY10 Activities:** The initial system-wide monitoring project will finish collecting data by May and a draft final report will be prepared and submitted. Once the initial monitoring is finished, recommendations will be made to determine a protocol and frequency for full system-wide bat monitoring. Four permanent Anabat monitoring stations will continue to operate to provide year-round data.

Outflight counts will be conducted at various mines and bridges 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.

**Proposed FY11 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. Bat populations will also continue to be monitored at maternity sites and mines to determine abundance and distribution of covered and evaluation bat species.

Depending on analysis and recommendations from the FY10 report, changes to the system monitoring for covered bat species may be implemented. Outflight counts will be conducted at various mines and bridges 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.

**Pertinent Reports:** *Monitoring of Covered and Evaluation Bat Species for the Lower Colorado River Multi-Species Conservation Program, Annual Report, 2009* will be posted to the LCR MSCP Web site. A final mine survey summary report for years 2004-2009 will be prepared and posted to the Web site.