

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

FY07 Estimates	FY07 Actual	Cumulative Accomplishment Through FY07	FY08 Approved Estimate	FY09 Proposed Estimate	FY10 Proposed Estimate	FY11 Proposed Estimate
\$100,000	\$89,832	\$244,719	\$100,000	\$130,000	\$130,000	\$130,000

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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:** AMM1, AMM6, MRM1, WRBA1, WYBA1, CLNB1, PTBB1, WRBA2, and WYBA3.

**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 Sonabat 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.

**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.

**FY07 Accomplishments:** Through coordination with state and Federal resource agencies and other interested parties, an LCR system-wide distribution and demography monitoring plan and protocol was developed for the LCR MSCP covered bat species.

A grant was awarded to AGFD for coordinating the collection and analysis of acoustic bat data for system-wide monitoring of the LCR. The geographic distribution and habitat use by the four bat species will be evaluated and the success of cottonwood-willow restoration efforts for these species will be assessed. Recommendations for habitat creation projects will be made to accomplish objectives.

Out-flight counts were conducted in January and May 2007 on several mines including Stonehouse, Mountaineer, Californian, Islander, Pilot Rock, Jackpot, Gold Dome, Eureka, Golden Dream, 3C, and Heart mines. The cave *Myotis* maternity colony has accepted the gates at the Stonehouse Mine, as have the male California leaf-nosed bats. However, the majority of the female California leaf-nosed bats were using the upper shafts on the other side of the canyon. A harp trap was placed at the Mountaineer mine to determine breeding status. No female cave *Myotis* were captured at the Mountaineer Mine. However, three lactating Townsend's big-eared bats were caught, along with several lactating big brown bats and pallid bats. Male cave *Myotis*, Yuma *Myotis*, pallid bats, California leaf-nosed bats, big brown bats, and a Mexican free-tailed bat were also captured.

Mist netting of bats was accomplished at several sites including Bill Williams River NWR, Havasu NWR, Cibola Nature Trail, and Imperial NWR. At Bill Williams River NWR, two male California *Myotis*, one lactating Yuma *Myotis*, one male pallid bat, and two male and three lactating western pipistrelles were captured. At Cibola NWR, we caught a male California leaf-nosed bat, a male California *Myotis*, and one male and one pregnant female pallid bat. No bats were captured at Havasu NWR or Imperial NWR due to weather.

**FY08 Activities:** Acoustic surveys will continue for covered bat species along the LCR. Non-permanent sites will be sampled to provide information on distribution and habitat use. Sampling areas will be selected to cover the broadest geographical area. Within these areas, sampling sites will be selected on a stratified basis to cover all major available habitats (cottonwood-willow, saltcedar, mesquite, and marsh). Permanent Anabat monitoring stations will be placed—one in each of LCR MSCP reaches 3 through 6, along the river, coupled with weather recorders, to ensure that migration pulses along the river are detected and to help identify any differential use of the various river reaches by the four covered and evaluation bat species.

In addition to acoustic surveys, habitat characteristics will be measured at each site, including vegetation composition and structure, and correlated with bat use. To assure comparability of data between sites and through time, coordination with cooperators will take place to develop standardized protocols for data collection. Because of the number of cooperators involved with monitoring along the LCR, there is a need for a centralized database where acoustic bat files can be stored and accessed. The AGFD will incorporate this capability into the existing AGFD bat database, which was developed to store and analyze other types of bat data collected throughout the state by AGFD and external cooperators. The AGFD database was intended to allow access

by the external cooperators for input, storage, and analysis and would be a logical place to centralize the acoustic data gathered under the LCR MSCP. These data will be linked to the LCR MSCP database.

**Proposed FY09 Activities:** Acoustic surveys will continue for covered bat species as listed above. Mist netting, in conjunction with post-development monitoring (F4), will take place at least twice at both mature cottonwood-willow stands and in more mature restoration areas. Bat populations will continue to be monitored at maternity sites and mines to determine abundance and distribution of covered and evaluation bat species.

**Pertinent Reports:** No reports were completed in 2007 as the system-wide surveys are just beginning, and a final mine survey summary report for years 2004-2008 will be prepared in 2008.