

Work Task F4: Post-Development Monitoring of Covered Bat Species

FY08 Estimates	FY08 Actual	Cumulative Accomplishment Through FY08	FY09 Approved Estimate	FY10 Proposed Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate
\$70,000	\$93,145.13	\$163,043.13	\$90,000	\$110,000	\$110,000	\$110,000

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Start Date: FY07

Expected Duration: FY55

Long-term Goal: Pre- and post-development monitoring of covered bat species.

Conservation Measures: MRM1, MRM2 (WRBA, WYBA, CLNB, PTBB), WRBA1, WYBA1

Location: Beal Lake, Havasu NWR; 'Ahakhav Tribal Preserve, CRIT: PVER, CA; CVCA, Cibola NWR Unit 1, Cibola, AZ; Imperial Ponds, Imperial NWR, AZ.

Purpose: Monitor bat use of habitat creation sites to provide data for the adaptive management process and develop management guidelines for created habitat sites. Pre- and post-development monitoring for the presence/absence of covered bat species will be conducted following a new study design developed in 2008. Information obtained through this work task, in conjunction with D9, will help determine the distribution of these species.

Connections with Other Work Tasks (past and future): Post-development bat monitoring will be conducted at habitat creation sites listed in Section E. In addition, information obtained from this work task may be used to provide data to D9.

Project Description: Post-development monitoring will utilize a study design developed in 2008 that will compare bat activity between 5 habitat types (agricultural fields, salt cedar stands, mesquite created habitat, sapling cottonwood-willow created habitat and intermediate cottonwood-willow created habitat). Acoustic monitoring will be conducted at habitat creation sites, including 'Ahakhav, CVCA, PVER, Cibola NWR Unit #1, Beal Lake, and Imperial Ponds. These surveys will utilize either active or stationary Anabat systems to record bat echolocation calls for presence/absence surveys. A capture program will also be used in at least 4 of the above mention sites to acquire reference acoustic calls and determine age, sex and reproductive status of covered bat species. These surveys will provide data on foraging habitat and use by covered species. Reclamation staff will conduct bat surveys before and after habitat creation utilizing Anabat, Sonobat, infrared cameras, stationary detection equipment, and mist netting, where appropriate.

Previous Activities: All sites were monitored in FY07 using both acoustic and capture techniques. The report *Post-Development Bat Monitoring of Habitat Creation Areas along the*

Lower Colorado River – 2007 Acoustic Surveys is posted on the LCR MSCP website. The report *2007 Preliminary Results for the Capture of Bats at Riparian Habitat Creation Sites along the Lower Colorado River* will be posted on the LCR MSCP website.

FY08 Accomplishments: Quarterly post-development bat monitoring was conducted utilizing Anabat bat detectors in seven LCR MSCP habitat creation areas, including Beal Lake Habitat Restoration, 'Ahakhav Tribal Preserve, Palo Verde Ecological Reserve, Cibola Valley Wildlife and Conservation Area, Cibola NWR Unit 1 Conservation Area, Pratt Restoration, and the Imperial Ponds Conservation Area. The principal goal of this monitoring is to assess seasonal use of the restoration sites by the two covered bat species (western red bat and western yellow bat), the two evaluation species (pale Townsend's big-eared bat and California leaf-nosed bat), and an indicator species (hoary bat) that may be more common than the other two tree bats (red and yellow). The hoary bat may be a good indicator for native riparian tree habitat along the LCR.

Additional funding was provided in FY08 in order to buy additional equipment and for labor for a more robust sampling design at habitat creation sites. A new acoustic sampling protocol was established in early 2008 which increased the number of samples in each major habitat type to allow statistical comparisons of bat activity by habitat type. The new protocol was implemented for the April 2008 and July 2008 sample periods. This data set also includes data that preceded the new sampling design (October 2007, and February 2008). A total of 76 detector nights were completed on 9 monitoring sites and 4 exploratory sites in the Beal Lake Habitat Restoration area. A total of 10,924 call files were collected and edited, and valid call files identified to species or species groups. A permanent Anabat station was established at the Beal Lake Restoration Area on April 8, 2008 and has continued uninterrupted for the most part throughout the rest of the year. Post development bat monitoring was initiated at the 'Ahakhav Tribal Preserve in April 2008. Nine sites were selected for monitoring. Thirty-six detector nights were completed with a total of 11,412 call files being collected and edited. Forty-four detector nights were completed at 9 monitoring sites in the Palo Verde Ecological Reserve. A total of 16,676 bat call files were collected and edited. Forty-one detector nights were completed at 8 monitoring sites in the Cibola Valley Conservation and Wildlife Area. A total of 19,722 call files were collected and edited. Thirty-two detector nights were completed for 7 monitoring sites at Cibola NWR Unit #1 Conservation Area. A total of 7,441 call files were obtained and edited. A total of 59 detector nights was completed for 18 sites at Imperial Ponds Conservation Area. A total of 100,247 call files were obtained and edited. All four covered species were found acoustically at all of the conservation areas. The California leaf-nosed bat was by far the most common covered species. The other 3 covered species were only picked up minimally.

A bat capture program utilizing mist nets and harp traps was conducted between April and September. Four habitat creation areas were sampled, including Beal Lake, 'Ahakhav, Cibola NWR Unit 1, and Pratt. An additional sample site was added at Havasu NWR in a more mature cottonwood restoration stand to determine if it would be a more productive site than Beal Lake. Together, these two sampling methods increase the odds of accurately detecting bats using a given habitat. Netting and trapping may allow a better understanding of how bats use habitat creation sites, which would aid the future design of these sites to better accommodate bat use. A total of 168 individual bats, from eight species, were captured among the five sites. Two LCR MSCP target species, the western yellow bat and the California leaf-nosed bat, were captured.

Two hoary bats were also captured. One yellow bat was captured at a site in which no acoustic data had been found, confirming the importance of using both acoustic and capture techniques to survey an area.

FY09 Activities: Bat capture techniques at the 'Ahakhav Tribal Preserve in February 2009 resulted in the first ever western red bat captured along the mainstem LCR. Conduct pre- and post-development bat surveys on habitat creation sites, including Beal Lake, 'Ahakhav, Cibola NWR Unit 1, CVCA, Imperial Ponds, and PVER. Anabat files will be analyzed to determine species richness and activity levels at habitat creation sites. A new type of bat detector and analyzing program will be tested for long-term monitoring. Capture techniques will be utilized to enhance acoustic surveys, identify hard to record (whispering bat) species, and obtain reference calls.

Proposed FY10 Activities: Pre- and post-development bat surveys will be conducted on habitat creation sites, including Beal Lake, Cibola Nature Trail, CVCA, Imperial Ponds, and PVER. Anabat and Sonobat files will be analyzed to determine species richness and activity levels at habitat creation sites. Capture techniques will be utilized to enhance acoustic surveys, identify hard to record (whispering bat) species, and obtain reference calls.

Pertinent Reports: *Post-Development Bat Monitoring of Restoration Sites along the Lower Colorado River – 2007* is posted on the LCR MSCP Web site. *Post-Development Bat Monitoring of Habitat Creation Areas along the Lower Colorado River –2008 Acoustic Surveys* will be posted on the LCR MSCP website. *Post-Development Bat Monitoring of Habitat Creation Areas along the Lower Colorado River –2008 Capture surveys* will be posted on the LCR MSCP website.