

## Work Task C43: Population Demographics and Habitat Use of California Leaf-nosed Bat, a Genetic Evaluation

FY11 Estimate	FY11 Actual Obligations	Cumulative Expenditures Through FY11	FY12 Approved Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate
\$20,000	\$1,099.56	\$1,099.56	\$40,000	\$60,000	\$50,000	\$0

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**Start Date:** FY11

**Expected Duration:** FY14

**Long-term Goal:** Determine the population demographics and habitat use of an LCR MSCP evaluation species, the California leaf-nosed bat.

**Conservation Measures:** CLNB1, CLNB2.

**Location:** Reaches 3-5.

**Purpose:** Determine the population genetic history of California leaf-nosed bats along the LCR including geographic structuring, evolutionary history, and other population demographic parameters using modern molecular techniques and determine the distribution of genetic variation in California leaf-nosed bat roost sites and identify where individuals from different roosts are foraging.

**Connections with Other Work Tasks (past and future):** Data on roost site location and samples collected from restoration sites will come from surveys conducted under D9 and F4.

**Project Description:** This work task is being initiated to evaluate to status of California leaf-nosed bats along the LCR within the framework of the LCR MSCP using a modern molecular approach. This will allow a better understanding of how far individuals are willing to travel to forage (currently assumed to be only 5 miles) and what constitutes appropriate habitat.

Genetic samples from each of the known roost sites near the LCR and from individuals captured during system monitoring will be collected and DNA sequencing and microsatellite analyses will be performed. This will document the genetic structuring of roost sites and allow various population demographic parameters to be estimated. These parameters include population size, previous population expansion or contraction, and dispersal between roosts. Individuals collected during conservation area monitoring will be assigned to their most likely roost site based on their unique genetic signature. Distance from roosts to restoration sites and other pertinent habitat information will be determined using GIS.

**Previous Activities:** Preliminary activities prior to FY11 were conducted under G3. Study design and initial sampling of LCR roosts has been conducted. Some samples from Mexico have been secured. Mitochondrial sequencing for initial candidate samples has been completed.

**FY11 Accomplishments:** Methodology was presented at the Western Bat Working Group Biennial Meeting in Las Vegas, Nevada. Genetic samples were collected during mist-netting at habitat creation areas as part of work task F4. Samples were not processed or analyzed this year due to contracting delays.

**FY12 Activities:** Genetic sampling will continue in conjunction with F4 surveys. Samples previously collected will be used for microsatellite development and analysis of genetic markers. Genetic data from both the roosts and restoration sites will be compared and analyzed to determine if distance from roost sites can be calculated, and which roost sites the bats captured at restoration sites are coming from.

**Proposed FY13 Activities:** Additional samples will be collected and analyzed on both the LCR as well as other locations within the range of the California leaf-nosed bat in order to determine the LCR population's importance to the species as a whole. This project is being extended in order to obtain a robust data set from which management recommendations can be made.

**Pertinent Reports:** An annual report will be posted on the LCR MSCP website. The research design is available upon request.