

## Work Task C36: Elf Owl Detectability Study

FY10 Estimates	FY10 Actual	Cumulative Accomplishment Through FY10	FY11 Approved Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate
\$50,000	\$21,836.95	\$21,836.95	\$50,000	\$20,000	\$0	\$0

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**Start Date:** FY09

**Expected Duration:** FY12

**Long-term Goal:** To develop a long-term elf owl monitoring plan for the LCR MSCP.

**Conservation Measures:** MRM1 (ELOW).

**Location:** Bill Williams River.

**Purpose:** To conduct a detectability study on a known population of elf owls that breed in riparian habitat.

**Connections with Other Work Tasks (past and future):** This study will be used to modify the survey protocol used for system-wide (D6) and post-development (F2) presence/absence elf owl surveys.

**Project Description:** Data to support the current tape-playback presence/absence elf owl survey protocol are lacking. A detectability study will be conducted on a known population of elf owls that breed in riparian habitat along the Bill Williams River. If the population is not large enough, then other populations away from the LCR region, but within other desert riparian areas in the southwest may be studied.

The objectives of this study are to 1) systematically test how varying the parameters of call-playback surveys (distance to owl, time of night, decibel level of call playback, habituation, duration of call playback) affects the response type and response time of elf owls in known locations, 2) recommend survey protocols that optimize detectability, and recommend the number of seasonal surveys and amount of long-term survey effort required for effective population monitoring, and 3) quantify the likelihood of detection if the recommended methods are implemented. Data from this study may be used to modify the existing elf owl presence/absence survey protocol.

**Previous Activities:** N/A

**FY10 Accomplishments:** A study plan for the elf owl detectability study was completed in January. Field work for the project took place at the Bill Williams NWR from 1 March

to 2 June. Twelve survey routes within and adjacent to the refuge riparian zone were prepared, mapped and marked in March. Passive listening and call-playback surveys were conducted along the survey routes to inventory elf owls and determine their nesting sites and/or activity centers. When elf owls were detected, follow-up surveys were conducted specifically to determine the center of activity or the nesting site. Seven territories were identified. Efforts to locate owls in the woodland interior were negatively affected by flooding of the Bill Williams River.

Capturing and radio tagging of the elf owls occurred from 1 April to 22 April. Six elf owls were captured and radio-tagged over the course of seven nights of netting. Because elf owls could almost always be located in great precision by the process of passive listening it was determined that radio telemetry would not be required to determine an elf owl's position prior to performing detectability trials. Therefore elf owls from all seven territories could be subject to detectability tests without making it a prerequisite to capture and radio tag them.

Detectability experiments were conducted on these seven pairs from 9 April to 2 June. Parameters tested were distance and time. Three different call-playback distances were tested (100 m, 250 m and 450 m) and three different times of night (Dusk: 30 minutes after sunset until 12 a.m., Mid-night: 12 a.m. to 3 a.m., and Predawn: 3 a.m. until 30 minutes before sunrise) were tested. An experimental matrix was constructed whereby each owl was tested for each combination of distance and time of night.

A total of 53 detectability trials were performed. For surveys at dusk the detectability rate was 94%, for surveys at mid-night the detectability rate was 100% and for surveys at predawn the detectability rate was 72%. For surveys performed 100 m away from the owl the detectability rate was 86%, for surveys performed 250 m away from the owl the detectability rate was 90% and for surveys performed 450 m away from the owl the detectability rate was 89%. When the trials were performed on nights with a full, half, quarter or new moon phase detectability rates were 100%. When trials were performed on nights with a gibbous moon phase detectability rates were 65%.

**FY11 Activities:** Field work for the second season of study will take place from 1 March to 2 June. Survey routes at the Bill Williams NWR will be mapped and marked. Additional efforts will be made to locate owls nesting in the woodland interior. Passive listening and call-playback surveys will be conducted along the survey routes to inventory elf owls and determine their nesting sites and/or activity centers.

Detectability experiments similar to the ones in 2010 will be conducted on at least 10 elf owls. Habituation testing will be incorporated into the detectability trials. The effect of moon phase on responsiveness will be further investigated. Further data will be gathered on home range size and habitat use using radio-tagged elf owls.

A final report on the project will be completed that will include detailed method and results of the study. This report will also include recommended survey protocols and associated detection probabilities.

**Proposed FY12 Activities:** The final report will be reviewed and completed.

**Pertinent Reports:** The report, *Elf Owl Detectability Study 2010*, will be posted on the LCR MSCP website. The study plan is available upon request.