

Work Task D6: System Monitoring for Riparian Obligate Avian Species

FY11 Estimate	FY11 Actual Obligations	Cumulative Expenditures Through FY11	FY12 Approved Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate
\$210,000	\$237,749.92	\$1,056,575.11	\$280,000	\$400,000	\$400,000	\$400,000

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Start Date: FY06

Expected Duration: FY55

Long-term Goal: System monitoring for avian covered species

Conservation Measures: MRM1, MRM2 (ELOW, GIFL, GIWO, VEFL, BEVI, YWAR, SUTA)

Location: System-wide

Purpose: Monitor riparian obligate avian species covered under the LCR MSCP to document long-term population trend and habitat use.

Connections with Other Work Tasks (past and future): Information obtained through this work task will be used to conduct system monitoring for avian covered species. Data collected during post-development monitoring of habitat conservation areas (F2) may also be used in this work task. Information obtained through this work task will also be used in association with C24 to help define habitat requirements for riparian obligate bird species.

Project Description: The LCR MSCP includes conservation measures for 26 covered species and five evaluation species, including nine neo-tropical migratory bird species. It is inefficient to monitor every covered species individually throughout the entire LCR MSCP planning area. Many bird populations can be monitored effectively using multi-species survey protocols.

Avian system monitoring protocols have been developed that can incorporate data into a coordinated bird monitoring network. Data from the LCR can be incorporated into a larger, regional database, which makes the data more powerful during analysis. Population trends can be derived over time, thus enabling Reclamation to monitor existing avian populations. The avian multi-species protocol described below is designed to monitor six LCR MSCP covered species as well as non-covered neo-tropical migratory bird species. The six LCR MSCP covered species are gilded flicker, Gila woodpecker, summer tanager, vermilion flycatcher, Sonoran yellow warbler, and Arizona Bell's vireo.

Single-species surveys for the elf owl are necessary due to the nocturnal nature of this species and its rarity along the LCR. Beginning in FY2013 elf owl systemwide monitoring will be under a separate work task.

Previous Activities:

Multi-Species Bird Surveys. In 2005-06, existing vegetation, characterized using the Anderson and Ohmart classification system, was stratified and random point-count transects were established and conducted. After reviewing data collected during the 2005-06 breeding seasons, the monitoring plan shifted to a double sampling technique in 2007. System-wide avian monitoring was conducted during the 2007-2010 breeding seasons utilizing a double sampling rapid/intensive area search protocol. This protocol was utilized to provide density estimates of the six focal species and other common species in the LCR MSCP planning area. The Sonoran yellow warbler and Arizona Bell's vireo were the most abundant species detected. The summer tanager and the Gila woodpecker were detected in moderate numbers. The vermilion flycatcher was detected in low numbers and the gilded flicker was not detected breeding within the LCR MSCP Planning area. Non-breeding gilded flickers and family groups were detected foraging at the Bill Williams NWR and Cibola NWR.

In 2010, the habitat definitions were changed based on the 2007-2009 data. The final scheme had four habitat types: tall woody, low woody, herbaceous, and not vegetated. The USGS submitted a final report on the sampling plan for Riparian Birds of the lower Colorado River. Power analysis was conducted utilizing BBS survey data. Based on the power analysis the plan recommended 80 rapid area search plots be surveyed annually. New plots should be selected each year. A software program (DS) to automate the calculation of the detection ratios was developed by the USGS. A power program to conduct power analyses was developed by the USGS. These programs were specifically developed to be used with Lower Colorado Riparian Bird sampling design, but can also be used for similar sampling designs. User manuals for the DS program and the GIS tools were finalized by USGS. A Sampling Large Landscape Workshop was held to educate others on the double sampling method, and to receive feedback on the survey methods.

In 2010, a final project report was written for systemwide monitoring from 2008-2010 during the study plan and field protocol development stage.

Elf Owl Surveys. Twenty-one survey sites and 45 single call stations in suitable habitat in the LCR MSCP planning area were selected to be surveyed for elf owls in 2008-2010. Suitable habitat was defined as historical locations, incidental sightings, and HMIII, CWI, and CWII habitat. Surveys were conducted from 27 March to 1 May of each year, and used a tape-playback presence-absence survey protocol. One elf owl was detected near Blankenship Bend.

FY11 Accomplishments:

Multi-Species Bird Surveys. In 2011, post-development monitoring on habitat conservation areas (F2) and habitat modeling (C24) continued. System wide surveys were conducted according to the final sampling plan and following the same sampling field protocol used in 2007-2010. In 2011, 80 plots were randomly selected, using the new GIS plots layer. Each rapid

area search plot was surveyed twice in 2011; one plot was surveyed between mid-April and mid-May and the other plot was surveyed between mid-May and Mid-June. A random subsample of eight plots was surveyed intensively to determine actual numbers of breeding birds present in each plot. Each intensive area search plot was surveyed eight times between 13 April and 16 June 2011. Data from intensive surveys and rapid surveys were combined to provide detection ratios and density estimates for the six focal species and other common species in the LCR MSCP planning area for 2011.

During system-wide rapid surveys in 2011, 155 species were recorded. Of these, 88 species were breeders and 67 were migrants or non-breeders. There were 2841 breeding territories detected during the rapid surveys. During system-wide intensive surveys, 90 species were recorded. Of these, 46 species were breeders and 44 were migrants or non-breeders. There were 416 breeding territories detected during the intensive surveys. The population estimates for the number of territories of focal species in the LCR MSCP planning area from 2011 were: 1) Arizona Bell's vireo (1941), 2) Sonoran yellow warbler (1166), 3) Gila woodpecker (425), 4) summer tanager (222), and 5) vermilion flycatcher (567). The vermilion flycatcher population estimates are skewed due to difficulties in detections of this species. There was one breeding gilded flicker detected at the eastern edge of Lincoln Ranch, in the Bill Williams River. The bird's territory was mostly outside the plot in upland habitat. This was the first gilded flicker detected breeding within the LCR MSCP project area since surveys began in 2007. Population size estimates for covered species were generally lower in 2011 than in previous years. This may be due to the random plot selection representing a lower proportion of covered species, to annual variation in migration arrival times, reproductive schedule, or population variation.

In 2011, a more extensive data management protocol was implemented to improve the management and quality of the data for the systemwide bird monitoring. A three year study was initiated to test the assumption of unbiased estimation during intensive area search surveys. The three goals of the project were: 1) evaluate the assumption that unbiased estimates are being obtained during intensive area search surveys; 2) estimated the average error rate being made during intensive area search surveys and determine if differences in error rate exist between species or habitats; 3) suggest improvements to intensive area search survey methods to achieve higher accuracy, if any are needed. Eight plots will be surveyed each year for a total sample size of 24 plots. Three surveys will be conducted on each plot; a rapid survey (2 visits), intensive survey (8 visits) and enhanced intensive survey (16 to 24 visits). The last year of this project is FY 2013.

Elf Owl Surveys. No systemwide surveys for elf owls were conducted in 2011.

FY12 Activities:

Multi-Species Bird Surveys. Area searches will be conducted during the breeding season of 2012 following the double sampling intensive/rapid area search protocol used in previous years. A new set of 80 rapid area search plots will be randomly chosen from the new plots layer using a stratified random sampling design. Two rapid surveys will be conducted per plot during the breeding season. Eight of these plots will be surveyed intensively with each plot being surveyed eight times during the breeding season.

A data management plan and quality assurance plan will be written for the systemwide bird survey data. Improvements will be made to the DS program. The second year of the study to test the assumption of unbiased estimation during intensive area search surveys will be implemented.

Elf Owl Surveys. All suitable habitat for the elf owl within and adjacent to the LCR MSCP project area will be defined. A monitoring plan for long term elf owl population monitoring will be developed for use in FY13 under a new work task, D13, Elf Owl System-wide Surveys. More intensive and targeted surveys will be conducted for the vermilion flycatcher and gilded flicker under work task C51 and C52, respectively.

Proposed FY13 Activities: System-wide area search surveys for riparian obligate species including the six focal species will continue in 2013. Area searches will be conducted during the breeding season of 2013 following the double sampling intensive/rapid area search protocol used in previous years. Two rapid surveys will be conducted per plot during the breeding season. Eight of these plots will be surveyed intensively with each plot being surveyed eight times during the breeding season. The last year of the study to test the assumption of unbiased estimation during intensive area search surveys will be implemented.

Bird surveys will be in SWFL breeding habitat at sites such as Mormon Mesa, Mesquite West, and Overton WMA in order to determine potential effects of beetles on breeding populations of LCR MSCP species before the beetles arrive in the lower river valley. The surveys would be conducted using the same methodology used for system-wide riparian surveys. In order to minimize excess disturbance of any breeding taking place at the sites we would limit surveys to rapid surveys within SWFL habitat so that only 2 surveys would be conducted. The rapid survey data from the SWFL sites could then be compared to the data collected as part of the system-wide effort to calculate a density estimate of the riparian bird species present at SWFL breeding sites. This information could then be compared to our estimates for the restoration sites and for the lower river.

Pertinent Reports: *Report on the Lower Colorado River Riparian Bird Surveys 2011*, and *A Sampling Plan for Riparian Birds of the Lower Colorado River—Final Report* are posted on the LCR MSCP website.