

## Work Task C24: Avian Species Habitat Requirements

FY08 Estimates	FY08 Actual	Cumulative Accomplishment Through FY07	FY09 Approved Estimate	FY10 Proposed Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate
\$150,000	\$86,935.13	\$86,935.13	\$375,000	\$200,000	\$200,000	\$150,000

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**Start Date:** FY08

**Expected Duration:** FY12

**Long-term Goal:** Develop habitat suitability index models for covered avian species

**Conservation Measures:** MRM1 (CLRA, LEBI, BLRA, WIFL, YBCU, ELOW, GIFL, GIWO, VEFL, BEVI, YWAR, SUTA)

**Location:** System-wide

**Purpose:** Determine habitat requirements for covered marsh and riparian bird species, including Yuma clapper rail (CLRA), least bittern (LEBI), California black rail (BLRA), southwestern willow flycatcher (SWFL), yellow-billed cuckoo (YBCU), elf owl (ELOW), gilded flicker (GIFL), Gila woodpecker (GIWO), vermilion flycatcher (VEFL), Arizona Bell's vireo (BEVI), yellow warbler (YWAR), and summer tanager (SUTA).

**Connections with Other Work Tasks (past and future):** Information gained from this work task will be used to design, create, and maintain marsh and cottonwood-willow habitat described in Section E that targets covered bird species. Information will also be used to maintain existing habitat as described in H1. Data collected in work tasks D2, D3, D5, D6, D7, and F2 will be used to help define habitat requirements.

**Project Description:** The HCP requires the creation of 512 acres of marsh habitat for three covered marsh bird species. All 512 marsh acres should provide habitat for CLRA and LEBI, while 130 acres will provide habitat for BLRA. Studies will be conducted to determine habitat requirements for marsh bird surveys. Results from these studies will be utilized in created habitats. Created habitats in turn will be designed in a mosaic to provide the characteristics required by each species. In addition, potential limiting factors such as water fluctuation, percent cover by plant species, minimum patch size, and selenium bio-accumulation need to be determined.

The HCP also requires the creation of 5,940 acres of cottonwood-willow habitat for nine covered riparian obligate bird species. Habitat requirements for these covered species are not fully understood. Studies will be conducted to determine habitat requirements for riparian obligate species. Results from these studies will be utilized in created habitats. Habitat creation projects

will provide habitat requirements for multiple covered species to effectively and efficiently complete these conservation measures.

**Previous Activities:** The monitoring plan and sampling methods used for this study were developed under Work Task D6, System Monitoring for Riparian Obligate Avian.

**FY08 Accomplishments:**

**System-wide and Created Habitat Avian Monitoring.** In 2008, a Cooperative Agreement was initiated with the Great Basin Bird Observatory (GBBO). The purpose of the study is to assess the habitats of the LCR MSCP covered species and to determine avian use of habitat creation sites, and to monitor the bird communities within the LCR MSCP area (avian surveys completed under D6). Twenty territories (if possible, depending on the species' rarity) per covered species will be paired up with 20 non-use sites from the same geographic and habitat type over a 2-year period. In 2008, habitat data was gathered at 48 sites for Bell's vireo and yellow warbler. A combination of landscape variable assessment, basic characterization of the vegetation cover types, and a microhabitat description with a point intercept method were used to assess habitat. This follows an earlier, rapid habitat assessment protocol implemented by USGS in 2007 (under D6 in 2007), for which more detailed methods are designed to provide complementary information. Because data was still being collected in October 2008, and a more accurate representation of the results will be possible with two years of data, this information will be combined and reported in 2009.

**Marsh Bird Habitat Monitoring.** A 2-year study was initiated to determine habitat preferences of the three covered marsh bird species, Yuma clapper rail, California black rail, and least bittern. Hydrology and vegetation will be monitored to correlate conditions with marsh bird use of the area.

This study is being conducted on Imperial NWR in fields 16 and 18. Field 18 was prepared (cleared and contoured) for restoration in 2008 and planted with wetland vegetation during the summer. Field 16 is adjacent to Field 18 and already contains wetland and riparian vegetation, and covered marsh bird species are present there. Information collected in Field 16 and data from Field 18 as it develops into marsh and riparian habitat will be used to adaptively manage marsh habitat in the future.

Twenty-one monitoring wells were installed in Field 16 and 69 wells were installed in Field 18 between July 20 and August 5. The wells were installed to monitor the hydrologic regime in each field. Four vegetation surveys were completed at each well location in Field 18. Live and dead stem density of each emergent plant species and the minimum, maximum, and mean height of each species within a 0.5-m square adjacent to each monitoring well was measured on each of four dates. The percent vegetative cover within 15 meters of each well location was estimated and mapped and the salinity and pH were measured adjacent to each well.

Two permanent survey routes around the perimeter of both fields 16 and 18 have been established to survey for marsh birds. Survey points are 50 m apart. Field 16 was surveyed four times and Field 18 was surveyed twice. Call broadcast surveys were used, and the location of

each bird detected was mapped by estimating the location of the response call. Incidental detections were also recorded.

Field 18 is dominated by California bulrush, but common threesquare bulrush and cattail are also common or co-dominant in the southern end of the field. *Phragmites*, an invasive volunteer, is sparse throughout most of the field except in the northwestern edge of the field where it is dominant. Saltcedar is sparse, but present on the extreme southern boundary of the field.

No LCR MSCP covered species were detected in Field 18 during the marsh bird surveys, but least bitterns were detected incidentally during vegetation surveys. Clapper rail, least bittern, and California black rail were detected in Field 16 during marsh bird surveys. In Field 17, which is adjacent to the area being surveyed, clapper rail and black rail were heard.

**Yellow-billed Cuckoo Habitat Modeling.** In July 2008, a project to develop a GIS-based model of yellow-billed cuckoo breeding habitat was initiated. This type of model can identify the relative importance of individual variables or a combination of variables in influencing the distribution of a species. The model will contribute to the assessment of alternative designs and management of habitat created for the yellow-billed cuckoo on the LCR.

To date, the following steps have been taken towards the development of the GIS based model:

1. Digital (GIS) layers have been developed from the 2006 Reclamation vegetation classification.
2. Vegetation classification layers for the Bill William National Wildlife Refuge were obtained.
3. Vegetation classes have been extracted and stored in a unique grid comprised of 30-X 30-m cells.
4. GIS variables such as NDVI and proximity to features for the LCR YBCU model have been created from 2003, 2005, and 2007 TM imagery.
5. Landscape variables for the LCR YBCU model, such as amount of mesquite within a given radius, patch size, and distance to water, have been created from the Reclamation vegetation layers.
6. The LCR MSCP 2006 and 2007 YBCU locations have been attributed with GIS data.
7. Physical and biological associations with LCR MSCP YBCU occurrence are being explored using logistic regression and/or Mahalanobis distance modeling.

#### **FY09 Activities:**

**System-wide and Created Habitat Avian Monitoring.** Monitoring activities begun in 2008 will continue. Bird densities derived from detection ratios are being calculated and habitat data are being analyzed and will be reported in the 2008 and 2009 annual reports. Recommendations of conservation actions under the adaptive management process outlined in the LCR MSCP Science Strategy (USBR 2006) will be addressed in the final report in 2009.

**Marsh Bird Habitat Monitoring.** The remaining 25 monitoring wells were installed in Field 16 in December 2008. Monthly vegetation surveys will continue throughout the winter and into the

breeding season in both fields 16 and 18. Marsh bird surveys will resume in February. Data will be evaluated on preferred vegetation and hydrologic regime of black rails, clapper rails, and least bittern. This information will be used to adaptively manage Field 18.

**Yellow-billed Cuckoo Modeling.** LCR YBCU detections collected in 2008 and 2007 will be overlaid onto the 2006 model output to assess the temporal accuracy and stability of the model. Change detections between 2001 and 2007 will be conducted to determine the stability of YBCU habitat. The model will then be applied throughout LCR MSCP boundary area.

**Proposed FY10 Activities:** Avian surveys will continue system-wide and within habitat conservation areas. Data gathered from the marsh bird study will be finalized in a report. This information will be used to develop marsh and wetland habitat at future LCR MSCP habitat creation sites. A draft annual project report is anticipated in December 2009 and a final report in January 2010.

**Pertinent Reports:** *Annual Report on the Lower Colorado River Riparian Bird Surveys, 2008* will be posted to the Web site. Study plans for Marsh Bird Habitat Monitoring and Yellow-billed Cuckoo Modeling are available upon request.