

Work Task C24: Avian Species Habitat Requirements

FY16 Estimates	FY16 Actual Obligations	Cumulative Expenditures Through FY16	FY17 Approved Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate	FY20 Proposed Estimate
\$270,000	\$302,717.48	\$2,035,390.61	\$340,000	\$150,000	\$0	\$0

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Start Date: FY08

Expected Duration: FY18

Long-Term Goal: Identify covered bird species' habitat characteristics to inform conservation area management

Conservation Measures: MRM1 and MRM2 (BEVI, BLRA, CLRA, ELOW, GIFL, GIWO, LEBI, SUTA, VEFL, WIFL, YBCU, and YWAR)

Location: Reaches 1–7 from Lake Mead to the Southerly International Boundary with Mexico, Bill Williams River, and other river systems in Arizona

Purpose: The purpose of this work task is to evaluate the habitat requirements of covered marsh and riparian bird species, including the Arizona Bell's vireo (*Vireo bellii arizonae*), California black rail (*Laterallus jamaicensis coturniculus*), elf owl (*Micrathene whitneyi*), gilded flicker (*Colaptes chrysoid*), Gila woodpecker (*Melanerpes uropygialis*), Sonoran yellow warbler (*Dendroica petechia sonorana* = *Setophaga petechia sonorana*), southwestern willow flycatcher (*Empidonax traillii extimus*), summer tanager (*Piranga rubra*), vermilion flycatcher (*Pyrocephalus rubinus*), western least bittern (*Ixobrychus exilis hesperis*) yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and Yuma clapper rail (*Rallus longirostris yumanensis* [also known as Yuma Ridgway's rail = *R. obsoletus yumanensis*]). Conservation measures within the Habitat Conservation Plan call for research to better identify habitat requirements (Monitoring and Research Measure 1 [MRM1]) and to manage habitat of covered bird species (MRM2). The research under this work task fulfills those goals. Research questions will be focused on habitat elements that can be managed at the conservation areas. Conservation measures to create habitat exist for each of the above species; knowledge of their habitat requirements will assist in habitat creation.

Connections with Other Work Tasks (Past and Future): Information gained from this work task will be used to conduct pre- and post-monitoring at conservation areas (Section F) that target covered bird species and system-wide

monitoring of avian species (Section D). Information gained from this work task will be incorporated into Conservation Area Development and Management (Section E) work tasks and adaptive management (Section G).

Project Description: A requirement under the LCR MSCP is the creation of a minimum of 512 acres of marsh habitat for three covered marsh bird species. All 512 marsh acres should provide habitat for the Yuma clapper rail and western least bittern, while 130 acres will provide habitat for the California black rail. The Habitat Conservation Plan requires the creation of a minimum of 5,940 acres of cottonwood-willow (*Populus fremontii-Salix gooddingii*) habitat and 1,320 acres of honey mesquite (*Prosopis glandulosa*) habitat for nine covered riparian obligate bird species. Studies will be conducted to evaluate the habitat elements of covered bird species that can be managed at habitat conservation areas: Arizona Bell's vireo, California black rail, elf owl, Gila woodpecker, gilded flicker, Sonoran yellow warbler, summer tanager, vermilion flycatcher, western least bittern, and Yuma clapper rail. Habitat characteristics for the southwestern willow flycatcher (D2), yellow-billed cuckoo (D7) and the gilded flicker (C52) are covered under separate work tasks.

Previous Activities:

Yellow-billed cuckoo: A Geographic Information System-based model of yellow-billed cuckoo breeding habitat was developed.

Arizona Bell's vireo, Gila woodpecker, Sonoran yellow warbler, and summer tanager: From FY08 to FY14, habitat data were collected and summarized. This included collection of vegetation measurements to detect vegetation differences where birds did and did not nest. An audit of the data from FY11 to FY14 was conducted to verify its completeness and quality.

Restoration of managed marsh units to benefit California black rail and other marsh birds: In 2009, vegetation surveys were conducted, water depth data were monitored at wells, and biweekly marsh bird surveys for California black rails, Yuma clapper rails, and western least bitterns were conducted throughout the breeding season at the Imperial National Wildlife Refuge in Fields 16 and 18. In 2011, a final report was prepared, giving recommendations on the creation of marshes for both Yuma clapper rails and California black rails. Further research on marsh bird habitat requirements will be conducted under Work Tasks C60 and C66.

Elf owl: A study was initiated in FY14 to refine the survey methods for elf owls in dense habitat and estimate the general habitat characteristics of occupied riparian habitat to inform nest box placement and management of conservation areas. Surveys were conducted to locate elf owls in order to confirm that they use riparian habitat, identify birds that could be used to test the accuracy of the call-playback survey method in dense riparian conditions, and identify nesting territories to inform where nest boxes should be installed on conservation areas.

In FY15, approximately 550 elf owls were detected in all 9 major Arizona watersheds and in mesic riparian vegetation in 7 of the watersheds. Generalized linear mixed models were developed to investigate the importance of riparian vegetation to elf owls and assess whether certain environmental characteristics could explain the locations of this subspecies.

FY16 Accomplishments:

Elf owl: Surveys were conducted to locate elf owl breeding pairs in or near riparian habitat at four study areas along the Santa Cruz watershed (Cienega Creek, Posta Quemada Canyon, Rincon Creek, and Tumamoc Hill Washes), one study area along Arivaca Creek in the Buenos Aires National Wildlife Refuge, and three study areas along the Bill Williams River watershed (Bill Williams River, Santa Maria River, and Date Creek). Call-playback discovery surveys, emergence surveys, radio telemetry surveys, nest searching, and territory surveys were used to confirm that pairs were breeding. A total of 89 elf owl pairs were confirmed breeding.

Responsiveness surveys were conducted during the first 3 hours after sunset at distances of 50 meters (m), 100 m, 150 m, 200 m, and 250 m from confirmed breeding individuals in obstructed conditions in five vegetation volume categories: 5–20%, 21–40 %, 41–60%, 61–80%, and > 80%. A total of 54 nests were found. The height and species of the nest tree or cactus, the cavity height, and the cavity orientation were recorded for each nest, and photographs were taken of the nest tree and surrounding habitat. The core territory was delineated for breeding pairs when individuals were observed at enough locations during radio telemetry surveys, territory surveys, nest searching, or emergence surveys.

Habitat assessments were conducted for all 89 confirmed pairs in a 75-m radius around the nest; if the nest was not found, the activity center was used instead. Vegetation patches of the six community types (mesic riparian, xeric riparian, exotic riparian, desert woodland, desert shrubland, and arborescent desert scrub) within each home range or fixed radius circle were delineated. Lower midstory volume, midstory volume, height of canopy, canopy cover, number of saguaros (*Carnegiea gigantea*) and snags, distance to riparian habitat, and riparian habitat width were estimated within each home range or fixed-radius circle.

FY17 Activities:

Elf owl: Elf owl surveys will continue in FY17. Call-playback discovery surveys, radio telemetry surveys, territory surveys, nest searching, and emergence surveys will be used to confirm that pairs are breeding and to find nests. Responsiveness surveys will be conducted on confirmed breeding individuals in obstructed conditions. The tree or cactus height, tree or cactus species, cavity height, and cavity orientation will be recorded, and photographs around the nest will be taken when nests are found. The core territory will be delineated for breeding pairs where individuals were observed at enough locations during radio

telemetry surveys, territory surveys, nest searching, or emergence surveys. Habitat assessments will be conducted for each pair where breeding was confirmed within fixed-radius circles and delineated home ranges.

Proposed FY18 Activities:

Elf owl: Field work will be completed, and the project report will be finalized. Discussions will take place on future management direction based on the results of this study.

Pertinent Reports: The annual reports will be posted on the LCR MSCP Web site upon completion.