

Work Task F1: Habitat Monitoring at Conservation Areas

FY14 Estimate	FY14 Actual Obligations	Cumulative Expenditures Through FY14	FY15 Approved Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate
\$650,000	\$472,448.47	\$3,696,603.91	\$650,000	\$450,000	\$450,000	\$450,000

Contact: Sonja Kokos, (702) 293-8033, skokos@usbr.gov

Start Date: FY05

Expected Duration: FY55

Long-Term Goal: Pre- and post-development monitoring

Conservation Measures: MRM2, CLRA1, WIFL1, WRBA2, WYBA3, CRCR2, YHCR2, LEBI1, BLRA1, YBCU1, ELOW1, GIFL1, GIWO1, VEFL1, BEVI1, YWAR1, SUTA1, and MNSW1

Location: Beal Lake, Havasu NWR, Arizona; PVER, California; CVCA, Arizona; Cibola NWR Unit #1, Cibola NWR, Cibola, Arizona; Yuma East Wetlands, Yuma, Arizona

Purpose: The purpose of this work task is to provide post-development monitoring that is necessary to assess the effectiveness of each habitat creation and restoration site. Monitoring will include biotic and abiotic components and will inform management decisions throughout the life of the LCR MSCP.

Connections with Other Work Tasks (Past and Future): Post-development habitat monitoring will be conducted at habitat creation sites detailed in the Conservation Area Development and Management (Section E) work tasks.

Project Description: Using post-development monitoring, species habitat characteristics will be evaluated. Monitoring data will be used to document progress toward achieving the biological goals and habitat characteristics for covered species and document the acreage by land cover type (riparian, mesquite, and marsh) each year.

Previous Activities: Five habitat creation sites were monitored in FY10 using different monitoring protocols. In FY11, new protocols were developed and implemented in a pilot year study. Protocols included measuring variables such

as density, species richness, vegetation structure, ground cover, canopy closure, distance to nearest standing water, and distance to nearest open space. Temperature and relative humidity data were also collected.

An external program review (G4) was conducted in FY12 on the vegetation monitoring project to address how the data being collected could be used to assess conservation measure accomplishment. It was found that, under the vegetation monitoring protocol developed over several years, the variability that was known to occur on the sites at various spatial scales was not able to be detected. Following an external program review, recommendations were provided for adjusting the current vegetation monitoring sample design and protocols, including the method chosen for randomization of monitoring plots, the collection of various data that were not tied to management questions, and measurements that were too subjective for inclusion into decisionmaking.

FY14 Accomplishments: In FY14, the adaptive management recommendations for vegetation monitoring were implemented. Vegetation monitoring was conducted in a spatially randomized approach, targeting areas where the vegetation structure and soils were more consistent with southwestern willow flycatcher and yellow-billed cuckoo habitat characteristics. The BLCA, Cibola NWR Unit #1, CVCA, PVER, and Yuma East Wetlands were monitored, collecting data on density, vegetation structure, canopy closure, and canopy height.

Abiotic data were collected using existing monitoring instrumentation. The new study designs for the inclusion of soil moisture monitoring with the vegetation monitoring strategy was drafted (C60).

FY14 obligations were less than approved due adaptive management changes to incorporate stratification of monitoring within conservation areas that support the habitat characteristics suitable for southwestern willow flycatcher.

Vegetation classification mapping was completed in FY14.

FY15 Activities: In recent years, LiDAR technologies have proven to provide more accurate representations of vegetation in forests; it can be collected quickly during the breeding season without disturbing the covered species, and it is expected to provide higher-quality data at a reduced cost. A study plan to evaluate vegetation structures using LiDAR technology and soil moisture dynamics has been completed, and a pilot study will begin in the spring of 2015. The study will be conducted in one area known to be occupied by southwestern willow flycatchers and one area within the PVER with similar habitat characteristics.

The new habitat monitoring approach for long-term monitoring, including soil moisture monitoring at habitat creation areas, will be determined after evaluating the results from the pilot study. LiDAR data will be acquired to assess vegetation characteristics and develop analysis tools (C60).

Proposed FY16 Activities: Incorporating the results from FY15, habitat monitoring using the new methods will continue in FY16.

Pertinent Reports: Reports are being prepared, but drafts are available upon request.