

Work Task D5: Monitoring Avian Productivity and Survivorship

FY15 Estimates	FY15 Actual Obligations	Cumulative Expenditures Through FY15	FY16 Approved Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate
\$250,000	\$300,836.44	\$2,851,772.52	\$250,000	\$250,000	\$250,000	\$250,000

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Start Date: FY05

Expected Duration: FY55

Long-Term Goal: System monitoring for avian covered species by conducting intensive monitoring of habitat creation sites and sites that typify current conditions along the lower Colorado River (LCR)

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

Location: Reach 3, Beal Lake Conservation Area (BLCA), Havasu National Wildlife Refuge (Havasu NWR), Arizona; and Reach 4, Cibola National Wildlife Refuge Unit #1 Conservation Area (Cibola NWR Unit #1) and the Cibola Valley Conservation Area (CVCA), Arizona

Purpose: To collect intensive, site-specific data on avian species demographics, physical condition, species composition and diversity, and site persistence at existing and created habitat sites

Connections with Other Work Tasks (Past and Future): Data from this work task are used in conjunction with data collected from the system-wide bird monitoring program (D6) to monitor overall bird use of the LCR. Data collected at Monitoring Avian Productivity and Survivorship (MAPS) banding stations located at habitat creation sites may also be used for post-development monitoring.

Project Description: Under this work task, conservation areas and existing habitat sites along the LCR that represent typical avian riparian habitat will be monitored. Banding allows for the collection of detailed information about avian species' use patterns and demographics, and this site-specific data can be used to characterize habitats and monitor habitat use, population trends, and demographics of avian species along the LCR.

Avian populations throughout the United States, Canada, and Mexico are monitored using the MAPS protocol. Long-term population trend data are collected by conducting intensive banding throughout breeding seasons. Data collected are analyzed by the Institute for Bird Populations, and long-term population trends are determined on a regional and continental level, as the larger database has increased statistical power that cannot be economically duplicated at a site-specific level.

The Bureau of Reclamation established a MAPS banding station at the Cibola NWR Unit #1 Nature Trail in 2002 prior to LCR MSCP implementation. In 2005, an additional station was established on the Havasu NWR, at the New South Dike, and in mixed cottonwood-salt cedar habitats. These sites provided data from different reaches of the LCR and from different habitat types to allow for comparisons among areas more typically found along the LCR and habitat creation sites like the LCR MSCP conservation areas.

The Institute for Bird Populations recommends netting birds at MAPS banding stations a minimum of 5 years to acquire site-specific data. After 5 years, each site will be evaluated and a decision made to continue, discontinue, or move the station to a new location.

Previous Activities: MAPS banding has been conducted during different seasons to provide information on habitat use by birds during the breeding and non-breeding seasons.

Winter banding was conducted from 2002 through 2005 at the Pratt Restoration Site near Yuma, Arizona, at Cibola NWR from 2002 to 2011, and at the Havasu NWR from 2005 to 2009. Winter banding was discontinued in 2011.

Fall migration banding was conducted at the Pratt Restoration Site and the Cibola NWR from 2002 to 2005. Data on fall migration and winter use were recorded using an adapted MAPS protocol similar to protocols from migration banding projects throughout the West and the Monitoreo de Supervivencia Invernal (MOSI) protocol that is used in Mesoamerica. Fall banding was discontinued in 2005.

Summer MAPS banding has been conducted at six locations:

- BLCA (2009 to 2016).
- Cibola NWR Unit # 1 (2002 to 2016).
- CVCA (2011 to 2015).
- Havasu NWR site (2005 to 2008) – This site was abandoned as a MAPS site in 2009 after a fire in 2008 burned a significant portion of the habitat.

- Headgate Rock Dam site at Parker, Arizona (2000 to 2004).
- The Colorado River Lake Mead site on the Colorado River above Pearce Ferry in Lake Mead National Recreation Area (2002).

Color banding target species such as Bell's vireo, yellow warbler, and summer tanager was initiated in August 2008 at the banding sites to monitor site persistence during the breeding and winter banding seasons.

FY15 Accomplishments: Banding was conducted at three conservation areas during summer using the MAPS protocol. Banding was conducted once during every 10-day banding period for 5 hours a day, beginning 1/2 hour before sunrise. During the breeding season, there were a total of 184 captures at Cibola NWR Unit #1, 126 total captures at the BLCA, and 82 captures at the CVCA.

Three LCR MSCP listed species were captured and color banded during the MAPS season. There was one vermilion flycatcher at Cibola NWR Unit #1, nine yellow warblers and six summer tanagers at the BLCA, and two summer tanagers at the CVCA. Two LCR MSCP listed species were captured and banded but not color banded: one Bell's vireo at the BLCA and one Gila woodpecker at Cibola NWR Unit #1.

One migrant willow flycatcher was banded at Cibola NWR Unit #1 on May 5, one was heard on May 27, and one was heard on June 2. Two migrant willow flycatchers were banded at the CVCA, one on May 14 and another on August 6. One migrant willow flycatcher was heard at the BLCA on June 18 and one was banded on August 7. Yellow-billed cuckoos were heard at Cibola NWR Unit #1 on June 16, at the CVCA from July 8 through July 29, and at the BLCA from June 18 through August 7. No yellow-billed cuckoos were banded during MAPS sessions or MAPS summer target netting in FY15.

One yellow warbler and one summer tanager were recaptured at the BLCA. They had both been captured and color banded in 2015. There were not any recaptures from previous years, but a yellow warbler was re-sighted at the BLCA on April 23 that was color banded in 2010.

An evaluation was initiated to identify the benefits of using the MAPS method for LCR MSCP system-wide monitoring purposes. The MAPS and double sampling methods used under Work Task F2 both detected lower riparian bird species diversity at the CVCA than at other conservation areas. The double sampling method provides a more complete picture of diversity, territory locations, and nest locations at the monitoring site than the MAPS protocol.

The value of continuing MAPS monitoring at the BLCA, CVCA and Cibola NWR #1 was evaluated. The CVCA is located 3 miles from another MAPS station at Cibola NWR Unit #1, and there are consistently fewer captures of birds at the CVCA than at Cibola NWR Unit #1. The covered species detected here are

also being documented by the post-development riparian bird surveys (F2), southwestern willow flycatcher surveys (D2), and yellow-billed cuckoo surveys (D7). It appears that there is limited value with continuing an annual MAPS station at the CVCA, so it will be discontinued after FY15.

The project budget exceeded the FY15 estimate. Additional labor was required for the evaluation of the MAPS method to identify its benefits for LCR MSCP system-wide and conservation area monitoring needs.

FY16 Activities: MAPS banding stations will continue to operate at the Cibola NWR and BLCA during the 2016 breeding season. Color banding of LCR MSCP covered species will continue to be implemented to increase the effective recapture rate. A visual identification of a color-banded bird qualifies as a recapture for statistical purposes. The evaluation will continue in order to identify if the information gathered from the MAPS banding stations is meeting LCR MSCP system-wide and conservation area monitoring needs. If the MAPS stations meet monitoring needs, the sampling intensity (number of stations) will be evaluated.

Proposed FY17 Activities: Breeding season monitoring will continue in 2017 based on the recommendations from the project evaluation.

Pertinent Reports: The *2014–2015 MAPS Summary Banding Report* will be posted on the LCR MSCP Web site upon completion.