

Work Task C60: Habitat Manipulation

FY15 Estimate	FY15 Actual Obligations	Cumulative Expenditures Through FY15	FY16 Approved Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate
\$100,000	\$74,319.36	\$120,067.55	\$225,000	\$175,000	\$175,000	\$175,000

Contact: John Swett, (702) 293-8555, jswett@usbr.gov

Start Date: FY13

Expected Duration: FY20

Long-Term Goal: Develop cost-effective management techniques and determine the timing and extent of management actions necessary for maintaining structural diversity in riparian habitats

Conservation Measures: MRM2, WIFL, YBCU, CLRA1, BLRA1, and LEBI1

Location: All current and future riparian LCR MSCP conservation areas

Purpose: The purposes of this work task are to identify riparian habitat areas in need of structural diversity enhancement and develop protocols to manage portions of LCR MSCP habitat creation sites. The intent is to use the results of this research to appropriately manage these successional stages of riparian habitat that are required by several covered riparian avian species and thereby meet established management guidelines.

Connections with Other Work Tasks (Past and Future): Research and monitoring data obtained from Work Tasks D1, D2, D3 (closed), E34, F1, F2, F7, G3, and G4 are used.

Project Description: The LCR MSCP riparian habitat creation sites are planted densely in order to reduce invasive species competition with native species and provide habitat for covered avian species. In natural systems where periodic flooding is a component of the system, portions of the habitat can be periodically disturbed and “reset” to earlier successional stages and increased structural diversity. Several covered avian species require as habitat early to mid-successional stages of native riparian trees. Over time, some of the LCR MSCP riparian habitat creation sites may grow beyond suitable habitat for some covered species unless management actions are taken.

Without the disturbance events that were once more common in the historic river hydrograph, direct manipulation of portions of these conservation areas may be required. Information will be provided to not only perform assessments but to provide protocols, which will guide the deliberate manipulation of these habitats to enhance structural diversity and produce the appropriate seral stages for covered species.

The objectives of the riparian study are to:

1. Provide a protocol for assessing areas for structural diversity and target areas that may require enhancement to meet management objectives. This will typically result in identifying areas that have at least 8 years of growth and that comprise more monotypic stands of riparian trees; however, the protocols that are developed may indicate longer or shorter durations based on measures of structural diversity.
2. Provide a protocol to guide cost-effective and appropriate manipulations of identified riparian habitats in order to reset portions of these areas to the earlier successional stages. Protocols that may be established could include, but are not limited to locations within stands for thinning, numbers or percent of trees per stand to be removed, height at which trees should be cut to encourage stump sprouting, and potential for in-planting in thinned areas to encourage species diversity as well as longer-term structural diversity.
3. Evaluate the timing and extent of manipulation necessary for maintaining multi-successional riparian habitat at the appropriate scale. Based on the collected data from this research, potential areas and the extent of manipulation for future areas may be predicted so that proper timing and budgeting for management can be more controlled and proactive. The funds for actual management action of conservation areas will be provided through each specific conservation area's work plan.

Changes in the hydrologic regime along the lower Colorado River have reduced the likelihood of marsh habitat being refreshed through active periods of flooding and removal of the vegetation structure. The covered marsh bird species thrive in marshes that function with ephemeral flooding and resetting of the habitat. Without flooding, active restoration and management of these marsh habitats is expected throughout the life of the LCR MSCP. The current literature suggests that burning of the marshes' decadent dry material allows for new habitat to emerge.

The objectives of the marsh study are to:

1. Provide a protocol for assessing areas at various spatial scales that are no longer providing habitat for the covered marsh birds
2. Provide a protocol to guide cost-effective and appropriate manipulations of marsh in order to reset portions of these areas to the earlier successional stages
3. Evaluate the timing and extent of the manipulation necessary for maintaining a mosaic of a functioning marsh

Previous Activities: In FY13, a literature review was completed on riparian stand thinning/manipulations to determine the best approaches for achieving the desired habitat structure and to determine the measured parameters needed to indicate success. The best approaches for assessing habitat diversity in different structure types were tested to identify study sites with low structural diversity and/or those with later successional stages of growth. A supplemental literature review was conducted on the habitat requirements and limitations of the southwestern willow flycatcher and yellow-billed cuckoo. The addition of species habitat parameters was needed to assist in defining what vegetation parameters could be manipulated.

Following the literature review, two strategies were investigated to assess structural diversity: (1) field-based methods (laser and terrestrial light detection and ranging sensing [TLS]) and (2) the analyses of remote sensing (airborne light detection and ranging sensing [ALS]) data. Both methods were used to identify vegetation strata and their relative heights at a site within the plot. Additionally, statistical tools were developed to assess the diversity of this vegetation data at multiple spatial scales (e.g., plot, patch, restoration area, etc.).

FY15 Accomplishments: Field method testing using TLS and ALS continued. The collected data continued to be used to investigate the power of the indices to describe structural diversity. Statistical geographic tools continued to be developed to assess the diversity at multiple spatial scales (e.g., plot, patch, restoration area, etc.) of these vegetation data.

A literature review was initiated to gather information to better manage marsh habitats.

FY16 Activities: Field method testing will continue, and following testing, the ALS and TLS data collected will be used to investigate the power of the indices to describe structural diversity. An evaluation of the ALS and TLS methods will be conducted to assess what level of data collection is needed based on specific

management questions. Statistical geographic tools will continue to be developed to assess the diversity at multiple spatial scales (e.g., plot, patch, restoration area, etc.) of these vegetation data.

The literature review will continue in order to gather information to better manage marsh habitats.

Proposed FY17 Activities: A monitoring protocol will continue to be tested following assessment of the ALS and TLS methods. The evaluation of these methods will continue in order to assess the level of data collection needed based on specific management questions. Potential management tools will be identified for further evaluation. Additional research will be conducted on the feasibility of implementing habitat management strategies when conditions within created habitat warrant their use.

Development of a marsh habitat manipulation protocol will begin with recommended methods for manipulation and the timing of needed manipulation.

Pertinent Reports: N/A