Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Hunters Hole

2015 Annual Report

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

July 2018

Work conducted under LCR MSCP Work Task E31

Lower Colorado River Multi-Species Conservation Program Steering Committee Members

Federal Participant Group

Bureau of Reclamation
U.S. Fish and Wildlife Service
National Park Service
Bureau of Land Management
Bureau of Indian Affairs
Western Area Power Administration

Arizona Participant Group

Arizona Department of Water Resources
Arizona Electric Power Cooperative, Inc.
Arizona Game and Fish Department
Arizona Power Authority
Central Arizona Water Conservation District
Cibola Valley Irrigation and Drainage District
City of Bullhead City
City of Lake Havasu City
City of Mesa
City of Somerton
City of Yuma
Electrical District No. 3, Pinal County, Arizona
Golden Shores Water Conservation District
Mohave County Water Authority
Mohave Valley Irrigation and Drainage District
Mohave Water Conservation District
North Gila Valley Irrigation and Drainage District
Town of Fredonia
Town of Thatcher
Town of Wickenburg
Salt River Project Agricultural Improvement and Power District
Unit "B" Irrigation and Drainage District
Wellton-Mohawk Irrigation and Drainage District
Yuma County Water Users' Association
Yuma Irrigation District
Yuma Mesa Irrigation and Drainage District

Other Interested Parties Participant Group

QuadState Local Governments Authority
Desert Wildlife Unlimited

California Participant Group

California Department of Fish and Wildlife
City of Needles
Coachella Valley Water District
Colorado River Board of California
Bard Water District
Imperial Irrigation District
Los Angeles Department of Water and Power
Palo Verde Irrigation District
San Diego County Water Authority
Southern California Edison Company
Southern California Public Power Authority
The Metropolitan Water District of Southern California

Nevada Participant Group

Colorado River Commission of Nevada
Nevada Department of Wildlife
Southern Nevada Water Authority
Colorado River Commission Power Users
Basic Water Company

Native American Participant Group

Hualapai Tribe
Colorado River Indian Tribes
Chemehuevi Indian Tribe

Conservation Participant Group

Ducks Unlimited
Lower Colorado River RC&D Area, Inc.
The Nature Conservancy

Lower Colorado River Multi-Species Conservation Program

Hunters Hole

2015 Annual Report

Prepared by:

Darrin Miller, Restoration Group

Chris Dodge, Wildlife Group

Sonja Kokos and Becky Blasius, Adaptive Management Group

Lower Colorado River
Multi-Species Conservation Program
Bureau of Reclamation
Lower Colorado Region
Boulder City, Nevada
http://www.lcrmscp.gov

July 2018

Miller, D., C. Dodge, S. Kokos, and B. Blasius. 2018. Hunters Hole, 2015 Annual Report. Prepared for the Lower Colorado River Multi-Species Conservation Program by the Bureau of Reclamation, Boulder City, Nevada.

ACRONYMS AND ABBREVIATIONS

AWPF	Arizona Water Protection Fund
Border Patrol	U.S. Border Patrol
FY	fiscal year
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
lidar	light detection and ranging
MODE	Maintenance Outlet Drain Extension
Reclamation	Bureau of Reclamation

CONTENTS

Page

1.0 Introduction 1
  1.1 Background 1
2.0 Conservation Area Information 2
  2.1 Purpose 2
  2.2 Location 2
  2.3 Landownership 2
  2.4 Water 2
  2.5 Agreements 2
  2.6 Public Use 2
  2.7 Law Enforcement 5
  2.8 Wildfire Management 5
3.0 Habitat Development and Management 5
  3.1 Planting 5
  3.2 Irrigation 5
  3.3 Site Management 7
4.0 Monitoring 7
  4.1 Avian Monitoring 7
    4.1.1 Southwestern Willow Flycatcher Surveys 7
    4.1.2 Yellow-billed Cuckoo Surveys 8
    4.1.3 General Bird Surveys 8
  4.2 Small Mammal Monitoring 8
    4.2.1 Bat Monitoring 8
    4.2.2 Rodent Monitoring 9
  4.3 MacNeill's Sootywing Skipper Monitoring 9
5.0 Habitat Creation and Conservation Measure Accomplishment 9
  5.1 Vegetation Monitoring 9
  5.2 Evaluation of Conservation Area Habitat 9
6.0 Adaptive Management Recommendations 10

Literature Cited 11

Tables

Table Page

1 LCR MSCP bat detections by month at Hunters Hole, FY15 8

Figures

Figure Page

1 LCR MSCP planning area with Hunters Hole inset. 3
2 Hunters Hole managed acreage through FY15. 4
3 Hunters Hole irrigation schedule, FY15. 6

1.0 INTRODUCTION

The purpose of this annual report is to summarize all activities that have occurred at Hunters Hole from October 1, 2014, through September 30, 2015, which is Federal fiscal year (FY) 2015, and projected activities for FY16. Water usage is presented for the calendar year, January 1 through December 31, 2015, consistent with water accounting reporting.

1.1 Background

Hunters Hole, 44 acres in size, is located in Arizona just south of Yuma and north of San Luis. In the 1950s, flood events formed a series of interconnected ponds with adjacent marsh areas and Fremont cottonwood-Goodding's willow (*Populus fremontii-Salix gooddingii*) (hereafter cottonwood-willow) stands. Water levels were subsequently maintained by groundwater, irrigation drain flows, and a connecting channel to the main river channel. Over time, the habitat became degraded due to reduced flows, which isolated the area from the main stem of the river. Most of the habitat was eventually lost due to declining groundwater levels and wildfires.

In 2001, local officials from State, Tribal, and Federal agencies worked together to develop a plan to restore wildlife habitat in the area as well as to increase public safety and border security. The restoration concept, including site drawings and the implementation schedule, were reviewed with the U.S. Border Patrol (Border Patrol) to ensure compatibility with international border security concerns.

In 2010, the Yuma Crossing National Heritage Area Corporation, a 501(c)3 non-profit organization, restored 44 acres at Hunters Hole. The Arizona Water Protection Fund (AWPF), in cooperation with the Lower Colorado River Multi-Species Conservation Program (LCR MSCP), funded the Hunters Hole restoration project. The AWPF-provided funding was used to clear non-native vegetation and to contour the site. The LCR MSCP provided funding for rehabilitation of the existing groundwater well and fabrication of the irrigation system manifold to allow for automation in the future. The restored site consisted of riparian and dry upland habitats. Restoration activities included selective clearing of invasive reeds (giant reed [*Arundo donax*] and common reed [*Phragmites australis*]) and saltcedar (*Tamarix* spp.), installation of infrastructure to allow for managed flooding, and the planting of cottonwood-willow and honey mesquite (*Prosopis glandulosa*).

After the project was completed in 2013, the LCR MSCP agreed to manage the site as a conservation area and provide funding for its long-term operation and maintenance. The LCR MSCP is responsible for the long-term maintenance costs of Hunters Hole through 2055 (the life of the program).

2.0 CONSERVATION AREA INFORMATION

2.1 Purpose

The purpose of Hunters Hole is to create 44 acres of riparian habitat that will be managed for southwestern willow flycatchers (*Empidonax traillii extimus*) and other LCR MSCP covered species that utilize the cottonwood-willow and honey mesquite land cover types.

2.2 Location

Hunters Hole is located in Arizona in Reach 7 of the LCR MSCP planning area at River Mile 3 (figure 1). The total project footprint is 44 contiguous acres (figure 2).

2.3 Landownership

Hunters Hole is owned and managed by the Bureau of Reclamation (Reclamation) and is on Reclamation withdrawn lands.

2.4 Water

Hunters Hole does not have a Colorado River water entitlement. The AWPF, in concert with the Arizona Water Resources Department, governs the use of Arizona State groundwater. When Hunters Hole was approved for development, up to 3,000 acre-feet of water was allocated for irrigation of native habitat. Irrigation water is pumped from the existing groundwater well; a flow meter was installed to track usage.

2.5 Agreements

Hunters Hole is located on lands owned and managed by Reclamation; therefore, no agreements with other parties have been signed.

2.6 Public Use

Hunters Hole is open to the public; however, activities may be restricted depending on safety concerns.

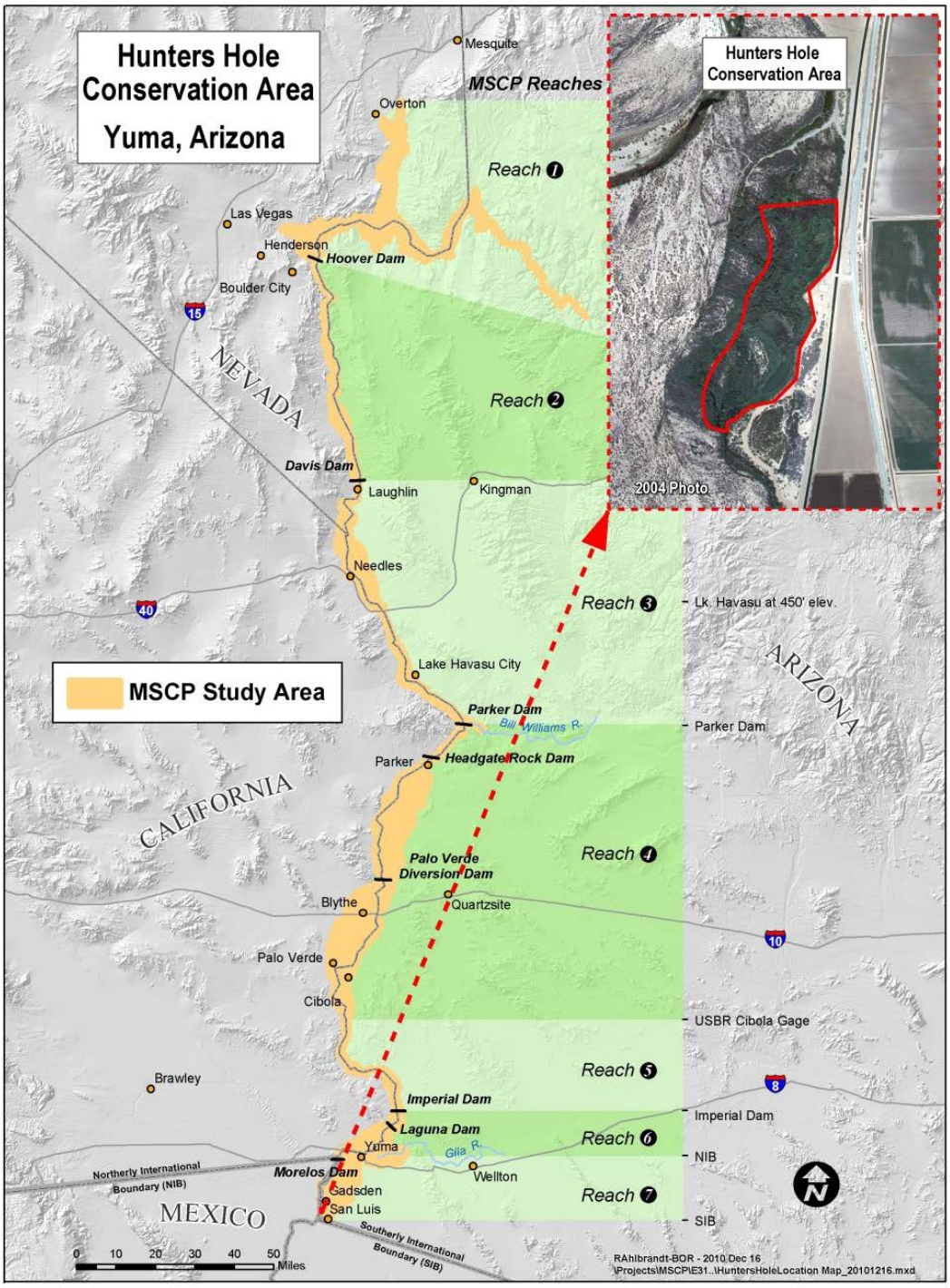
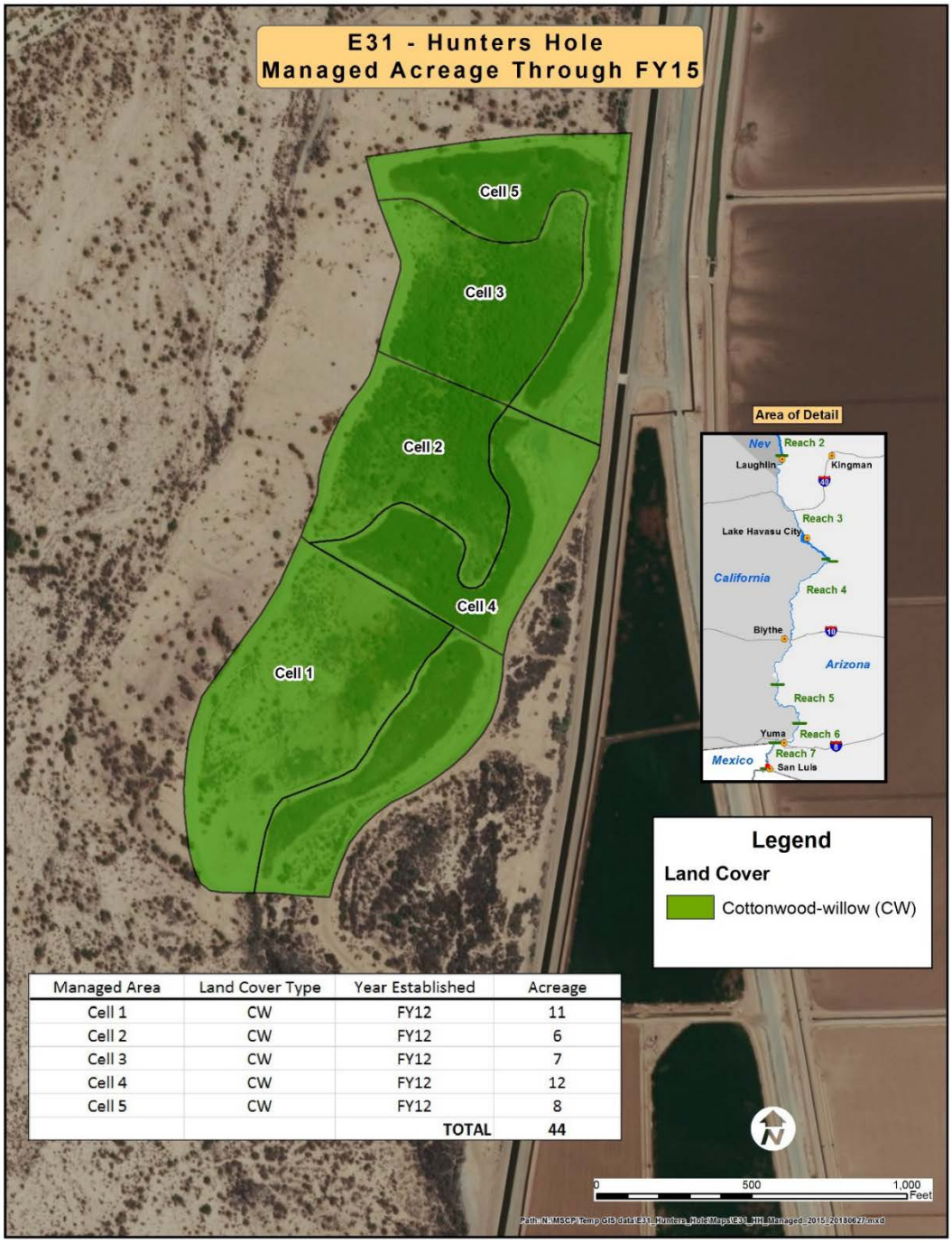


Figure 1.—LCR MSCP planning area with Hunters Hole inset.



Managed Area	Land Cover Type	Year Established	Acreage
Cell 1	CW	FY12	11
Cell 2	CW	FY12	6
Cell 3	CW	FY12	7
Cell 4	CW	FY12	12
Cell 5	CW	FY12	8
		TOTAL	44

Figure 2.—Hunters Hole managed acreage through FY15.

2.7 Law Enforcement

The Border Patrol is responsible for all law enforcement at Hunters Hole due to its location along the U.S. border security fence near the International Boundary between Arizona and Mexico. Reclamation continues to work with the Border Patrol regarding security issues and notifies them by phone prior to each site visit.

2.8 Wildfire Management

Federal, State, and local fire agencies, either by existing management agreements or mutual aid agreements, will provide wildland fire suppression, incident dispatch, fire investigation, and potential fire restrictions. The full range of suppression strategies is available to managers provided that selected options do not compromise firefighter or public safety, are cost effective, consider the benefits of suppression and the values to be protected, and are consistent with resource objectives (LCR MSCP 2010). Reclamation may assist the Bureau of Land Management with fire suppression by activating the electrical groundwater pump located within the security fencing enclosure. The pump can be turned on remotely from Reclamation's Yuma Area Office, or manually onsite, to flood each irrigation cell (Cells 1–5), using separate valves for each cell.

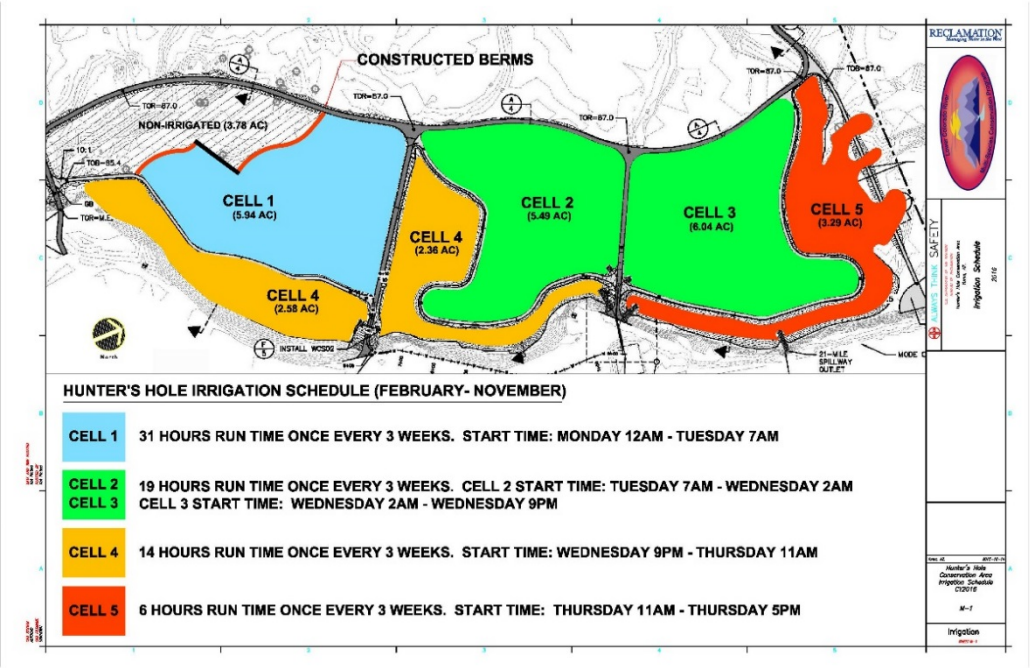
3.0 HABITAT DEVELOPMENT AND MANAGEMENT

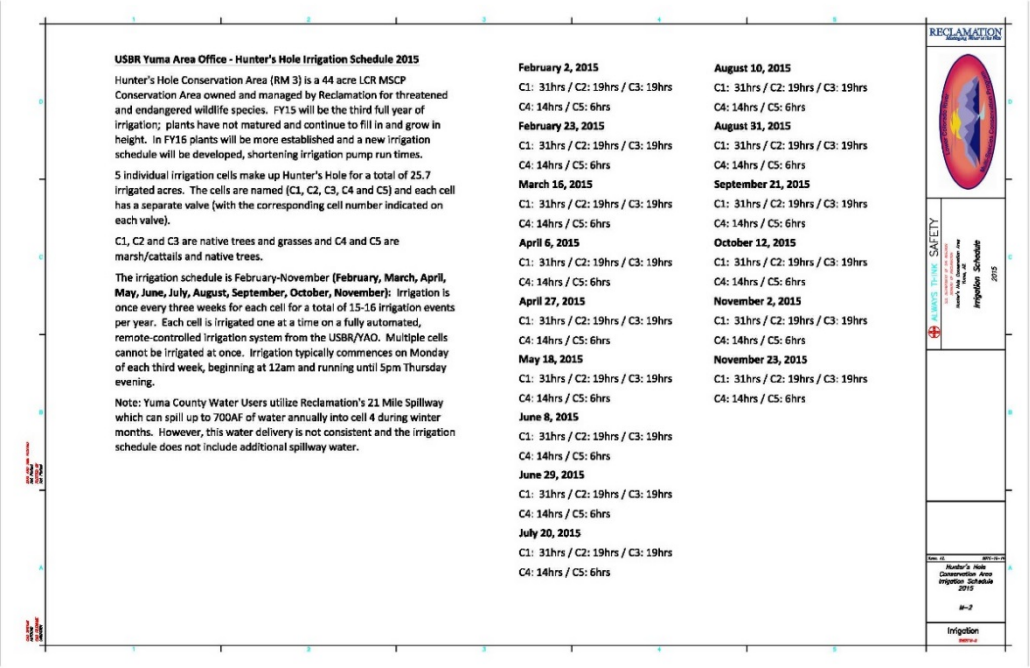
3.1 Planting

No planting occurred at Hunters Hole in 2015.

3.2 Irrigation

Irrigation water is pumped using a 100-horsepower electric motor coupled to a groundwater pump. After reaching the surface, irrigation water is routed through an irrigation manifold that delivers water to the five habitat cells. As of May 1, 2015, a hydrologist at the Yuma Area Office has been in charge of monitoring the programmed irrigation schedule (provided by the LCR MSCP) during the irrigation season via the electronic monitoring system at the area office. During the FY15 irrigation season, the site was irrigated once every 3 weeks (February – November) (figure 3).





USBR Yuma Area Office - Hunter's Hole Irrigation Schedule 2015

Hunter's Hole Conservation Area (RM 3) is a 44 acre LCR MSCP Conservation Area owned and managed by Reclamation for threatened and endangered wildlife species. FY15 will be the third full year of irrigation; plants have not matured and continue to fill in and grow in height. In FY16 plants will be more established and a new irrigation schedule will be developed, shortening irrigation pump run times.

5 individual irrigation cells make up Hunter's Hole for a total of 25.7 irrigated acres. The cells are named (C1, C2, C3, C4 and C5) and each cell has a separate valve (with the corresponding cell number indicated on each valve).

C1, C2 and C3 are native trees and grasses and C4 and C5 are marsh/cattails and native trees.

The irrigation schedule is February-November **(February, March, April, May, June, July, August, September, October, November):** Irrigation is once every three weeks for each cell for a total of 15-16 irrigation events per year. Each cell is irrigated one at a time on a fully automated, remote-controlled irrigation system from the USBR/YAO. Multiple cells cannot be irrigated at once. Irrigation typically commences on Monday of each third week, beginning at 12am and running until 5pm Thursday evening.

Note: Yuma County Water Users utilize Reclamation's 21 Mile Spillway which can spill up to 700AF of water annually into cell 4 during winter months. However, this water delivery is not consistent and the irrigation schedule does not include additional spillway water.

February 2, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
February 23, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
March 16, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
April 6, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
April 27, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
May 18, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
June 8, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
June 29, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
July 20, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
August 10, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
August 31, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
September 21, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
October 12, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
November 2, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs
November 23, 2015
C1: 31hrs / C2: 19hrs / C3: 19hrs
C4: 14hrs / C5: 6hrs

RECLAMATION
Irrigation

Figure 3.—Hunters Hole irrigation schedule, FY15.

A significant irrigation infrastructure upgrade was completed in January 2015, which included the installation of six new, remote-controlled irrigation valves. The remote-controlled system was implemented by the Yuma Area Office and became fully operational in May 2015. This upgrade was implemented in order to allow all six of the irrigation valves and well pump to be controlled electronically and remotely from the area office and the LCR MSCP. This has significantly reduced the staff labor hours required to travel to the site for manual irrigation and increased personnel safety at this remote site near the International Border with Mexico.

3.3 Site Management

Maintenance activities can be separated into two categories: infrastructure maintenance and habitat maintenance. Infrastructure maintenance includes maintenance of roads, groundwater pumps, outfall structures, and water control valves used to operate and maintain the conservation area. Habitat maintenance includes manual weeding of invasive species and application of herbicides as necessary. Maintenance activities are coordinated with the Border Patrol.

In August 2015, an 80-foot section of coyote willows (*Salix exigua*) were trimmed in irrigation Cell 5 (between the irrigation water outlet and the 21-mile spillway outlet of the MODE canal). This removal work was conducted by the Border Patrol in order to increase visibility for their agents to detect illegal immigrants crossing the U.S./Mexico border through a culvert extending under the MODE canal and U.S./Mexico border fence. This work was authorized and conducted due to U.S. national security concerns.

4.0 MONITORING

4.1 Avian Monitoring

Avian monitoring in FY14 included surveys for southwestern willow flycatchers, yellow-billed cuckoos (*Coccyzus americanus occidentalis*), and riparian breeding birds.

4.1.1 Southwestern Willow Flycatcher Surveys

Surveys to detect the presence of southwestern willow flycatchers were conducted three times during FY15 in cottonwood-willow habitat. No resident or breeding southwestern willow flycatchers were detected. Several migrant willow flycatchers (*Empidonax trailli*) were detected before June 24 and were not considered to be southwestern willow flycatchers. Birds detected before June 24 and those detected only once after June 24 are considered migrant willow flycatchers.

4.1.2 Yellow-billed Cuckoo Surveys

Hunters Hole was surveyed for yellow-billed cuckoos once in June and once in July using passive detection methods. No yellow-billed cuckoos were detected.

4.1.3 General Bird Surveys

Bird surveys were conducted to detect breeding LCR MSCP riparian bird species and other territorial riparian bird species. General bird surveys resulted in the detection of five species (nine pairs) of birds breeding within Hunters Hole. There were no LCR MSCP species confirmed breeding at Hunters Hole in FY15.

4.2 Small Mammal Monitoring

4.2.1 Bat Monitoring

Acoustic methods were used to monitor bats in order to document the presence of species using the conservation area.

4.2.1.1 Acoustic Surveys

One long-term monitoring acoustic monitoring station was operated at Hunters Hole. The LCR MSCP species detected were western red bats (*Lasiurus blossevillii*), western yellow bats (*Lasiurus xanthinus*), and California leaf-nosed bats (*Macrotus californicus*). Table 1 summarizes the total number of nights that LCR MSCP species were detected in FY15 (Mixan and Diamond, *in press*).

Table 1.—LCR MSCP bat detections by month at Hunters Hole, FY15

Month	Number of nights recorded	Total nights detected			
		Western red bat	Western yellow bat	California leaf-nosed bat	Pale Townsend's big-eared bat
June	30	0	6	0	0
July	31	1	20	0	0
August	31	1	12	0	0

[1] Genetic analyses on the pale Townsend's big-eared bat indicate that the lower Colorado River is likely in the range of the Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*) rather than the pale Townsend's big-eared bat (Piaggio and Perkins 2005). The bats recorded along the lower Colorado River will be referred to as pale Townsend's big-eared bats in this report, as the nomenclature change has not yet been verified by U.S. Fish and Wildlife Service.

4.2.2 Rodent Monitoring

Live trapping was conducted once in fall and once in spring to determine the presence of Yuma hispid cotton rats (*Sigmodon hispidus eremicus*) at Hunters Hole. A total of 180 traps were set over 2 nights. No Yuma hispid cotton rats were captured (Hill 2017).

4.3 MacNeill's Sootywing Skipper Monitoring

Surveys for MacNeill's sootywing skippers (*Pholisora gracielae = Hesperopsis gracielae* [MacNeill]) were conducted in May and June. Four adults were detected in May and two adults were detected in June (Nelson et al. 2017).

5.0 HABITAT CREATION AND CONSERVATION MEASURE ACCOMPLISHMENT

5.1 Vegetation Monitoring

Vegetation data were collected in FY15 using light detection and ranging (lidar). Lidar measures the vegetation structure throughout the canopy and provides the ability to identify structural diversity and successional growth stages.

Conservation area vegetation will be evaluated on a periodic basis using lidar to ensure the habitat is meeting species' requirements. A procedure to analyze and provide vegetation structure metrics will be developed, and the results will be presented in future reports.

5.2 Evaluation of Conservation Area Habitat

The Final Habitat Creation Conservation Measure Accomplishment Tracking Process was finalized in October 2011 (LCR MSCP 2011). All areas within Hunters Hole were designed to benefit covered species at the landscape level.

To meet species habitat creation requirements, the Habitat Conservation Plan provides goals for habitat creation based on land cover types. These land cover types are described using the Anderson and Ohmart vegetation classification system (Anderson et al. 1976, 1984a, 1984b).

6.0 ADAPTIVE MANAGEMENT RECOMMENDATIONS

Adaptive management relies on the initial receipt of new information, the analysis of that information, and the incorporation of the new information into the design and/or direction of future project work (LCR MSCP 2007). The Adaptive Management Program's role is to ensure habitat creation sites are biologically effective and fulfill the conservation measures outlined in the HCP for 26 covered species and if they potentially benefit 5 evaluation species. Post-development monitoring and species research results will be used to adaptively manage habitat creation sites after initial implementation. Once monitoring data are collected over a few years, and then analyzed for the Hunters Hole, recommendations may be made through the adaptive management process for site improvements in the future.

There are no adaptive management recommendations for Hunters Hole at this time.

LITERATURE CITED

Anderson, B.W. and R.D. Ohmart. 1976. Vegetation Type Maps of the Lower Colorado River from Davis Dam to the Southerly International Boundary, Final Report. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada.

_____. 1984a. Vegetation Management Study for the Enhancement of Wildlife Along the Lower Colorado River, Final Report. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada.

_____. 1984b. Lower Colorado River Riparian Methods of Quantifying Vegetation Communities to Prepare Type Maps, Final Report. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada.

Hill, J. 2017. Post-Development and System Monitoring of Rodent Populations, 2015 Annual Report. Prepared by the Bureau of Reclamation, Boulder City, Nevada.

Lower Colorado River Multi-Species Conservation Program (LCR MSCP). 2007. Final Science Strategy. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada.

_____. 2010. Lower Colorado River Multi-Species Conservation Program Fire Management & Law Enforcement Strategy. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada.

_____. 2011. Final Habitat Creation Conservation Measure Accomplishment Tracking Process. Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada.

Mixan, R. and J.M. Diamond. *In press*. 2015 and 2016 Post Development Acoustic Bat Monitoring of LCR MSCP Bat Species. Annual report submitted to the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada, by the Arizona Game and Fish Department, Phoenix, Arizona under cooperative agreement No. R16AC00067.

Nelson, S.M., R. Wydoski, S. Pucherelli, C. Ronning, and N. Rudd. 2017. Monitoring of the MacNeill's Sootywing and its Habitats, 2015 Annual Report. Annual report prepared by the Bureau of Reclamation, Technical Service Center, Denver, Colorado, and the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada.

Piaggio, A.J. and S.L. Perkins. 2005. Molecular phylogeny of North American long-eared bats (Vespertilionidae: *Corynorhinus*); inter- and intraspecific relationships inferred from mitochondrial and nuclear DNA sequences. Molecular Phylogenetics and Evolution 37:762–775.