



# Lower Colorado River Multi-Species Conservation Program

*Balancing Resource Use and Conservation*

## Cibola National Wildlife Refuge Unit #1 Conservation Area

### 2016 Annual Report



October 2018

Work conducted under LCR MSCP Work Task E24

# 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  
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Electrical District No. 3, Pinal County, Arizona  
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Mohave Valley Irrigation and Drainage District  
Mohave Water Conservation District  
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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**

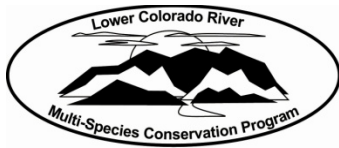
Colorado River Commission of Nevada  
Nevada Department of Wildlife  
Southern Nevada Water Authority  
Colorado River Commission Power Users  
Basic Water Company

## **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**

## **Cibola National Wildlife Refuge Unit #1 Conservation Area**

### **2016 Annual Report**

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# ACRONYMS AND ABBREVIATIONS

Cibola NWR	Cibola National Wildlife Refuge
Cibola NWR Unit #1	Cibola National Wildlife Refuge Unit # 1 Conservation Area
FY	fiscal year
HCP	Habitat Conservation Plan
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
lidar	light detection and ranging
Reclamation	Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service

# CONTENTS

	Page
1.0 Introduction.....	1
1.1 Background.....	1
2.0 Conservation Area Information .....	1
2.1 Purpose.....	1
2.2 Location .....	1
2.3 Landownership.....	3
2.4 Water.....	3
2.5 Agreements .....	3
2.6 Public Use.....	3
2.7 Law Enforcement.....	3
2.8 Wildfire Management .....	4
3.0 Habitat Development And Management .....	4
3.1 Planting .....	4
3.2 Irrigation .....	7
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.....	7
4.1.3 General Avian Surveys .....	8
4.2 Small Mammal Monitoring.....	9
4.2.1 Bat Monitoring.....	9
4.2.2 Rodent Monitoring.....	10
4.3 MacNeill’s Sootywing Skipper Monitoring.....	10
5.0 Habitat Creation Conservation Measure Accomplishment.....	10
5.1 Evaluation of the Conservation Area Habitat .....	10
6.0 Adaptive Management Recommendations .....	11
Literature Cited.....	13

## Tables

Table	Page
1 Number of breeding territories per LCR MSCP covered species at Cibola NWR Unit #1, FY16 .....	8
2 LCR MSCP bat detections by month at Cibola NWR Unit #1, FY16 .....	9
3 Species-specific habitat creation conservation measure creditable total acres for 2016.....	11

## Figures

Figure	Page
1 LCR MSCP planning area with Cibola NWR Unit #1 (inset).....	2
2 Cibola NWR Unit #1 managed acreage through FY16. ....	5
3 Lower Hippy Fire planting design. ....	6

# 1.0 INTRODUCTION

The purpose of this annual report is to summarize all activities that have occurred at the Cibola National Wildlife Refuge Unit #1 Conservation Area (Cibola NWR Unit #1) from October 1, 2015, through September 30, 2016, which is Federal fiscal year (FY) 2016. Water usage is presented for the calendar year, January 1 through December 31, 2016, consistent with the Colorado River Accounting and Water Use Report: Arizona, California, and Nevada, Calendar Year 2016 (Reclamation 2017).

## 1.1 Background

The Cibola National Wildlife Refuge (Cibola NWR) consists of about 16,600 acres of land located along approximately 12 miles of the lower Colorado River in Arizona and California. The Cibola NWR was established in 1964 as a refuge and breeding ground for migratory birds and other wildlife. The refuge and Reclamation have agreed to convert approximately 950 acres of agricultural ground within Unit #1 to a mosaic of Fremont cottonwood-Goodding's willow (*Populus fremontii-Salix gooddingii*) (hereafter cottonwood-willow) and honey mesquite (*Prosopis glandulosa*).

# 2.0 CONSERVATION AREA INFORMATION

## 2.1 Purpose

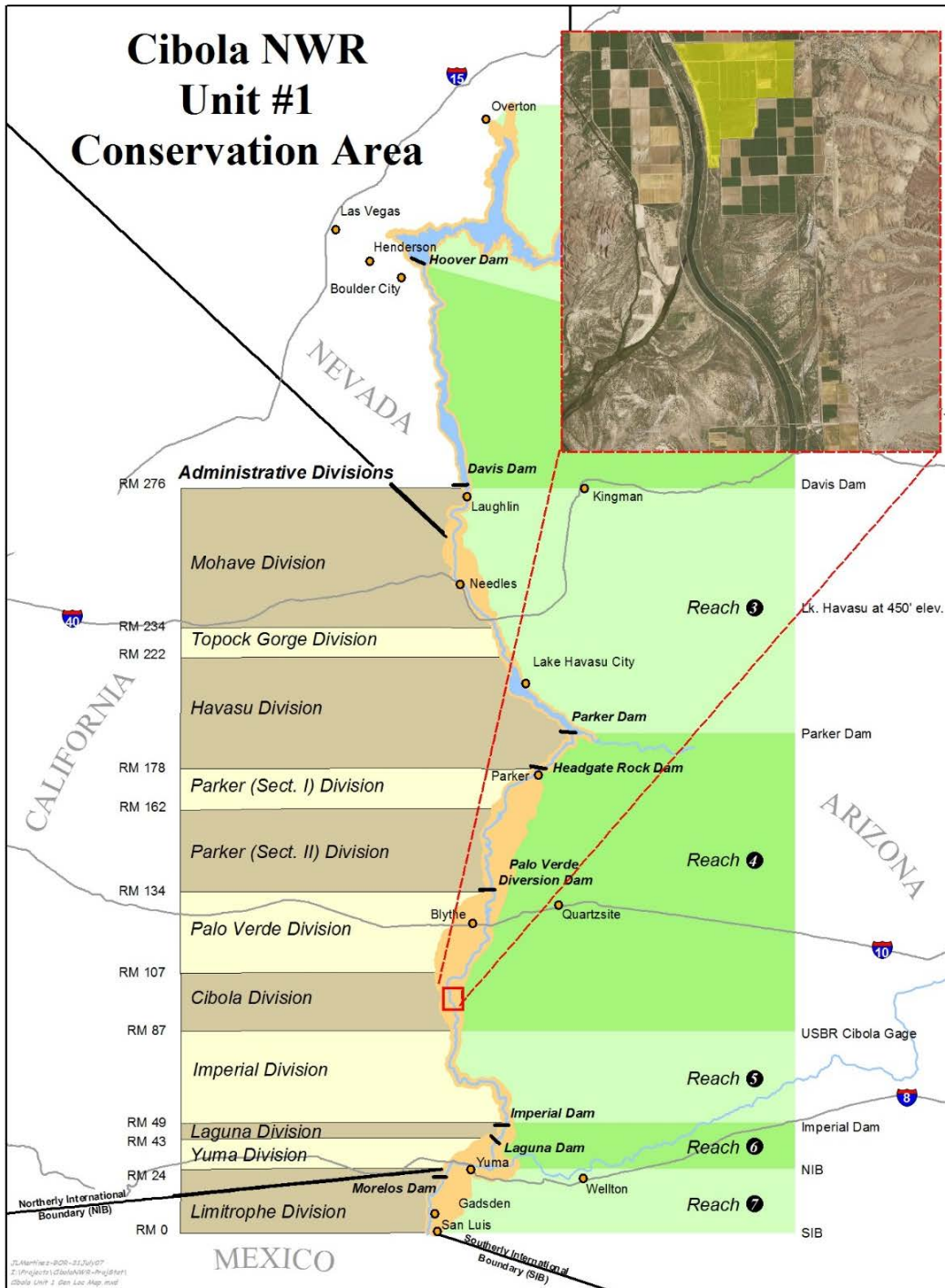
The cottonwood-willow land cover created within Cibola NWR Unit #1 will be managed for southwestern willow flycatchers (*Empidonax traillii extimus*), yellow-billed cuckoos (*Coccyzus americanus occidentalis*), and other terrestrial wildlife species covered by the Lower Colorado River Multi-Species Conservation Program (LCR MSCP). The riparian restoration area of Cibola NWR Unit #1 provides habitat for a variety of avian and small mammal species and also provides creditable land cover type acreage to the program. Irrigation cycles for the riparian restoration area are evaluated annually to determine if conditions are appropriate for the species targeted by the LCR MSCP, specifically the southwestern willow flycatcher.

## 2.2 Location

Cibola NWR Unit #1 is located in Reach 4, within the Cibola NWR, in Cibola, Arizona. It is within the historic flood plain of the lower Colorado River and between River Miles 97 and 99 (figure 1).



**Cibola National Wildlife Refuge Unit #1 Conservation Area  
2016 Annual Report**



**Figure 1.—LCR MSCP planning area with Cibola NWR Unit #1 (inset).**

## **2.3 Landownership**

Cibola NWR Unit #1 is located on the Cibola NWR, which is owned and managed by the U.S. Fish and Wildlife Service (USFWS).

## **2.4 Water**

Cibola NWR Unit #1 receives water from the Cibola NWR's 2nd priority water entitlement provided by the 1964 Supreme Court Decree in *Arizona v. California* and by U.S. Department of the Interior Secretarial reservation. The Cibola NWR has a diversionary entitlement of 27,000 acre-feet per year, a consumptive use entitlement (diversion minus return flow) of 16,793 acre-feet per year, and a circulatory (circulation water with minimum consumptive use) water right of 7,500 acre-feet per year. A maximum of 5,400 acre-feet per year (6 acre-feet per acre, per year) of that water is available for irrigating the conservation area when it has been fully developed.

## **2.5 Agreements**

A Land Use Agreement was signed in 2007 by Reclamation and the USFWS to secure land and water for Cibola NWR Unit #1 for the remainder of the 50-year term of the LCR MSCP. The agreement outlines the rights and responsibilities of each partner in the project's development and maintenance.

## **2.6 Public Use**

Cibola NWR Unit #1 is in an area that had public access limited by the USFWS prior to becoming a conservation area, and public access will remain limited. Vehicular access is restricted to a driving trail referred to as "Goose Loop." Low-impact public uses, such as wildlife watching, sport fishing, and education/outreach, are expected at Cibola NWR Unit #1; however, these uses may be regulated depending on future occupation of the habitat by listed species.

## **2.7 Law Enforcement**

Law enforcement activities at Cibola NWR Unit #1 are performed primarily by the USFWS's law enforcement officer under the LCR MSCP's site-specific Fire Management & Law Enforcement Strategy (LCR MSCP 2010). Additional local

law enforcement assistance is available through the Arizona Game and Fish Department's Yuma Office, the Yuma County Sheriff's Office, and the Bureau of Land Management's Yuma Office.

## **2.8 Wildfire Management**

The USFWS will provide an appropriate management response to all wildfires that occur within Cibola NWR Unit #1. 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).

## **3.0 HABITAT DEVELOPMENT AND MANAGEMENT**

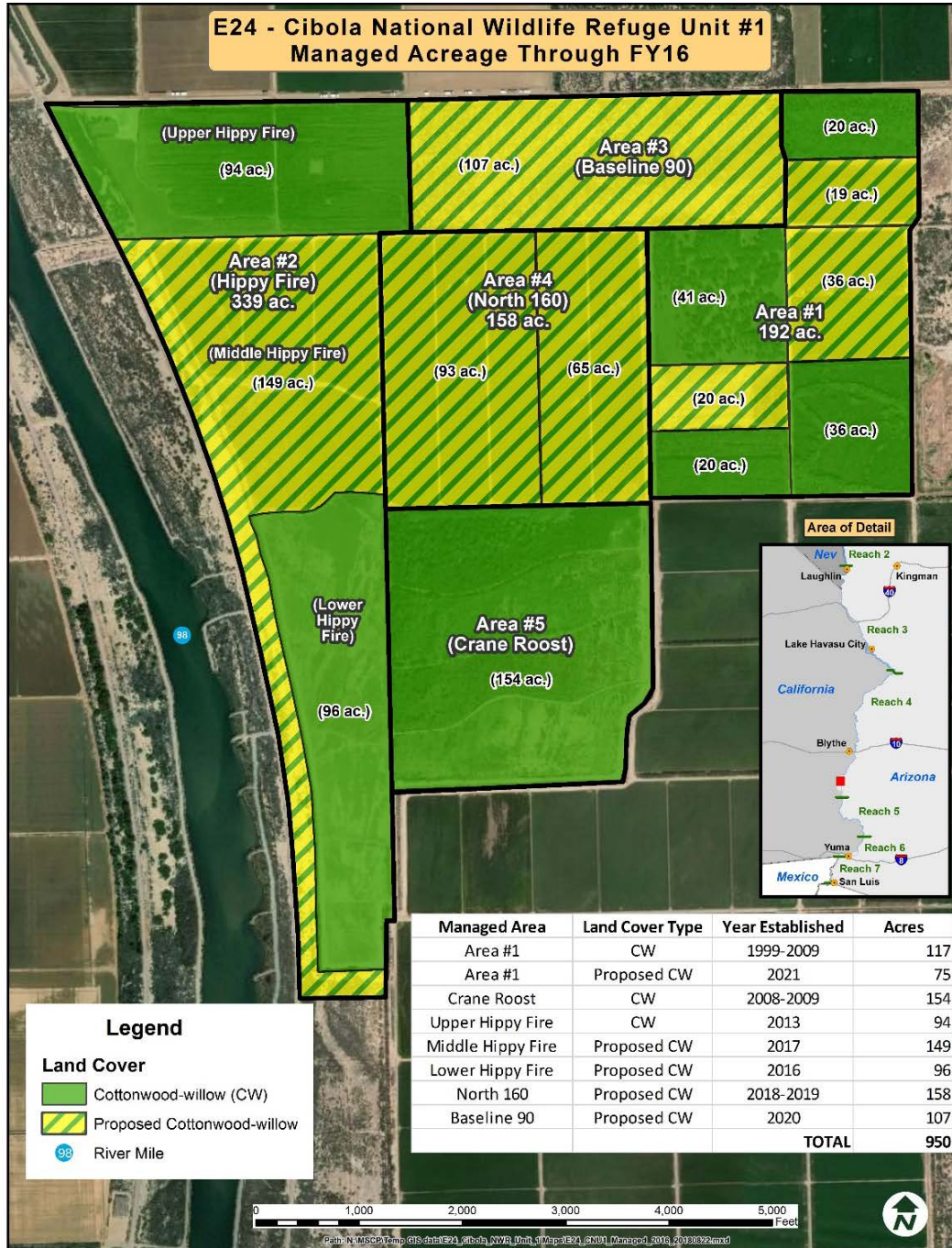
Figure 2 shows the established land cover types that are being managed for LCR MSCP covered species.

### **3.1 Planting**

During FY16, restoration activities at Cibola NWR Unit #1 consisted of irrigation, maintenance, monitoring activities, and the planting 96 acres within Lower Hippy Fire.

Lower Hippy Fire was planted using a mosaic planting approach (figure 3). The area was divided into checks and planted with high- or low-density cottonwood-willow and honey mesquite. Planting included 7 species and over 180,000 plants. Planting occurred in March/April and included hand planting and use of a mass transplanter. The areas planted with honey mesquite are in furrows with moderate sinuosity to reduce the amount of irrigation needed by funneling the water directly to the trees as opposed to flooding the entire field. These mesquite furrow areas can be blocked off from water after about 2 years, when the mesquite establish, to further reduce water use. Additional information about the planting design can be found in the restoration monitoring and development plan (Stegmeier et al.). Future planting of phases within Cibola NWR Unit #1 will continue through FY20 based on the current plan.

**Cibola National Wildlife Refuge Unit #1 Conservation Area  
2016 Annual Report**



**Figure 2.—Cibola NWR Unit #1 managed acreage through FY16.**



Figure 3.—Lower Hippy Fire planting design.

## 3.2 Irrigation

The cottonwood-willow land cover type at Cibola NWR Unit #1 is flood irrigated in accordance with the schedule prepared by Reclamation.

## 3.3 Site Management

Routine site maintenance, such as road grading, was conducted at Cibola NWR Unit #1. Three new irrigation gates and a culvert were installed along the east side of Lower Hippy Fire to allow for field irrigation flexibility. Infrastructure improvements across the conservation area are expected as development of the site moves to subsequent phases.

To maintain healthy stands of trees and to promote growth, flood irrigation was also used on other previously established fields within the conservation area for regular watering. Additional measures were taken, as necessary, to maintain field borders, and herbicide and/or fertilizer were appropriately used.

## 4.0 MONITORING

### 4.1 Avian Monitoring

Avian monitoring in FY16 included surveys for southwestern willow flycatchers, yellow-billed cuckoos, and riparian breeding birds, as well as bird migration monitoring at a Monitoring Avian Productivity and Survivorship Station.

#### 4.1.1 Southwestern Willow Flycatcher Surveys

Surveys to detect the presence of southwestern willow flycatchers were conducted five times during FY16 in cottonwood-willow habitat. No breeding or resident southwestern willow flycatchers were detected. Migrant willow flycatchers (*Empidonax traillii*) were detected in May and June. Most birds detected after June 24 or individuals detected repeatedly before June 24 are considered to be southwestern willow flycatchers. Birds detected before June 24 and those detected only once after June 24 are considered migrant willow flycatchers (McLeod and Pellegrini 2017).

#### 4.1.2 Yellow-billed Cuckoo Surveys

Four surveys for yellow-billed cuckoos were conducted within the riparian portion of Cibola NWR Unit #1. Sixteen cuckoos were detected during the first survey period (June 15–29). Thirteen cuckoos were detected during the second

**Cibola National Wildlife Refuge Unit #1 Conservation Area  
2016 Annual Report**

survey period (June 30 – July 13). Thirteen cuckoos were detected during the third survey period (July 14–27). Two cuckoos were detected during the fourth survey period (July 28 – August 10).

Breeding was confirmed at Cibola NWR Unit #1 in FY16. Due to the behavior of this species, detections alone do not indicate the number of cuckoos present, nor do detections confirm breeding. The number, timing, and location of detections, along with behaviors observed, may be used to estimate abundance, distribution, and/or breeding status. The possible, probable, and confirmed counts were used to estimate the number of breeding territories and not the number of breeding pairs. Territory estimates represent two adults associated with a single nest. There were four possible territories, one probable territory, and five confirmed territories. Four nests were found incidental to surveys (Parametrix, Inc., and Southern Sierra Research station 2016).

### **4.1.3 General Avian Surveys**

Bird surveys were conducted to detect breeding LCR MSCP riparian bird species and other territorial riparian bird species. Surveys were conducted within areas of cottonwood-willow and honey mesquite land cover types that were of adequate growth to support breeding birds. General bird surveys resulted in the detection of 26 species (174.75 territories) of birds breeding within the surveyed plots. Arizona bell's vireos (*Vireo bellii arizonae*), summer tanagers (*Piranga rubra*), and vermilion flycatchers (*Pyrocephalus rubinus*) were confirmed breeding (Great Basin Bird Observatory 2017).

Table 1 shows the number of breeding territories of LCR MSCP covered species at Cibola NWR Unit #1 in FY16 (Great Basin Bird Observatory 2017).

Table 1.—Number of breeding territories per LCR MSCP covered species<sup>1</sup> at Cibola NWR Unit #1, FY16

<b>LCR MSCP covered species</b>	<b>Number of confirmed breeding pairs</b>
Arizona bell's vireo	1.0
Summer tanager	1.75
Vermilion flycatcher	0.5

<sup>1</sup> Number of breeding territories refers to the number of territories that are within the sampled area for pairs that were confirmed breeding. Partial territories are possible, as the amount of each territory within the sampled area was estimated to 0.25, 0.5, 0.75, or 1.0.

A bird banding station was operated 10 times from May 1 through July 30, 2016. Three Sonoran yellow warblers (*Dendroica petechia sonorana* = *Setophaga petechia sonorana*) were captured and fitted with color bands. One female vermilion flycatcher that was a capture from 2015 was resighted on a nest (Dodge and Kahl, Jr., *in prep.*).

## 4.2 Small Mammal Monitoring

Bat and rodent monitoring were conducted at Cibola NWR Unit #1 in FY16.

### 4.2.1 Bat Monitoring

Acoustic and capture survey methods were used to monitor bats in order to document the presence of species using Cibola NWR Unit #1 and to determine the age, sex, and reproductive status of bats that were captured.

#### 4.2.1.1 Acoustic Surveys

One long-term monitoring station was operated at the Crane Roost phase of Cibola NWR Unit #1 during June, July, and August 2016. Western red bats (*Lasiurus blossevillii*) and western yellow bats (*Lasiurus xanthinus*) were detected (table 2). Table 2 summarizes the total number of nights the four LCR MSCP species were detected in FY16 (Mixan and Diamond 2017).

Table 2.—LCR MSCP bat detections by month at Cibola NWR Unit #1, FY16

Month	Number of nights recorded	Total nights detected			
		Western red bat	Western yellow bat	California leaf-nosed bat	Pale Townsend's big-eared bat <sup>1</sup>
June	14	0	0	0	0
July	31	1	0	0	0
August	31	2	3	0	0

<sup>1</sup> 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 the USFWS.



#### **4.2.1.2 Capture Surveys**

Bats were captured with mist nets at Cibola NWR Unit #1 one night per month from June to August 2016. Three California leaf-nosed bats (*Macrotus californicus*) were captured in August (Hill 2018b).

#### **4.2.2 Rodent Monitoring**

Live trapping was conducted in the fall and spring of FY16 to determine the presence of Colorado River cotton rats (*Sigmodon arizonae plenus*). In fall, 120 traps were set on transects at Cibola NWR #1 for 1 night; in spring, 170 traps were also set on transects for 1 night. One Colorado River cotton rat was captured in fall and spring (Hill 2017, 2018a).

### **4.3 MacNeill's Sootywing Skipper Monitoring**

Surveys for MacNeill's sootywing skippers (*Pholisora graciellae* = *Hesperopsis graciellae* [MacNeill]) were conducted in March 2016. MacNeill's sootywing skippers were documented in the Crane Roost phase of Cibola NWR Unit #1 (Hill 2016).

## **5.0 HABITAT CREATION CONSERVATION MEASURE ACCOMPLISHMENT**

Vegetation data were collected in FY16 using light detection and ranging (lidar). Lidar measures and evaluates the vegetation structure throughout the canopy, with 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. Data are being processed and analyzed to provide metrics for vegetation structure.

### **5.1 Evaluation of the Conservation Area Habitat**

The Final Habitat Creation Conservation Measure Accomplishment Tracking Process was finalized in October 2011 (LCR MSP 2011). All areas within Cibola NWR Unit #1 were designed to benefit covered species at the landscape level.

To meet species habitat creation requirements, the Habitat Conservation Plan (HCP) 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). A total of 12 species

with habitat creation goals have creditable acres at Cibola NWR Unit #1. These species, including their corresponding conservation measure acronyms, are: southwestern willow flycatcher (WIFL1), western red bat (WRBA2), western yellow bat (WYBA3), Colorado River cotton rat (CRCR2), yellow-billed cuckoo (YBCU1), elf owl (*Micrathene whitneyi*) (ELOW1), gilded flicker (*Colaptes chrysoides*) (GIFL1), Gila woodpecker (*Melanerpes uropygialis*) (GIWO1), vermilion flycatcher (VEFL1), Arizona Bell’s vireo (BEV11), Sonoran yellow warbler (YWAR1), and summer tanager (SUTA1) (table 3).

Table 3.—Species-specific habitat creation conservation measure creditable total acres for 2016

Species-specific habitat creation conservation measure	WIFL1	WRBA2	WYBA3	CRCR2	YBCU1	ELOW1	GIFL1	GIWO1	VEFL1	BEV11	YWAR1	SUTA1
Creditable acres in 2016	0 <sup>1</sup>	0	0	94	94	0	94	20	20	175	20	0
Total, including previous years	0	271	271	365	365	270	364	364	365	365	365	271

<sup>1</sup> Although Cibola NWR Unit #1 provides the appropriate structure type (cottonwood-willow I–IV) as defined in WIFL1 of the HCP, Reclamation is in the process of gathering the appropriate hydrologic data to determine saturated soils, moist soils, or slow-moving water. Once this has been determined, Cibola NWR Unit #1 will be evaluated.

## 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 Cibola NWR Unit #1, recommendations may be made through the adaptive management process for site improvements in the future.

There are no adaptive management recommendations for Cibola NWR Unit #1 at this time.

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2016 Annual Report**

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**Cibola National Wildlife Refuge Unit #1 Conservation Area  
2016 Annual Report**

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