Lower Colorado River Multi-Species Conservation Program
Steering Committee Members

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

**California Participant Group**
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- 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

**Arizona Participant Group**
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- 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
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- Colorado River Indian Tribes
- Chemehuevi Indian Tribe

**Conservation Participant Group**
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- The Nature Conservancy

**Other Interested Parties Participant Group**
- QuadState Local Governments Authority
- Desert Wildlife Unlimited
Lower Colorado River
Multi-Species Conservation Program

Palo Verde Ecological Reserve
2020 Annual Report

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ACRONYMS AND ABBREVIATIONS

CDFW  California Department of Fish and Wildlife
FY    fiscal year
LCR MSCP  Lower Colorado River Multi-Species Conservation Program
PVER  Palo Verde Ecological Reserve
PVID  Palo Verde Irrigation District
Reclamation  Bureau of Reclamation
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1. Location of the PVER
1.0 INTRODUCTION

This annual report summarizes all activities that have occurred at the Palo Verde Ecological Reserve (PVER) from October 1, 2019, through September 30, 2020, which is Federal fiscal year (FY) 2020. Use of Colorado River water is presented for the calendar year, January 1 through December 31, 2020, consistent with the Colorado River Accounting and Water Use Report: Arizona, California, and Nevada (Bureau of Reclamation [Reclamation 2021]).

1.1 Background

The PVER encompasses 1,702 acres of the historical floodplain of the Colorado River near Blythe, California. The State of California identified up to 1,300 acres of active agricultural lands in 2007 and an additional 350 acres in 2019 for habitat restoration under the Lower Colorado River Multi-Species Conservation Program (LCR MSCP), a 50-year multi-partner program administered by Reclamation (LCR MSCP 2004).

The California Department of Fish and Wildlife (CDFW) and the LCR MSCP jointly planned the conversion of portions of the PVER from agricultural crops to a mix of native plant species. Existing infrastructure consists primarily of an irrigation system comprised of about 10.5 miles of lined and unlined irrigation ditches and associated slide gates, a 100-horsepower electric pump, and approximately 15 miles of access roads. All the acreage had been in agricultural crops—grain, small melons, and alfalfa—since the late 1930s.

2.0 CONSERVATION AREA INFORMATION

2.1 Purpose

The purpose of the development of the PVER was to convert 1,267 acres of agricultural land to riparian habitat that will be managed for the southwestern willow flycatcher (*Empidonax trailli extimus*) and other LCR MSCP covered species that utilize the Fremont cottonwood-Goodding’s willow (*Populus fremontii-Salix gooddingii*) (hereafter cottonwood-willow) and honey mesquite (*Prosopis glandulosa*) land cover types.

2.2 Location

The PVER is in Reach 4, in southeastern Riverside County, California, approximately 5 miles north of Blythe, California. It is within the historic
floodplain of the lower Colorado River. The PVER is separated by land into two sections, previously referred to as PVER and PVER-South. The PVER is located between River Miles 128 and 134 and between River Miles 123 and 124 (figure 1).

Figure 1.—Location of the PVER.
2.3 Landownership

The PVER is owned by the CDFW, which has dedicated 1,373 acres for the restoration and maintenance of native land cover types by the LCR MSCP. The CDFW manages two parcels for migratory waterfowl and upland game.

2.4 Water

The Palo Verde Irrigation District (PVID) has an entitlement to Colorado River water for use on up to 104,500 acres of land within the PVID pursuant to a contract between the United States and the PVID dated February 7, 1933. The CDFW, as a landowner within the PVID, has the right to order Colorado River water from the PVID for pumping through the PVID canal system to its fields. The CDFW has made Colorado River water available for irrigation of the native plants.

2.5 Agreements

Reclamation has signed an Agreement for Restoration Activities Consistent with the LCR MSCP PVER, Contract No. 06-07-30-LO633, for the development and long-term management of the PVER. The agreement was amended in 2019 to add an additional 350 acres of land.

2.6 Public Use

The CDFW has the authority, and is the lead, to regulate hunting and recreation uses pursuant to CDFW statutes, regulations and policies at the PVER. In cooperation with Reclamation, CDFW coordinates its public use and related activities so they are compatible with management of the site by the LCR MSCP. Low-impact public uses such as wildlife watching, sport fishing, and education/outreach are expected at the PVER; however, these uses may be regulated depending on future occupation of the habitat by listed species.

2.7 Law Enforcement

The CDFW is responsible for law enforcement at the PVER. A LCR MSCP Conservation Area Specific Fire Management & Law Enforcement Strategy was finalized for the PVER (LCR MSCP 2010).
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).

3.0 HABITAT DEVELOPMENT AND MANAGEMENT

Riparian land cover types were created at the PVER from 2006 to 2013 and are being managed for LCR MSCP covered species (figure 2). Additional land cover will be created from 2020 to 2021.

3.1 Planting

Planting Phases 1 through 8 was accomplished over multiple years and was completed in 2013. In 2019, the LCR MSCP acquired an additional 350 acres for habitat creation. The additional acres are in Phases 9 and 10 and are 102 acres and 142 acres, respectively.

During 2020, the contract farmer prepared 84 acres for furrow planting. A planting crew planted 11,003 honey mesquites, spaced about 25 feet, in Phase 9.

3.2 Irrigation

The fields at the PVER are flood irrigated. The PVID provides a monthly report generated from their Water Ordering System to assist in tracking water deliveries to the PVER. The system reports provide water delivery data based on gates, generating two reports each for the PVER and PVER-South. During 2020, the PVID delivered 18,506.40 acre-feet of water to the PVER, 17,468.90 acre-feet (17.08 acre-feet per acre per year) to the PVER, and 1,037.50 acre-feet (12.35 acre-feet per acre per year to PVER-South). The numbers provided by the PVID do not reflect consumptive use or unmeasured return flow data.
3.3 Site Management

Normal road maintenance, such as grading and gravel road base replacement, was done as needed.

3.3.1 Weed Management

Invasive weeds and plant material were removed adjacent to the irrigation ditches to protect the integrity of the ditches. Disking was done monthly along the levee road. The disked extended 50 feet into the fields to protect the integrity of the levee road and to reduce the risk of fire.

3.3.2 Pest Management

Gophers have been an issue at the PVER. They burrow in the grassy edges of the fields and burrow under the levee road. Extensive burrowing, combined with water, has resulted in field berms breaking and damage to the levee road. The fields are disked monthly to collapse burrows.

3.3.3 Nursery Management

Northern Arizona University and the Bureau of Land Management collected plant materials from the nursery and areas outside of the designated nursery.

4.0 MONITORING

4.1 Avian Monitoring

Avian monitoring in FY20 included surveys for southwestern willow flycatchers and yellow-billed cuckoos (Coccyzus americanus occidentalis).

4.1.1 Southwestern Willow Flycatcher Surveys

Surveys to detect the presence of southwestern willow flycatchers were conducted five times during FY20 in cottonwood-willow habitat. No breeding or resident southwestern willow flycatchers were detected; only migrant willow flycatchers (Empidonax trailli) were detected. Most birds detected after June 24, or individuals detected repeatedly before June 24, are considered southwestern willow flycatchers. Birds detected before June 24, and those detected only once after June 24, are considered migrant willow flycatchers (McLeod and Pellegrini 2021).
4.1.2 Yellow-billed Cuckoo Surveys

Four surveys for yellow-billed cuckoos were conducted within the riparian portion of the PVER. During the first survey period (approximately June 15–30), there were 24 cuckoo detections. Two surveys are conducted during the second survey period (approximately July 1–31) and resulted in 77 detections. Between approximately August 1–15, there were 21 detections. The majority of detections were in Phases 5, 6, and 7.

Breeding was confirmed at the PVER in FY20. Due to the behavior of this species, detections alone do not indicate the number of cuckoos present, nor do detections confirm breeding. The number of detections reported during the standardized surveys are comparable to previous years, but because the scope of the project has changed, the numbers of nests and territories, now found incidentally to the surveys rather than as a result of nest searching and monitoring, are not comparable. 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. There were 19 possible, 9 probable, and 11 confirmed territories breeding at the habitat conservation area in FY20. Seven nests were found incidental to surveys (Tracy et al. 2021).

4.2 Small Mammal Monitoring

4.2.1 Bat Monitoring

Acoustic survey methods were used to monitor bats in order to document the presence of species using the PVER. Two long-term monitoring stations were operated at the PVER during June, July, and August 2020. Western red bats (*Lasiurus blossevillii*), western yellow bats (*Lasiurus xanthinus*), and California leaf-nosed bats (*Macrotus californicus*) were detected (table 1). No Pale Townsend’s big-eared bats (*Corynorhinus townsendii pallescens = Plecotus townsendii pallescens = C. townsendii townsendii*) \(^1\) were detected. Table 1 summarizes the total number of nights the four LCR MSCP species were detected in FY20 (Mixan et al., *in press*).

\(^1\) 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 the U.S. Fish and Wildlife Service.
### Table 1.—LCR MSCP bat detections by month at PVER acoustic stations PVER1 and PVER2, FY20

<table>
<thead>
<tr>
<th>Month</th>
<th>Number of nights recorded (PVER1/ PVER2)</th>
<th>Total nights detected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Western red bat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PVER1</td>
</tr>
<tr>
<td>June</td>
<td>0 / 0</td>
<td>0</td>
</tr>
<tr>
<td>July</td>
<td>0 / 23</td>
<td>0</td>
</tr>
<tr>
<td>August</td>
<td>0 / 31</td>
<td>0</td>
</tr>
</tbody>
</table>

#### 4.2.2 Rodent Monitoring
Live trapping was conducted on March 5–6, 2020, to determine the presence of Colorado River cotton rats (*Sigmodon arizonae plenus*) at the PVER. Forty traps were set for 2 nights on transects in Phases 4 and 8 of the conservation area due to the presence of dense grass and scattered shrubs. Five Colorado River cotton rats and no desert pocket mouse (*Chaetodipus penicillatus*) were captured (Hill and Smith 2021). The subspecies of the desert pocket mouse typically captured is normally not determined, but it is not expected to be of the *sobrinus* subspecies, as the PVER is south of the subspecies’ documented range.

#### 5.0 HABITAT CREATION CONSERVATION MEASURE ACCOMPLISHMENT

##### 5.1 Vegetation Monitoring
Vegetation data were collected in FY20 using 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 the PVER 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). Thirteen species with habitat creation goals have creditable acres at the PVER. 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 (Pyrocephalus rubinus) (VEFL1), Arizona Bell’s vireo (Vireo bellii arizonae) (BEVI1), Sonoran yellow warbler (Dendroica petechia soronana = Setophaga petechia sonorana) (YWAR1), summer tanager (Piranga rubra) (SUTA1), and MacNeill’s sootywing skipper (Pholisora gracielae = Hesperopsis gracielae) (MacNeill) (MNSW2) (table 2).

### Table 2.—Species-specific habitat creation conservation measure creditable total acres for 2020

<table>
<thead>
<tr>
<th>Species-specific habitat creation conservation measure</th>
<th>WIFL1</th>
<th>WRBA2</th>
<th>WYBA3</th>
<th>CRCR2</th>
<th>YBCU1</th>
<th>GIFL1</th>
<th>GIWO1</th>
<th>VEFL1</th>
<th>BEVI1</th>
<th>YWAR1</th>
<th>SUTA1</th>
<th>MNSW2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creditable acres in 2020</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total, including previous years</td>
<td>945</td>
<td>1,023</td>
<td>1,023</td>
<td>945</td>
<td>983</td>
<td>945</td>
<td>985</td>
<td>945</td>
<td>945</td>
<td>945</td>
<td>38</td>
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</table>

### 6.0 Adaptive Management

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 Habitat Conservation Plan for 27 covered species and to determine 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 PVER, recommendations may be made through the adaptive management process for site improvements in the future.

There are no adaptive management recommendations for the PVER at this time.
LITERATURE CITED


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


