



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Palo Verde Ecological Reserve

2019 Annual Report



September 2020

Work conducted under LCR MSCP Work Task E4

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
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City of Lake Havasu City
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Unit "B" Irrigation and Drainage District
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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

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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
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The Metropolitan Water District of Southern California

Nevada Participant Group

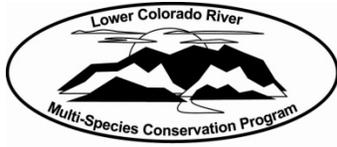
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Native American Participant Group

Hualapai Tribe
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RECLAMATION

Lower Colorado River Multi-Species Conservation Program

Palo Verde Ecological Reserve 2019 Annual Report

Prepared by:

Andrea Finnegan, Restoration Group

Barbara Raulston, Wildlife Group

Becky Blasius and Jimmy Knowles, Adaptive Management Group

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

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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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1.0 INTRODUCTION

The purpose of this annual report is to summarize all activities that have occurred at the Palo Verde Ecological Reserve (PVER) from October 1, 2018, through September 30, 2019, which is Federal fiscal year (FY) 2019. Use of Colorado River water is presented for the calendar year, January 1 through December 31, 2019, consistent with the Colorado River Accounting and Water Use Report: Arizona, California, and Nevada, Calendar Year 2019 (Bureau of Reclamation [Reclamation] 2020).

1.1 Background

The PVER encompasses 1,352 acres of the historical floodplain of the Colorado River near Blythe, California. Formerly, the property was known as the Riverview Ranch and was owned by the Travis family. The ranch was acquired by the Trust for Public Lands in 2004 to offset degradation of wildlife habitat along the lower Colorado River. On September 3, 2004, the property was conveyed to the State of California. California identified up to 1,300 acres of active agricultural lands on this property 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. Now that planting is completed, the created habitats will be managed for species covered under the LCR MSCP throughout the 50-year life of the program. Existing infrastructure consists primarily of an irrigation system comprised of 9.2 miles of lined and unlined irrigation ditches and associated slide gates, a 100-horsepower electric pump, and approximately 14 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 1,023 acres of agricultural land to 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 (*Prosopis glandulosa*) land cover types.

2.2 Location

The PVER is located 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 and between River Miles 128 and 134 (figure 1).

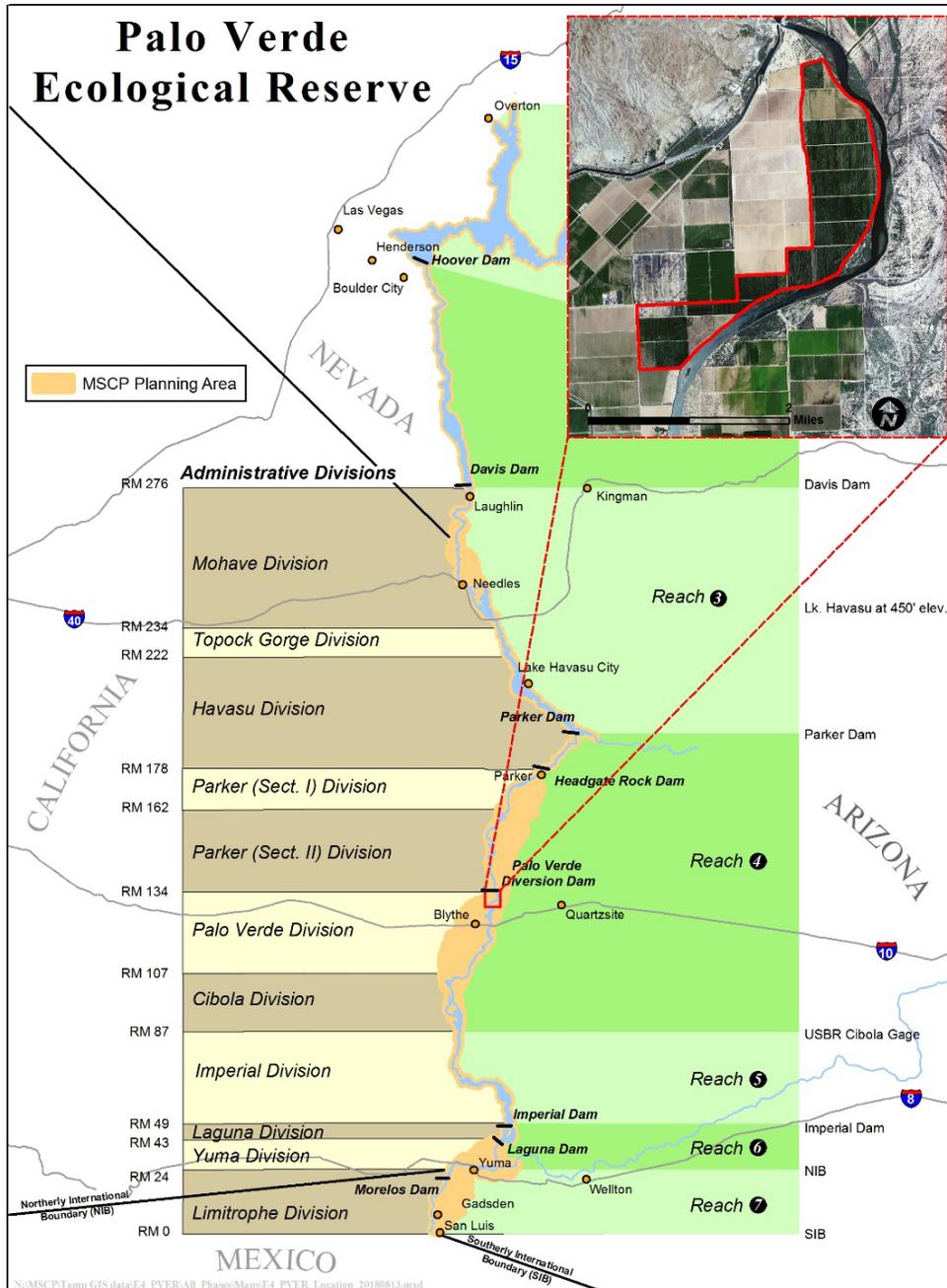


Figure 1.—PVER location map.

2.3 Landownership

The PVER is owned by the CDFW, which has dedicated 1,023 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 irrigation district, 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 LCR MSCP Palo Verde Ecological Reserve Contract No. 06-07-30-LO633, for the development and long-term management of the PVER.

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, the CDFW coordinates its public use and related activities so they are compatible with management of the site for 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).

3.1 Planting

No planting occurred in 2019.

3.2 Irrigation

The fields at the PVER are flood irrigated. Water usage for the calendar year is reported from the PVID's Water Order System. During 2019, 15,671.68 acre-feet (15.30 acre-feet per acre, per year) of water was applied to the fields at the PVER. The water usage reported by the PVID does not reflect consumptive use or unmeasured return.

3.3 Site Management

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

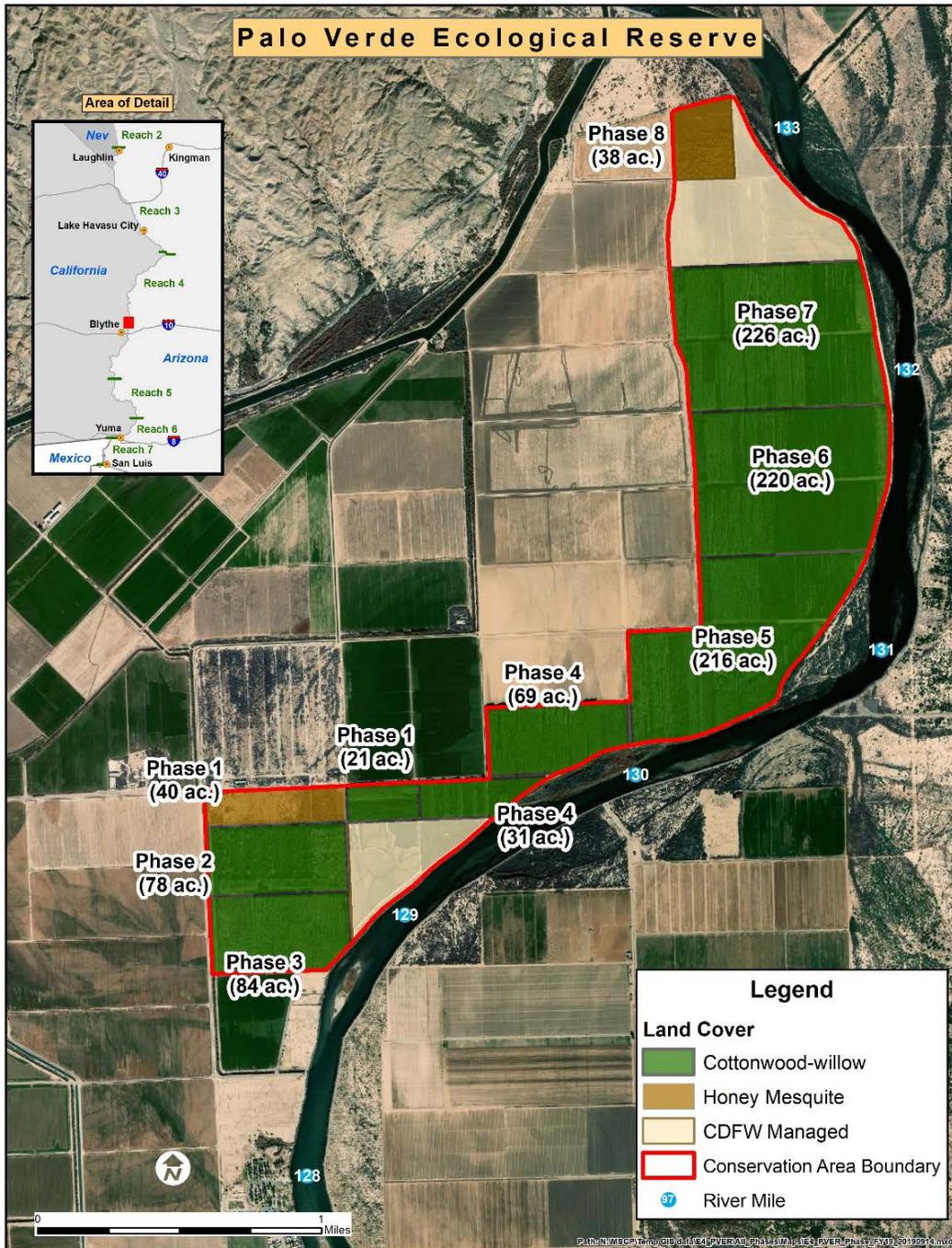


Figure 2.—PVER managed acreage through FY19.

3.3.1 Weed Management

Invasive weeds and plant material were removed adjacent to the irrigation ditches to protect their integrity. Disking was done quarterly along the levee road. The disking 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

No pest management was needed this year.

3.3.3 Nursery Management

No plant materials were collected from the nursery.

4.0 MONITORING

4.1 Avian Monitoring

Avian monitoring in FY19 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 five times during FY19 in Fremont cottonwood-Goodding's willow (*Populus fremontii-Salix gooddingii*) habitat. No breeding or resident southwestern willow flycatchers were detected; only migrant willow flycatchers (*Empidonax traillii*) were detected. 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 2020).

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 (June 15–30), there were 29 cuckoo detections. Two surveys are conducted during the second survey period (approximately July 1–31) and resulted in 63 detections. Between August 1–15, there were 24 detections.

Breeding was confirmed at the PVER in FY19. 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 12 possible, 12 probable, and 8 confirmed territories breeding at the habitat conservation area in FY19. A total of 7 nests were found incidental to surveys (McNeil et al. 2020).

4.1.3 General Bird 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 the 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 16 species (262 territories) of birds breeding within the surveyed plots. Arizona Bell’s vireos (*Vireo bellii arizonae*) (2 territories) and summer tanagers (*Piranga rubra*) (8 territories) were confirmed breeding (Great Basin Bird Observatory 2020). Table 1 shows the number of breeding territories of LCR MSCP covered species at the PVER in FY19 (Great Basin Bird Observatory 2020).

Table 1.—Number of breeding territories per LCR MSCP covered species¹ at the PVER, FY19

LCR MSCP covered species	Number of confirmed breeding pairs
Arizona Bell’s vireo	2
Summer tanager	8

¹ Number of breeding territories refers to the number of territories that are within the sampled area for pairs that were confirmed breeding.

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 2019. Western red bats (*Lasiurus blossevillii*), western yellow bats (*Lasiurus xanthinus*), and California leaf-nosed bats (*Macrotus californicus*) were detected (table 2). No Pale Townsend’s big-eared bats (*Corynorhinus townsendii pallescens* = *Plecotus townsendii pallescens* = *C. townsendii townsendii*)¹ were detected. Table 2 summarizes the total number of nights the four LCR MSCP species were detected in FY19 (Mixan et al., *in press*).

Table 2.—LCR MSCP bat detections by month at PVER acoustic stations PVER1 and PVER2, FY19

Month	Number of nights recorded (PVER1/PVER2)	Total nights detected							
		Western red bat		Western yellow bat		California leaf-nosed bat		Pale Townsend’s big-eared bat	
		PVER1	PVER2	PVER1	PVER2	PVER1	PVER2	PVER1	PVER2
June	30 / 30	7	10	2	0	0	0	0	0
July	31 / 31	14	8	22	5	2	1	0	0
August	8 / 31	4	7	5	6	0	1	0	0

4.2.2 Rodent Monitoring

Live trapping was conducted in February 2019 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 2 areas of the conservation area with dense grass and scattered shrubs. One Colorado River cotton rat and one desert pocket mouse (*Chaetodipus penicillatus*) were captured (Hill and Lyon 2020). The subspecies of the desert pocket mouse was not determined, but it is not expected to be of the *sobrinus* subspecies, as the PVER is south of the subspecies’ documented range.

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.

4.3 MacNeill's Sootywing Skipper Monitoring

MacNeill's sootywing skippers (*Pholisora graciellae* = *Hesperopsis graciellae* [MacNeill]) were detected at the PVER during surveys conducted in April 2019 (Hill 2019).

5.0 HABITAT CREATION CONSERVATION MEASURE ACCOMPLISHMENT

5.1 Vegetation Monitoring

Vegetation data were collected in FY19 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 (BEVI1), Sonoran yellow warbler (*Dendroica petechia sonorana* = *Setophaga petechia sonorana*) (YWAR1), summer tanager (SUTA1), and MacNeill's sootywing skipper (MNSW2) (table 3).

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Table 3.—Species-specific habitat creation conservation measure creditable total acres for 2019¹

Species-specific habitat creation conservation measure	WIFL1	WRBA2	WYBA3	CRCR2	YBCU1	ELOW1	GIFL1	GIWO1	VEFL1	BEV11	YWAR1	SUTA1	MNSW2
Creditable acres in 2019	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, including previous years	945	1,023	1,023	1,023	945	985	945	945	985	1,023	945	945	40

¹ The habitat creation accomplishment analysis was not performed for FY19 because lidar data were not available.

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

- 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. Prepared for the Bureau of Reclamation, Boulder City, Nevada.
- _____. 1984a. Vegetation Management Study for the Enhancement of Wildlife Along the Lower Colorado River, Final Report. Prepared for the Bureau of Reclamation, Boulder City, Nevada.
- _____. 1984b. Lower Colorado River Riparian Methods of Quantifying Vegetation Communities to Prepare Type Maps, Final Report. Prepared for the Bureau of Reclamation, Boulder City, Nevada.
- Bureau of Reclamation. 2020. Colorado River Accounting and Water Use Report: Arizona, California, and Nevada, Calendar Year 2019. Bureau of Reclamation, Boulder City, Nevada.
- Great Basin Bird Observatory. 2020. Riparian Bird Surveys at Conservation Areas in the Lower Colorado River Region, 2019. Submitted to the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada, by the Great Basin Bird Observatory, Reno, Nevada, under Contract No. 140R3019C0007.
- Hill, J. 2019. Monitoring of the MacNeill's Sootywing Skipper and its Habitats, 2019 Annual Report. Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada.
- Hill, J. and J. Lyon. 2020. Post-Development and System-Wide Monitoring of Rodent Populations, 2019 Annual Report. Prepared for the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada.
- LCR MSCP (see Lower Colorado River Multi-Species Conservation Program).
- Lower Colorado River Multi-Species Conservation Program (LCR MSCP). 2004. Lower Colorado River Multi-Species Conservation Program, Volume II: Habitat Conservation Plan, Final. December 17 (J&S 00450.00). Sacramento, California.
- _____. 2007. Draft Final Science Strategy. Bureau of Reclamation, Lower Colorado River Multi-Species Conservation Program, Lower Colorado Region, Boulder City, Nevada.

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- _____. 2010. Lower Colorado River Multi-Species Conservation Program Fire Management & Law Enforcement Strategy. Bureau of Reclamation, Boulder City, Nevada.
- _____. 2011. Final Habitat Creation Conservation Measure Accomplishment Tracking Process. Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Lower Colorado Region, Boulder City, Nevada. October 26.
- McLeod, M.A. and A.R. Pellegrini. 2020. Southwestern Willow Flycatcher Monitoring Along the Lower Colorado River and Tributaries, 2019 Annual Report. Submitted to the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada, by SWCA Environmental Consultants, Flagstaff, Arizona, under contract No. 140R3018C0010.
- McNeil, S.E., C.L. Squibb, J.R. Stanek, and D. Tracy. 2020. Yellow-billed Cuckoo Surveys in Conservation Areas on the Lower Colorado River and Bill Williams River, 2019 Annual Report. Submitted to the Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada, by Southern Sierra Research Station, Weldon, California, under contract No. 140R3019C0004.
- Mixan, R., B. Milbrandt, and M. Ingraldi. *In press*. 2019 Post Development Acoustic Bat Monitoring of LCR MSCP Bat Species. Submitted to the Bureau of Reclamation, Boulder City, Nevada, by the Arizona Game and Fish Department, Phoenix, Arizona, under Cooperative Agreement R16AC00067.
- 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.