Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Palo Verde Ecological Reserve

2011 Annual Report

May 2019

Work conducted under LCR MSCP Work Task E04

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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Mohave Valley Irrigation and Drainage District
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Yuma Irrigation District
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Desert Wildlife Unlimited

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Conservation Participant Group

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

Lower Colorado River Multi-Species Conservation Program

Palo Verde Ecological Reserve

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ACRONYMS AND ABBREVIATIONS

CDFG	California Department of Fish and Game
DBH	diameter at breast height
DC	diameter class
FY	fiscal year
HCP	Habitat Conservation Plan
kg	kilogram(s)
lb	pound(s)
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
PVER	Palo Verde Ecological Reserve
PVID	Palo Verde Irrigation District
Reclamation	Bureau of Reclamation
SE	standard error

Symbols

<	less than
≤	less than or equal to
>	greater than
≥	greater than or equal to
%	percent

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1 List of Common and Scientific Names

EXECUTIVE SUMMARY

The Palo Verde Ecological Reserve (PVER) encompasses 1,352 acres of the historical flood plain 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 has 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 the Bureau of Reclamation (Reclamation) (LCR MSCP 2004).

The California Department of Fish and Game (CDFG) and the LCR MSCP are jointly planning the conversion of portions of the PVER from agricultural crops to a mix of native plant species. After planting is complete, the created habitats will be managed for species covered under the LCR MSCP throughout the 50-year life of the program.

The project is being developed using a phased approach over a 9-year period, with an estimated completion date of 2014. An overview restoration development plan for the entire site was completed in 2006 (LCR MSCP 2007). In July 2009, the CDFG exchanged land at the PVER involving the fields located to the west and north of Phase 5 for land identified as Phase 8 and the eastern part of then Phase 9. This was determined to benefit both parties, as it resulted in a contiguous riparian land area. This exchange affected the phase schedule by increasing the acres developed in Phase 5 and decreasing the acres in Phase 8. In 2006, Phase 1, a 30-acre riparian nursery, was planted (Iglitz and Clune 2006). In 2007, 2008, 2009, and 2010, 476 acres of cottonwood-willow land cover type were planted during Phases 2, 3, 4, and 5 (Iglitz and Clune 2006; LCR MSCP 2009, 2010, 2013).

1.0 SITE INFORMATION

1.1 Purpose

This purpose of this annual is to provide information pertaining to the development and maintenance of riparian habitat and summarized monitoring reports/results that would influence the Adaptive Management Plan. Currently, 39% of the acreage at the Palo Verde Ecological Reserve (PVER) is planted in alfalfa and wheat. The intent is to eventually convert approximately 1,100 acres to riparian habitat, which will be managed for southwestern willow flycatchers (*Empidonax traillii extimus*) and other Lower Colorado River Multi-Species Conservation Program (LCR MSCP) covered species that utilize the Fremont cottonwood-Goodding's willow (*Populus fremontii-Salix gooddingii*) (hereafter cottonwood-willow) land cover type.

1.2 Location/Description

The PVER lies within the historic flood plain of the Colorado River in southeastern Riverside County, California, at Townships 5 and 6 South and Ranges 23 and 24 East. The PVER is one of the northernmost parcels of agricultural land within the Palo Verde Valley, which is approximately 5 miles north of Blythe.

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 has been in agricultural crops – grain, small melons, and alfalfa – since the late 1930s. Currently, the land not restored is leased and farmed with crops such as alfalfa and grain.

1.3 Landownership

The PVER is owned by the California Department of Fish and Game (CDFG). They lease approximately 400 acres to a local farmer who raises alfalfa and small grains. The CDFG intends to continue the agricultural lease until the entire property comes under development by the Bureau of Reclamation (Reclamation).

1.4 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 CDFG, 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 CDFG will make Colorado River water available for irrigation of the native plants.

1.5 Agreements

Reclamation and the CDFG have signed an agreement to ensure that the land and water resources will be available for the 50-year term of the LCR MSCP (Agreement for Restoration Activities Consistent with the LCR MSCP, Palo Verde Ecological Reserve, 2007).

1.6 Public Use

The CDFG has the authority, and is the lead, to regulate hunting and recreation uses pursuant to the CDFG statutes, regulations, and policies at the PVER. In cooperation with Reclamation, the CDFG coordinates its public use and related activities so they are consistent with, and do not adversely affect, restoration activities at the PVER.

1.7 Law Enforcement

The CDFG is responsible for law enforcement at the PVER. Reclamation continues to work with the CDFG to ensure these activities do not conflict with the LCR MSCP Habitat Conservation Plan (HCP).

1.8 Wildfire Management

A LCR MSCP Conservation Area Specific Fire Management & Law Enforcement Strategy has been finalized for the PVER and is posted on the website (https://www.lcrmscp.gov/reports/2017/e4_annrep_2017.pdf). The LCR MSCP will continue to work with local State and Federal fire agencies to reduce the risk of wildland fires and to maintain clear lines of communication among agencies.

2.0 HABITAT DEVELOPMENT AND MANAGEMENT

2.1 Planting

Approximately 205 acres (82.96 hectares) of the cottonwood-willow land cover type were planted in spring 2011. There were some changes to the preliminary planting design (Palo Verde Ecological Reserve: Restoration Development Plan Phase 6, 2010) (Iglitz 2010), which are reflected on figure 1.

Since the soils at the PVER are similar in Phases 4–7, previously recommended applications of 10-34-0 fertilizer was applied prior to planting Phase 6.

The field was prepared and leveled using standard farming practices. The field was then divided into 28 checks (divisions of the acreage bordered by earthen mounds in which irrigation water can be controlled). A cover crop of 25 pounds (lb) (13.6 kilograms [kg]) of alfalfa seed and 5 lb (2.3 kg) of rye grass seed per acre were planted in checks 2–13 and 16–27. The cover crop was planted 7–14 days prior to the mass transplanting of the trees and shrubs. Generally speaking, planting a dense cover crop includes the following added benefits:

- Suppresses weeds without the use of herbicide
- Protects valuable topsoil from wind and water erosion
- Reduces compaction caused by frequent mowing
- Increases organic matter, earthworms, and beneficial micro-organisms
- Increases the soil's available nitrogen and moisture retention
- Brings deep minerals to the surface and break up hardpans
- Provides habitat, nectar, and pollen for beneficial insects and reduces the population of pests

Checks 1, 14, 15, and 28 were drill seeded with the following native species: blue grama grass (*Bouteloua gracilis*) and alkali sacaton (*Sporobolus airoides*) seeds were mixed with rice hulls so that the distribution of seed by weight was equal. The application rate for the seed mixture was 6.75 lb (3.06 kg) per acre (figure 2).

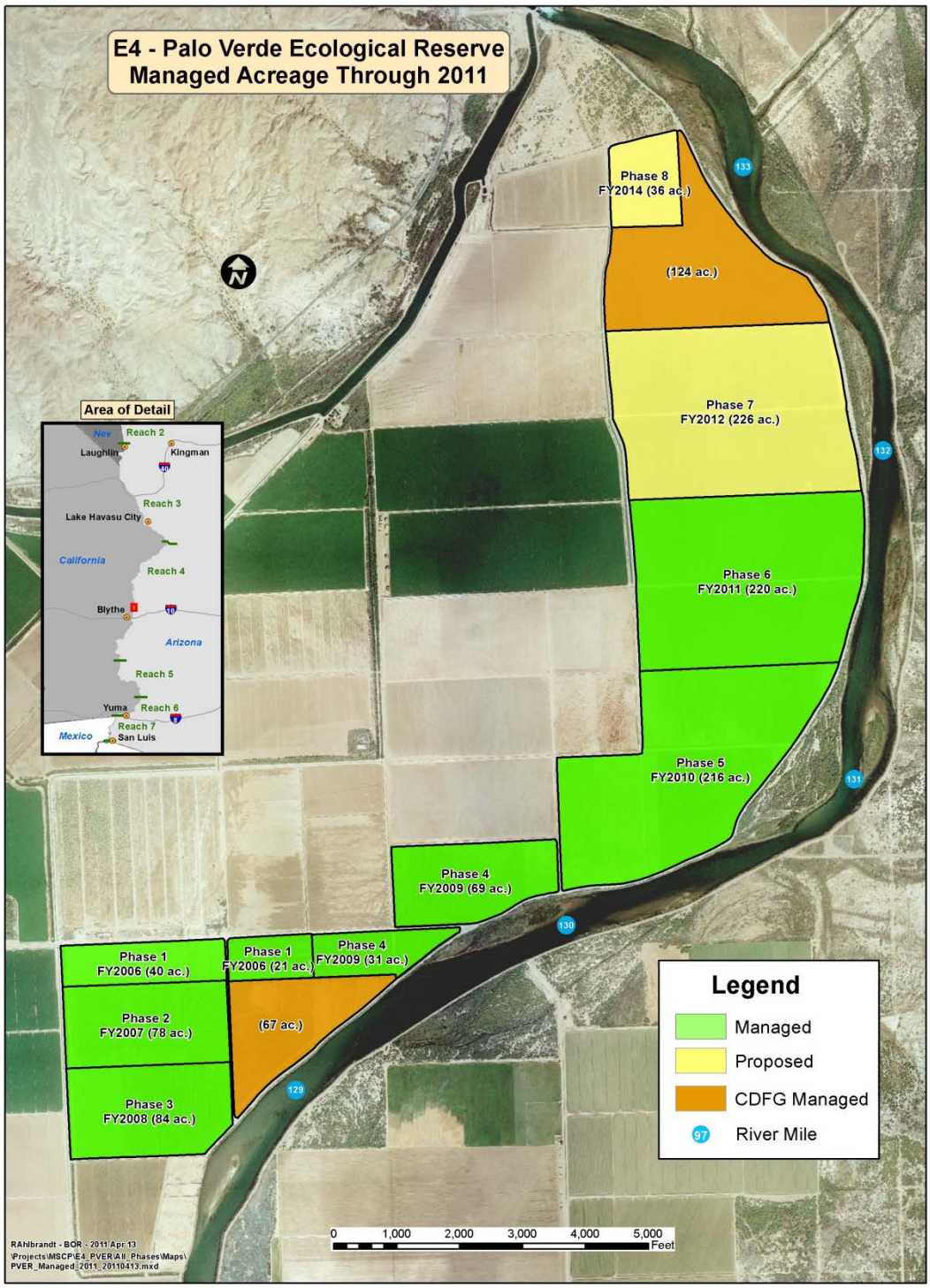

Figure 1.—PVER managed acreage through 2011.

Figure 2.—Cover crop, blue grama grass, planted with honey mesquite.

In March 2011, trees and shrubs were planted in Phase 6 with 40-inch rows and 6-foot in-line spacing in checks 2–12 and 16–27, utilizing mass transplanting techniques (figure 3). Over 340,000 trees and shrubs were planted within an 11-day period. There were some changes to the preliminary planting design due to the low survival rate of cottonwood trees (figure 4) grown at the greenhouse in Arroyo Grande, California. A large majority of cottonwood plantings experienced slow or no growth. Because of the reduced number of cottonwood trees, checks 13 and 27 were left fallow and will be planted in 2012. All remaining checks in Phase 6 were planted with the following averaged percentages: 18.9% cottonwood, 5.2% baccharis (*Baccharis salicifolia* and *Baccharis sarothroides*), 43% Gooding's willow, 31.1% coyote willow (*Salix exigua*), 0.05% atriplex, and 0.9% honey mesquite (*Prosopis glandulosa*) (figure 5). The average number of plants was 1,659 per acre in the riparian fields and 4,863 shrubs and trees in the honey mesquite fields. Table 1 shows the number of trees and shrubs planted in Phase 6 – spring 2011).

Figure 3.—Mass transplanting.

Figure 4.—Cottonwood plant.

Table 1.—Number of trees and shrubs planted in Phase 6 – spring of 2011

Check	Acres	*Baccharis sarothroides*	*Baccharis salicifolia*	Cottonwood	Gooding's willow	Coyote willow	Honey mesquite	Atriplex
1	6.6	0	0	0	0	0	1,000	1,000
2	7.9	0	0	8,494	5,445	1,525	0	0
3	8.1	545	545	2,614	7,623	3,920	0	0
4	8.0	545	545	3,920	7,841	3,049	0	0
5	8.2	545	545	3,920	7,841	3,049	0	0
6	7.9	545	545	3,920	7,841	3,049	0	0
7	7.9	545	545	3,920	7,841	3,049	0	0
8	7.9	545	545	3,920	7,841	3,049	0	0
9	8.2	0	0	2,614	4,356	10,672	0	0
10	7.9	0	0	2,614	4,574	8,276	0	0
11	8.0	545	545	2,614	6,841	4,062	0	0
12	7.7	0	0	2,318	6,058	5,006	0	0
13	8.0	FALLOW	0	0	0	0	0	0
14	8.6	0	0	0	0	0	788	0
15	6.0	0	0	0	0	0	975	600
16	7.8	545	545	2,178	6,058	5,442	0	0
17	7.9	545	545	2,831	7,013	5,006	0	0
18	8.0	545	545	2,178	6,058	5,442	0	0
19	7.9	545	545	2,831	7,013	5,006	0	0
20	7.8	545	545	1,742	7,013	5,442	0	0
21	7.9	545	545	2,831	6,058	5,006	0	0
22	7.9	545	545	1,742	7,013	5,442	0	0
23	7.8	500	500	1,742	7,013	5,442	0	0
24	7.8	500	500	1,742	7,013	5,006	0	0
25	7.8	0	0	1,742	7,013	5,006	0	0
26	7.4	0	0	1,742	6,058	5,006	0	0
27	6.9	FALLOW	0	0	0	0	0	0
28	2.8	0	0	0	0	0	250	250
	Total	8,630	8,630	64,169	147,425	105,952	3,013	1,850

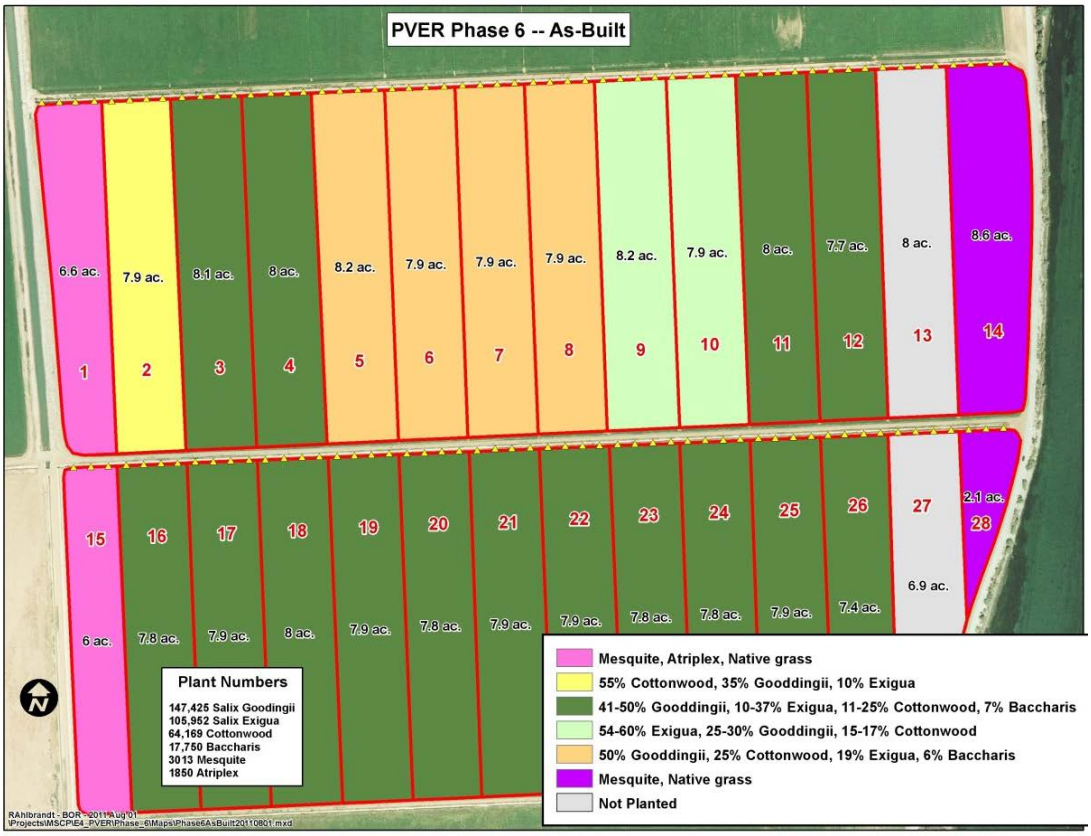

Figure 5.—Phase 6 – as-built.

2.1.1 Phases 1–7

In Phase 1, during fiscal year 2006 (FY06), a 61-acre riparian nursery was planted. In Phase 2 (FY07), 78 acres; in Phase 3 (FY08), 45 acres; in Phase 3 (2009), 39 acres; in Phase 4 (FY09), 100 acres; in Phase 5 (FY10), 216 acres; and in Phase 6 (FY11), 205 acres of cottonwood-willow land cover type were planted. In Phase 7 (FY12), 241 acres of cottonwood-willow will be planted. The number of acres planted each year by cover type is shown in table 2. Additional information on the design, planting, and monitoring of Phases 1–7 can be found on the LCR MSCP website (https://www.lcrmscp.gov/steer_committee/technical_reports.html

2.2 Irrigation

The fields at the PVER are flood irrigated; table 3 indicates the amount of irrigation water applied through September 2011. Irrigation water applied (acre-feet) is calculated on the assumption that the irrigation delivery ditch is running at full capacity (25 cubic feet per second or 0.707 cubic meter per second) (Pair et al. 1975). The estimated average amount of irrigation water applied in 2010 was 9.47 acre-feet over the entire site per acre.

Table 2.—Planted acres in Phases 1–7

Phase	Fiscal year	Acres planted	Land cover type	Cumulative total
1	2006	61	Cottonwood-willow	61
2	2007	78	Cottonwood-willow	139
3	2008	45	Cottonwood-willow	184
3	2009	39	Cottonwood-willow	223
4	2009	100	Cottonwood-willow	323
5	2010	216	Cottonwood-willow	539
6	2011	205	Cottonwood-willow	744
7*	2012	241	Cottonwood-willow	985

* Phase 7 to be planted in spring 2012.

Table 3.—Irrigation water applied through September 2011

Phase	Total hours of Irrigation water applied	Amount of Irrigation water applied[1] (acre-feet)
Phase 1 – Cottonwood-willow nursery: 20 acres	86	14.34
Phase 1 – Honey mesquite nursery: 10 acres	23	4.79
Phase 2 – Cottonwood-willow habitat: 78 acres	651	17.38
Phase 3 – Cottonwood-willow habitat: 84 acres	971	24.0
Phase 4 – Cottonwood-willow habitat: 100 acres	819	17.06
Phase 5 – Cottonwood-willow habitat: 216 acres	847	8.17
Phase 6 – Cottonwood-willow habitat: 205 acres	927	9.4
Total: 713 acres	4,324	95.14

[1] Amount of water applied does not reflect consumptive use or unmeasured return.

2.3 Site Maintenance

No major site maintenance, such as irrigation ditch replacement or road maintenance, was performed in 2011. Normal road maintenance – grading and rock replacement as needed – was done. The levee road, damaged by water and gophers, continues to be repaired by Reclamation's Yuma Office.

2.4 Management of Existing Habitat

2.4.1 Nursery Management

Plant material (seeds and cuttings) was collected from the nursery in December 2011. The plant material will be used for Phase 7 planting in March 2012.

2.4.2 Weed Management

Invasive weeds and plant material continue to be removed adjacent to the irrigation ditches to protect their integrity. The planting of trees was offset a minimum of 50 feet from the levee road in Phases 5 and 6 to protect the road from runoff irrigation and to provide a buffer zone. This area is disked two to four times a year depending on the growth of vegetation. Thirty feet of trees and shrubs were removed from the south side of the irrigation ditch in Phase 2, Fields 2–7 (figure 6). A proliferation of nutgrass (*Cyperus rotundus*) in Phase 6 prompted a trial use of the herbicide Sandea. Sandea was aerially applied to the southern 100 feet of checks 15–26, and the results were mixed. Some of the trees yellowed but recovered a few weeks later; the nutgrass appeared to be minimally affected. A sheep grazing study was proposed for the fall to eliminate weeds and fire loads.

Figure 6.—Vegetation removed to protect the integrity of the irrigation ditch.

2.4.3 Pest Management

No pest management was needed this year.

2.4.4 Soil Management

A crop consultant was contracted to perform soil samples, which will be analyzed to determine fertilizer needs. Fertilizer was applied as suggested by the crop consultant's report.

3.0 MONITORING

3.1 Avian Monitoring

Three types of avian surveys were conducted at the PVER. Single species surveys were conducted for southwestern willow flycatchers and yellow-billed cuckoos (*Coccyzus americanus occidentalis*). General avian surveys were conducted for six LCR MSCP avian covered species and all non-covered avian species. Surveys were not conducted for elf owls (*Micrathene whitneyi*) in 2011.

3.1.1 Southwestern Willow Flycatcher Surveys

Restoration sites at the PVER were surveyed during 2011. One of the birds detected at Phase 2 on June 9, 2011, was color banded, and the color band combination was resighted and confirmed. The bird was originally captured in southern Nevada and is a confirmed southwestern willow flycatcher – the first confirmed southwestern willow flycatcher detected at the PVER. The bird was not detected or resighted again after June 9, 2011. All other birds detected before June 15 were considered to be migrants and not the covered southwestern (*extimus*) subspecies.

- Phase 2 – Three willow flycatchers were detected on May 16, six birds were detected on May 26, and two were detected on June 9, 2011. One was a confirmed southwestern willow flycatcher (see discussion above).

- Phase 3 – One bird was detected on May 16, and three birds were detected on May 26, 2011. All were assumed to be migrants.

3.1.2 Yellow-billed Cuckoo Surveys

Surveys for yellow-billed cuckoos were conducted at Phases 1, 2, 3, and 4 in appropriate habitats between June 17 and August 8, 2011. In Phases 1 and 3, cuckoos were not detected on the first two surveys of the season but were detected on the four surveys conducted after July 11, 2011. At Phases 2 and 3, cuckoos were not detected during the first survey but were detected during the four surveys conducted after July 1, 2011. Cuckoos were detected during all five surveys in Phase 4. Nine cuckoos were captured and banded. Geolocators were

attached to four of the nine birds captured. If these birds are captured in 2012, information on their locations during the non-breeding season can be collected. There were 11 nests found at the PVER. Nine nestlings were banded with U.S. Fish and Wildlife Service numbered bands and unique color bands prior to fledging.

3.1.3 General Avian Surveys

Surveys of habitat conservation areas with more than 2 years' growth were conducted using a double sampling area search method (rapid and intensive area searches) to determine their use for breeding by other LCR MSCP avian species. Details of the method and further results are found in Great Basin Bird Observatory (2011). Eight Sonoran yellow warbler (*Dendroica petechia sonorana = Setophaga petechia sonorana*) pairs were confirmed breeding.

3.2 Small Mammal Monitoring

3.2.1 Bat Monitoring

Acoustic and capture survey methods were used to monitor and document the presence of bat species within the PVER and to determine the age, sex, and reproductive status of the bats captured.

3.2.1.1 Acoustic Surveys

Acoustic monitoring for western red bats (*Lasiurus blossevilli*) and western yellow bats (*Lasiurus xanthinus)* were conducted utilizing an Anabat echolocation detector in May and July at the PVER and/or the surrounding area. Neither species was detected.

3.2.1.2 Capture Surveys

Bat capture surveys were conducted at the PVER once a month from May to September to determine the age, sex, and reproductive status of the bats captured in the conservation area (table 4). There was a lower capture rate in 2011 than in 2010, although species richness and diversity increased (table 5).

Capture surveys were also conducted once in February, targeting western red and western yellow bats specifically. One red bat was captured in late February and remained in the area at least until mid-March when the transmitter battery failed.

Table 4.—2011 PVER bat netting results by month
(LCR MSCP species in bold)

Species*1*	May	June	July	August	September	Totals
Big brown bat	2	6	35	23	9	75
California leaf-nosed bat	**2**	**2**	**0**	**0**	**1**	**5**
California myotis	0	0	1	0	1	2
Cave myotis	0	7	1	2	0	10
Mexican free-tailed bat	0	0	0	2	0	2
Pallid bat	0	3	14	5	1	23
Western mastiff bat	1	0	0	0	0	1
Western red bat	**1**	**0**	**1**	**0**	**3**	**5**
Western yellow bat	**0**	**0**	**6**	**3**	**0**	**9**
Yuma myotis	0	2	2	0	0	4
Totals	6	20	60	35	15	136

[1] See attachment 1 for a list of scientific names.

Table 5.—Total bats captured at the PVER in 2010–11
(LCR MSCP species in bold)

Species	2010	2011	Totals
Big brown bat	154	75	229
California leaf-nosed bat	**0**	**5**	**5**
California myotis	3	2	5
Cave myotis	31	10	41
Mexican free-tailed bat	2	2	4
Pallid bat	7	23	30
Pocketed free-tailed bat	4	0	4
Western mastiff bat	0	1	1
Western red bat	**3**	**5**	**8**
Western yellow bat	**12**	**9**	**21**
Yuma myotis	16	4	20
Totals	232	136	368

[1] See attachment 1 for a list of scientific names.

3.2.2 Rodent Monitoring

Three Colorado River cotton rats (*Sigmodon arizonae plenus*) and one desert pocket mouse (*Chaetodipus penicillatus sobrinus*) were captured in Phase 4

during fall 2010 and spring 2011; none were captured in Phase 5. The bench along the river below the PVER continues to support a population of Colorado River cotton rats, with 20 rats captured.

3.3 MacNeill's Sootywing Skipper Monitoring

MacNeill's sootywing skipper (*Pholisora gracielae = Hesperopsis gracielae* [MacNeill]) surveys at the PVER were conducted for adult sootywings during April – September 2011. Sootywings were detected at Phases 4 and 5. Figure 7 shows the numbers of sootywing adults detected in 2010 and 2011. The sootywing survey protocol will be re-evaluated.

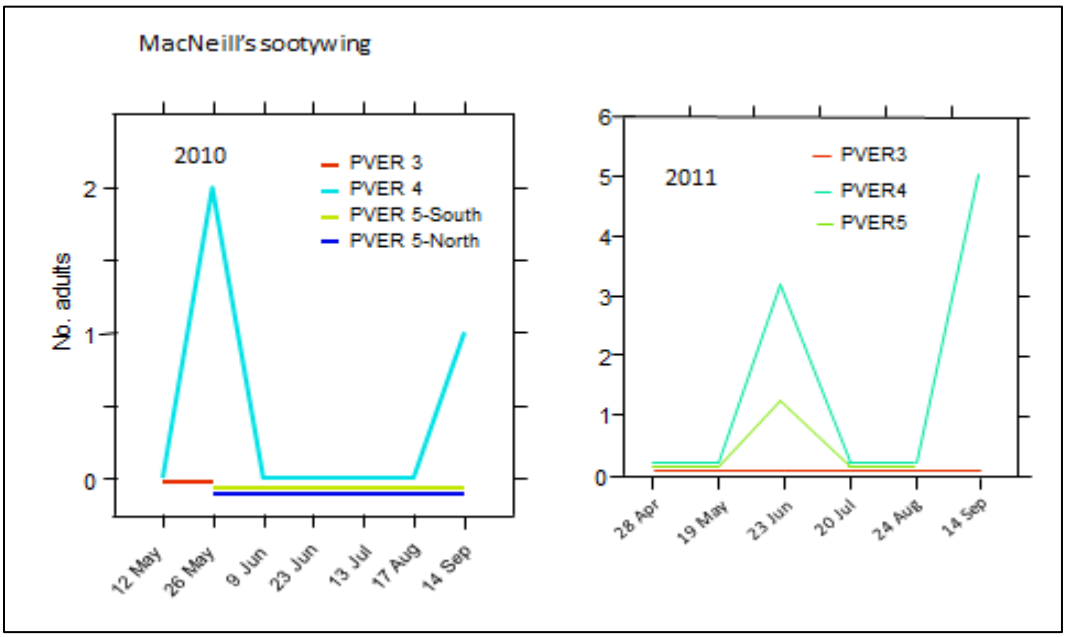

Figure 7.—MacNeill's sootywing skipper populations detected at the PVER in 2010 and 2011.

4.0 HABITAT CREATION CONSERVATION MEASURE ACCOMPLISHMENT

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 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). Nine species with habitat creation goals have creditable acres at the PVER. These species, including their corresponding conservation measure acronyms, are: western red bat (WRBA2), yellow-billed cuckoo (YBCU1), elf owl (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 (YWAR1), and summer tanager (*Piranga rubra*) (SUTA1). The species-specific conservation measure creditable total acres are provided in table 6.

Table 6.—Species-specific habitat creation conservation measure creditable total acres, 2011

Species-specific habitat creation conservation measure	WIFL1[1]	WRBA2	WYBA3[2]	CRCR2[3]	YBCU1	ELOW1	GIFL1	GIWO1	VEFL1	BEVI1	YWAR1	SUTA1	MNSW2[4]
Creditable acres in 2011	0	283	0	0	283	283	283	499	499	216	499	283	0
Total, including previous years	0	283	0	0	283	283	283	499	499	216	499	283	0

[1] Although the PVER 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, the PVER will be evaluated.

[2] Reclamation is in the process of determining foraging and roosting habitat for the western yellow bat (WYBA). Once this has been determined, the PVER will be evaluated.

[3] The preliminary data suggest the Colorado River cotton rat (CRCR) uses both cottonwood-willow and fringe marsh habitats. Reclamation is in the process of evaluating data collected to determine marsh and cottonwood-willow habitat uses by the CRCR.

[4] PVER mesquite habitat was classified as honey mesquite VI or V; therefore, it was not mature enough to meet the habitat creation conservation measure in which the honey mesquite land cover type must be classified as honey mesquite III.

4.1 Vegetation

Vegetation data were collected within several parameters to evaluate the vegetation structure from the ground layer to the upper canopy layer. The parameters included tree and shrub density, tree heights, and canopy closure.

The tree density in cottonwood/willow (cottonwood, Goodding's willow, and coyote willow) ranged from 20–5,720 trees per acre. The shrub density (willow baccharis [*Baccharis salicina*], desert broom [*Baccaris sarothroides*], and quailbush [*Atriplex lentiformis*] ranged from 0–324 shrubs per acre. The PVER had the following maximum and minimum heights in meters (m): cottonwood (15 m, 1.7 m), Goodding's willow (15 m, 1.4 m), and honey mesquite (5.1 m, 0.6 m), respectively. The average canopy closure ranged from 0–100%.

5.0 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 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.

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ATTACHMENT 1

List of Common and Scientific Names

Common name	Scientific name
Big brown bat	*Eptesicus fuscus*
California leaf-nosed bat	*Macrotus californicus*
California myotis	*Myotis californicus*
Cave myotis	*Myotis velifer*
Mexican free-tailed bat	*Tadarida brasiliensis*
Pallid bat	*Antrozous pallidus*
Pocketed free-tailed bat	*Nyctinomops femorosaccus*
Western mastiff bat	*Eumops perotis*
Yuma myotis	*Myotis yumanensis*