Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Cibola Valley Conservation Area

2011 Annual Report

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

December 2013

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Cibola Valley Conservation Area

2011 Annual Report

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ACRONYMS AND ABBREVIATIONS

AGFD	Arizona Game and Fish Department
CVCA	Cibola Valley Conservation Area
HCP	Habitat Conservation Plan
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
MCWA	Mohave County Water Authority
Reclamation	Bureau of Reclamation

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EXECUTIVE SUMMARY

In 2007, the Bureau of Reclamation (Reclamation) secured 1,309 acres of land serviced by the Cibola Valley Irrigation and Drainage District and established the Cibola Valley Conservation Area (CVCA). The Arizona Game and Fish Department (AGFD) acquired the CVCA in September 2007 through a multi-organizational agreement involving the AGFD, Reclamation, the Mohave County Water Authority, The Conservation Fund, and the Hopi Tribe. Through these agreements, the AGFD acquired CVCA fee title and water entitlements and agreed to manage the site.

Large habitat restoration sites such as the CVCA are developed over a number of years, with restoration activities divided into phases. The report, Cibola Valley Conservation Area Restoration Development Plan: Overview, provides a summary of the site and projected phase implementation.

In fiscal year (FY) 2006, Reclamation planted Phase 1, consisting of a 22-acre native plant nursery and approximately 69 managed acres of cottonwood-willow habitat. Phase 2 was originally scheduled for implementation in the early spring of FY07 but was delayed for 1 year in an attempt to eradicate the invasive plant, morning glory's seed bank. Phase 3, consisting of 103 managed acres, was planted in FY07. Phase 2, a 71-acre parcel, was planted in March 2008 with approximately 160,000 coyote willow (*Salix exigua*), Goodding's willow (*Salix gooddingii*), and Fremont cottonwood (*Populus fremontii*). Phase 4, consisting of two separate locations – 58 managed acres north of Phase 3 and 187 managed acres west of Phase 1 – were planted in FY09 with approximately 25,000 honey mesquite trees and 18,000 *Atriplex* plants. Phase 5, consisting of 71 managed acres, was planted in FY10. Phase 6, which consists of 89 managed acres, was planted in the spring of FY11 with approximately 14,000 honey mesquites.

Future planting of phases within the CVCA has been postponed until FY15, when planting will resume. A development plan for Phase 7 will be prepared in 2014.

This report documents the development and management of land cover types through 2011, presents the results of monitoring, habitat creation conservation measure accomplishment, and makes recommendations for future adaptive management of lands within the CVCA.

1.0 CONSERVATION AREA INFORMATION

1.1 Purpose

Cottonwood-willow land cover created within the Cibola Valley Conservation Area (CVCA) will be managed for the southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and other species covered under the Lower Colorado River Multi-Species Conservation Program (LCR MSCP). As part of habitat creation, native plant communities are established and managed for covered species by integrating seral stages of vegetation, moist soil, standing water, and open areas into mosaics of riparian habitat.

1.2 Location

The 1,309-acre CVCA (figure 1) is located in southwestern La Paz County, Arizona, which is approximately 15 miles south of Blythe, California. Cibola Valley encompasses the land inside an engineered bend of the lower Colorado River and a remnant oxbow on the west side of the river (Palo Verde Oxbow). Historically farmed for cotton and alfalfa, the CVCA is bordered to the south by the Cibola National Wildlife Refuge and on the east by unimproved land under the jurisdiction of the Bureau of Land Management. The river forms the north and west boundaries, except for the Palo Verde Oxbow, from River Miles 98.8 to 104.9.

1.3 Land Ownership

The Arizona Game and Fish Department (AGFD) acquired CVCA land and water rights in 2007 and 2008 through multiple agreements involving the AGFD, Bureau of Reclamation (Reclamation), the Mohave County Water Authority (MCWA), The Conservation Fund, and the Hopi Tribe. The entitlements are subject to an existing long-term lease of the land and water rights to Reclamation through April 5, 2055, as part of the LCR MSCP. Portions of the land and water are leased short term to farmers for crop production.

1.4 Water Availability

For the long term, the AGFD has a 2,719 acre-foot per year (table 1) diversionary right of 4th priority Colorado River water available, which includes a Reclamation 4th priority entitlement for 118.94 acre-feet per year.

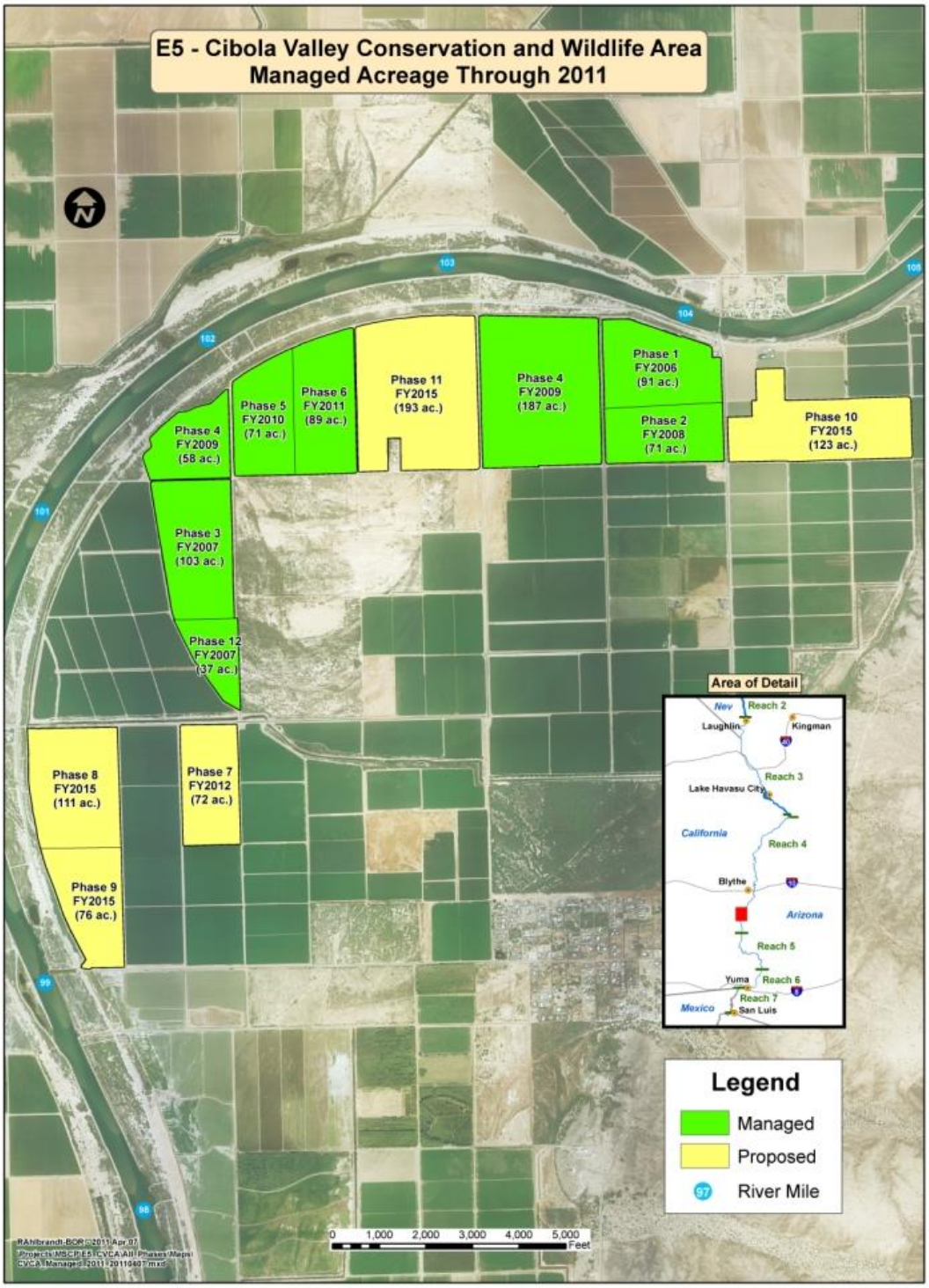

Figure 1.—Phase map of the CVCA.

Table 1.—Water entitlement and priority

Term	Entitlement (acre-feet/year)	Priority
Long term		
AGFD entitlement	2,719	4th
Reclamation entitlement	119	4th
Long-term total	2,838	
Short term		
Multi-year lease from MCWA entitlement	5,997	4th
Multi-year lease from MCWA entitlement	750	5th
Multi-year lease from MCWA entitlement	1,000	6th
Short-term total	7,747	

Additionally, a 7,747 acre-foot diversionary right of combined 4th, 5th, and 6th Priority Colorado River water is currently available for lease each year from the MCWA to the LCR MSCP to accommodate the higher water diversions required to establish habitat.

1.5 Agreements

A lease was signed in 2007 between Reclamation and the AGFD that ensures availability of land and water resources for the 50-year term of the program.

1.6 Public Use

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

1.7 Law Enforcement

The AGFD is responsible for law enforcement at the CVCA. Reclamation continues to work with the AGFD 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 and Law Enforcement Strategy was finalized in January 2010 and is posted on our Web site. The LCR MSCP will continue to work with local State and Federal fire agencies to reduce the risk of wildland fires and maintain clear lines of communication among agencies.

2.0 HABITAT DEVELOPMENT AND MANAGEMENT

2.1 Planting

Phase 6 is 89 acres. It was first planted with winter wheat in February 2010 at the request of the AGFD. This wheat provides a cover crop to help keep the site weed free and serves as wildlife forage in the fall. Phase 6 was then planted in March 2011 with approximately 14,000 honey mesquite trees (*Prosopis glandulosa* "*torreyanna*"). Atriplex (*Atriplex lentiformis*) is scheduled to be planted or seeded in 3 years. Phase 6 was divided into four fields, or checks, to assist with the control of irrigation water (figure 2).

Phase 6 native plants were planted in 2-foot-deep furrows with an in-line spacing of approximately 15 feet and a furrow row spacing of approximately 18 feet. One-gallon potted honey mesquites were hand-planted in the trough of the furrow. This wide furrow spacing saves irrigation water and provides adequate room for a tractor to disk invasive salt cedar and volunteer cotton which grow between the planted furrows (figure 3).

2.2 Irrigation

2.2.1 Method

Flood irrigation was used to provide water to each field. Irrigation amounts applied in each phase were based on monthly invoices received by the Cibola Valley Irrigation and Drainage District. Irrigation scheduling was determined by the contract farmer along with input from Reclamation.

2.2.2 Water Applied

Table 2 depicts the number of acre-feet of water applied to each phase in calendar year 2011. These values are based on monthly invoices received by the Cibola Valley Irrigation and Drainage District.

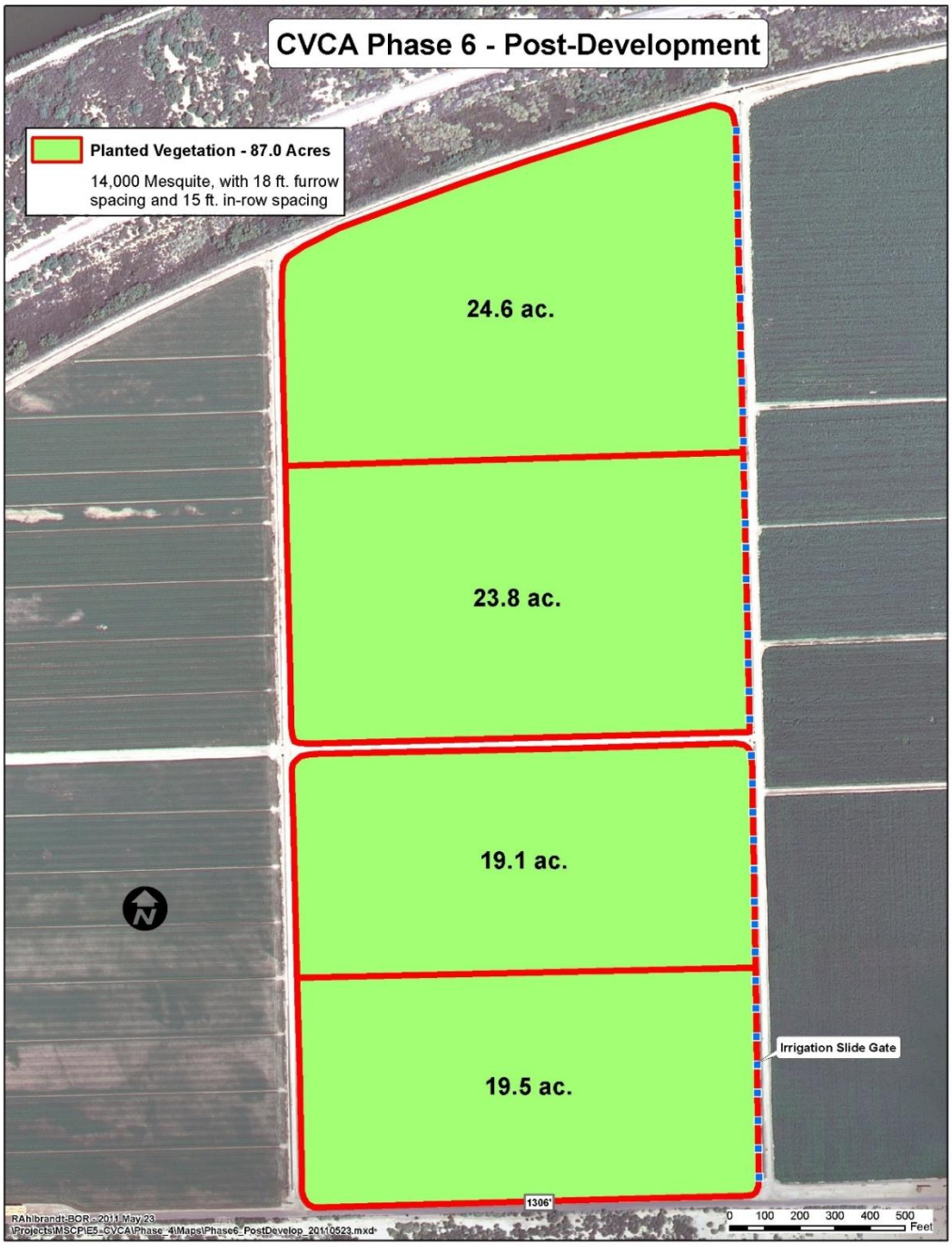

Figure 2.—As-built of Phase 6.

When calculating the volume of water applied to each phase during 2011, it is most accurate to combine the volumes delivered to Phases 1 and 2, as exactly how much water reached the individual phases is unknown.

Figure 3.—Planting in furrows.

2.3 Site Maintenance

There were no major improvements conducted at the conservation area; however, routine maintenance, such as road grading, was completed.

2.4 Management of Existing Land Cover and Habitat

2.4.1 Pest Management

2.4.1.1 Mesquite in Phase 5

During the spring time expected green-up, some mesquites in Phase 5 appeared to be dead or dying (figure 4). Upon further examination, it appeared that they had cankers (figure 5) and tip dieback (figure 6). The mesquites were treated with a fungicide.

Table 2.—Irrigation water applied in 2011

	2011							
	Phase 1: 86 acres (acre-feet applied)[1]	**Phase 2: 70 acres (acre-feet applied)[1]**	**Phase 3: 101acres (acre-feet applied)[1]**	**Phase 4: 60 acres (acre-feet applied)[1]**	**Phase 4 Ground Stabilization: 175 acres (acre-feet applied)[1]**	**Phase 5: 61 acres (acre-feet applied)[1]**	**Phase 6: 89 acres (acre-feet applied)[1]**	**Phase 7: 72 acres (acre-feet applied)[1]**
March	110.10	15.50	95.80	58.10	207.10	0.00	41.30	132.60
April	148.60	36.70	87.20	39.90	249.70	45.70	83.10	130.50
May	129.70	44.50	90.00	0.00	0.00	0.00	0.00	85.90
June	135.60	51.20	101.30	0.00	0.00	0.00	0.00	0.00
July	126.00	15.70	98.80	0.00	0.00	0.00	0.00	0.00
August	123.50	41.80	116.00	0.00	0.00	0.00	25.40	0.00
September	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
October	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
November	93.00	48.60	102.40	40.60	150.50	48.50	23.20	50.10
Acre-feet / year	866.50	254.00	691.50	138.60	607.30	94.20	173.00	379.10
Acre-feet / acre of phase	10.13	3.65	6.85	2.31	3.48	1.56	1.95	5.37

[1] Acre-feet applied represents the quantity of irrigation water in acre-feet applied to each phase.

Figure 4.—Mesquites struggling in Phase 5.

Figure 5.—Mesquite cankers.

Figure 6.—Mesquite tip dieback.

During the late summer, aphids (Mesquite Psyllids) were detected on younger mesquites in Phase 6 (figure 7). These insects were eating the green leaves on the younger mesquites, causing significant stress to the trees. An insecticide called "Intruder" was applied, with positive results.

Figure 7.—Aphids infesting younger mesquites.

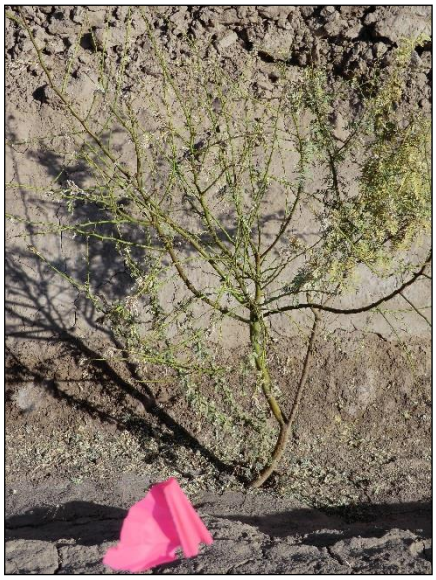

Figure 8.—Mesquite effects of aphids.

Field crews continued to control morning glory, volunteer cotton, and salt cedar with hand tools. This method of using crews proves to be an effective method of controlling invasives as they germinate. The crews remove these weeds and other invasives from the fields twice a year: in the spring and in the fall.

3.0 MONITORING

3.1 Avian Monitoring

Single species surveys were conducted for the southwestern willow flycatcher and yellow-billed cuckoo. General avian surveys were conducted for six LCR MSCP avian covered species and all non-covered avian species, and a Monitoring Avian Productivity and Survivorship Station (MAPS) was operated.

3.1.1 Southwestern Willow Flycatcher Surveys

Restoration sites at the CVCA were surveyed six times during 2011. All birds detected at the CVCA detected before June 15 were considered to be migrants and not the covered southwestern (*extimus*) subspecies.

- Phase 1 – Nine willow flycatchers were detected in May and three in June. The site was surveyed six times, totaling 16.0 observer hours.

- Phase 2 – Eleven willow flycatchers were detected in May. The site was surveyed six times, totaling 16.0 observer hours.

- Phase 3 – Sixteen willow flycatchers were detected in May and two in June. The site was surveyed five times, totaling 14.0 observer hours.

- One willow flycatcher was captured during MAPS banding operations in May.

3.1.2 Yellow-billed Cuckoo Surveys

Yellow-billed cuckoos were detected in CVCA Phases 1, 2, and 3 during all five surveys conducted. There were 14 total captures of cuckoos at the CVCA in 2011. Nine birds were fitted with new bands, two were returning birds banded in 2010, and three were within-year recaptures. Nine were also fitted with transmitters to track within-year movements, and three were fitted with geolocators to track between-year movements. There were six nests found in CVCA Phase 1 and three nests in CVCA Phase 2. Thirteen nestlings fledged from the nine nests. All fledglings were banded with U.S. Fish and Wildlife Service numbered bands as well as unique color band combinations for future identification.

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. All plots were surveyed using the rapid area search method, and two plots in Phase 1 were also surveyed using the intensive method. The Sonoran yellow warbler (*Dendroica petechia sonorana*) and summer tanager (*Piranga rubra*) were confirmed breeding (table 3). This is the first year summer tanagers were recorded breeding at the CVCA.

Table 3.—LCR MSCP avian species detected at the CVCA in 2011

LCR MSCP covered species detected	Number of confirmed breeding pairs
Sonoran yellow warbler	11
Summer tanager	3

A bird banding station was operated from May 1 through July 30. The following LCR MSCP covered species were captured: two yellow warblers and two summer tanagers. The two yellow warblers were recaptures originally captured at the Nature Trail in 2010. Summer tanagers were present all summer and presumed breeding for the first time at the CVCA.

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 CVCA and to determine the age, sex, and reproductive status of the bats that could be captured.

3.2.1.1 Acoustic Surveys

Acoustic driving surveys were conducted in each of the habitat creation areas in May, July, and September to document the presence of bat species using the conservation area. Western red bat, western yellow bat, and California leaf-nosed bats were detected.

Bat activity is expressed in call minutes, which indicate that a given species is present if it is recorded at least once within a 1-minute period. Table 4 lists the number of call minutes for the four focal bat species. There were two transects in May, two transects in July, and one transect in September.

Table 4.—Total number of bat call minutes recorded for the four focal species at the CVCA in 2011

Species	May	July	September	Total
Western red bat	3	1	0	4
Western yellow bat	0	2	1	3
California leaf-nosed bat	0	1	0	1
Townsend's big-eared bat	0	0	0	0
All other species	12	111	92	215
Total call minutes	**15**	**115**	**93**	**223**

The acoustic driving surveys were discontinued after 2011 because the method did not detect uncommon species; it was only in one location for a very short amount of time.

3.2.1.2 Capture Surveys

Bat capture surveys were conducted at CVCA Phase 1 once a month from May – September to determine the age, sex, and reproductive status of bats captured in the conservation area. The number of red and yellow bats captured increased in 2011. The Townsend's big-eared bat was the only LCR MSCP species not captured (table 5).

Table 5.—Total number of bats captured at the CVCA from 2009–11

Species	2009	2010	2011
Western yellow bat	5	4	14
Western red bat	3	0	7
California leaf-nosed bat	1	0	3
Townsend's big-eared bat	0	0	0
All other species	112	177	237
Total	121	181	261

3.2.2 Rodent Monitoring

Four Colorado River cotton rats (*Sigmodon arizonae plenus*) were captured during 30 trap nights in the CVCA in the spring of 2011: 3 in Phase 1 and 1 in Phase 3 (figure 9). A trap night is calculated as one trap site out over a night. A total of 13 percent of the traps set out over night at the CVCA resulted in a Colorado River cotton rat capture.

Figure 9.—Habitat where Colorado River cotton rats were detected at the CVCA.

3.3 MacNeill's Sootywing Skipper Monitoring

MacNeill's sootywing (*Hesperopsis gracielae*) surveys at the CVCA were conducted for adult sootywings during April – September 2011. Four sootywings were detected at CVCA 4 – west during 2011. The current protocol is currently being evaluated, and a standardized survey protocol will be developed for use in 2015.

4.0 HABITAT CREATION CONSERVATION MEASURE ACCOMPLISHMENT

4.1 Vegetation Monitoring

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

In Phases 1–3, tree density in cottonwood willow (cottonwood, Goodding's willow, and coyote willow) habitat was 0–6,400 trees per acre. The shrub

(quailbush, willow baccharis, desert broom, and salt cedar) density was 0–64 shrubs per acre. Cottonwood and Gooding's willow tree height average ranges were from over 4.9 to over 54 feet. The average canopy closure ranged from 0–100 percent.

4.2 Evaluation of the Cibola Valley Conservation Area

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

In 2011, the CVCA was classified using the Anderson and Ohmart vegetation classification system (Anderson and Ohmart 1976, 1984a, 1984b). The CVCA supports 71 acres of cottonwood-willow structure type I, 194 acres of cottonwood-willow structure type II, 129 acres of honey mesquite structure type IV, and 187 acres of honey mesquite type V. Eight species with habitat creation goals have creditable acres in this reporting cycle at the CVCA. These species (including their corresponding conservation measure acronym) are: western red bat (WRBA2), yellow-billed cuckoo (YBCU1), elf owl (ELOW1), gilded flicker (GIFL1), Gila woodpecker (GIWO1), vermilion flycatcher (VEFL1), Sonoran yellow warbler (YWAR1), and summer tanager (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 for 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	265	0	0	265	256	265	265	265	0	265	265	0

[1] Although the CVCA 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 CVCA will be evaluated.
[2] Reclamation is in the process of determining foraging and roosting habitat for the western yellow bat. Once this has been determined, the CVCA will be evaluated.
[3] The preliminary data suggest the Colorado River cotton rat 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 this species.
[4] CVCA 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. Also, the CVCA cottonwood-willow structure type was classified as I and II, thus not meeting the BEVI1 habitat creation conservation measure goal of cottonwood-willow III–IV.

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 (Reclamation 2007). Under the Adaptive Management Program, habitat creation sites will be assessed for biological effectiveness and whether they fulfill the conservation measures outlined in the Habitat Conservation Plan for 26 covered species and 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 CVCA, recommendations may be made through the adaptive management process for site improvements in the future. At this time, there are no adaptive management recommendations for the site.

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