



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Small Mammal Colonization at Habitat Creation Areas along the Lower Colorado River: 2010



May 2010

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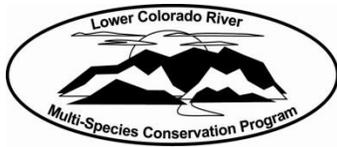
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ACRONYMS AND ABBREVIATION

CVCA	Cibola Valley Conservation and Wildlife Area
FY	fiscal year
ha	hectare(s)
km	kilometer(s)
LCR	lower Colorado River
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
m	meter(s)
mi	mile(s)
NWR	National Wildlife Refuge
PVER	Palo Verde Ecological Reserve
Reclamation	Bureau of Reclamation
UNLV	University of Nevada, Las Vegas

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ABSTRACT

The Bureau of Reclamation is the lead agency for the Lower Colorado River Multi-Species Conservation Program (LCR MSCP). One of the goals of the LCR MSCP is to create habitat for species covered under the Habitat Conservation Plan. Colorado River cotton rat (*Sigmodon arizonae plenus*) and Yuma hispid cotton rat (*Sigmodon hispidus eremicus*) are listed as covered species. Monitoring small mammals at current and future habitat creation sites will allow Reclamation to determine whether *Sigmodon* are colonizing these sites. Trapping continued at five habitat creation sites in fall 2009 and spring 2010. *Sigmodon* spp. has been documented at four of the five sites. *Sigmodon arizonae* continues to maintain large populations at Cibola National Wildlife Refuge Nature Trail and near the Palo Verde Ecological Reserve. Trapping will continue to focus on areas that have a dense herbaceous understory or have been specifically planted to provide *Sigmodon* habitat. A protocol optimized to document presence of these rare species and obtain population demographic information is being developed and will be incorporated into post-restoration monitoring in fiscal year 2012.

INTRODUCTION

The Bureau of Reclamation (Reclamation) is the lead implementing agency for the Lower Colorado River Multi-Species Conservation Plan (LCR MSCP). The LCR MSCP is a 50-year cooperative Federal-State-Tribal-County-Private endeavor that will manage the natural resources of the lower Colorado River (LCR) watershed, provide regulatory relief for the use of water resources of the river, and create native habitat types along the LCR. Implementation of the LCR MSCP began in October 2005. In order to restore native habitats, the LCR MSCP will create the following cover types: (1) 5,940 acres (2,404 hectares [ha]) of cottonwood-willow (*Populus fremontii*/*Salix* spp.), (2) 1,320 acres (534 ha) of honey mesquite (*Prosopis glandulosa*), (3) 512 acres (207 ha) of marsh, and (4) 360 acres (146 ha) of backwaters.

One of the purposes for these efforts is to provide habitat for plant and animal species covered under the Habitat Conservation Plan, including Yuma hispid cotton rat (*Sigmodon hispidus eremicus*) and Colorado River cotton rat (*Sigmodon arizonae plenus*). Of the habitat to be created, 125 acres (50.6 ha) of habitat have been designated for *Sigmodon arizonae plenus*, and 76 acres (30.8 ha) of habitat have been designated for *Sigmodon hispidus eremicus*. The range of these two species does not overlap. Those captured south of the Trigo and Chocolate Mountains in the area of Imperial National Wildlife Refuge (NWR) and south to the Yuma, Arizona, area are Yuma hispid cotton rats. Those captured north of the aforementioned mountain ranges are Colorado River cotton rats. The historic northernmost records of the Colorado River cotton rat is an area just south of Laughlin, Nevada (Hall 1946; Bradley 1966). Currently, Reclamation has not found this species farther north than Havasu NWR near Needles, California.

Reclamation is increasing its understanding of restoration science through an adaptive management approach; therefore, monitoring of current habitat creation/restoration sites is crucial. A portion of the research conducted under Work Task C-27 is dedicated to developing a new monitoring protocol for restoration sites that have confirmed *Sigmodon* presence or have habitat planted specifically for *Sigmodon*. Using an adaptive management approach combined with long-term monitoring of restoration sites will allow the continued persistence of these two listed LCR MSCP species. Beginning in fiscal year (FY) 2010, permanent long-term trapping grids will have been established at or near restoration sites with confirmed *Sigmodon* presence. Some of the data collected under Work Task C-27 is presented here as well as in the C-27 year-end report.

STUDY AREAS

Beal Lake Riparian and Marsh Project

The Beal Lake site is adjacent to Beal Lake and Topock Marsh, inside the Havasu NWR on the Arizona side of the Colorado River (figure 1). It is a two-phase habitat creation project that was initiated in the spring of 2003. The 100-acre (40.5-ha) site is a joint effort between Reclamation and the Havasu NWR, with the purpose of evaluating riparian restoration techniques for the improvement of habitat for terrestrial and marsh LCR MSCP covered species. The site was planted with Fremont cottonwood, Goodding's willow (*Salix gooddingii*), coyote willow (*Salix exigua*), honey mesquite (*Prosopis glandulosa*), and screwbean mesquite (*Prosopis pubescens*). Currently, the site contains areas of all of the species listed above. Arrowweed (*Pluchea sericea*) has begun to fill in the open areas and edges of most of the plots in the site.

Palo Verde Ecological Reserve

Palo Verde Ecological Reserve (PVER) is located about 5 miles (mi) (8 kilometers [km]) north of Blythe, California, along the California side of the Colorado River (figure 1). It will encompass up to 1,300 acres (526 ha) when completed. The acreages will be separated into nine different phases, with one phase being planted every year. In the spring of 2006, a 31-acre (12.5-ha) nursery (Phase 1) was planted. Phase 2 was farmed for alfalfa (*Medicago sativa*) prior to conversion to native riparian habitat. In the spring of 2007, Phase 2 was planted with 80 acres (32.4 ha) of cottonwood, willow, and other riparian plants. Phase 3 was planted in the spring of 2008 and is also planted with cottonwood-willow habitat types. Phase 4 was planted in 2009 and contains mostly cottonwood-willow, with one plot of mesquite and a mix of native grasses.

Cibola Valley Conservation and Wildlife Area

Cibola Valley Conservation and Wildlife Area (CVCA) is located in Arizona adjacent to the Colorado River about 15 mi (24 km) south of Blythe, California (figure 1). It will encompass about 1,019 acres (412 ha) when completed. CVCA involved a multi-phase program in which the first three phases of planting have been identified: Fremont cottonwood, Goodding's willow, coyote willow, and other riparian plant species. Phase 1 was planted in the spring of 2006 and contains a 22-acre (9-ha) nursery and a 64-acre (26-ha) area of cottonwood-willow habitat. Phase 3 was planted in the spring of 2007 and contains over 80 acres (32 ha) of cottonwood-willow planted in different combinations. Phase 3 also includes 11 acres (4.5 ha) of *Baccharis* spp. mixed with some cottonwood and willow. Phase 2 was planted in the spring of 2008.

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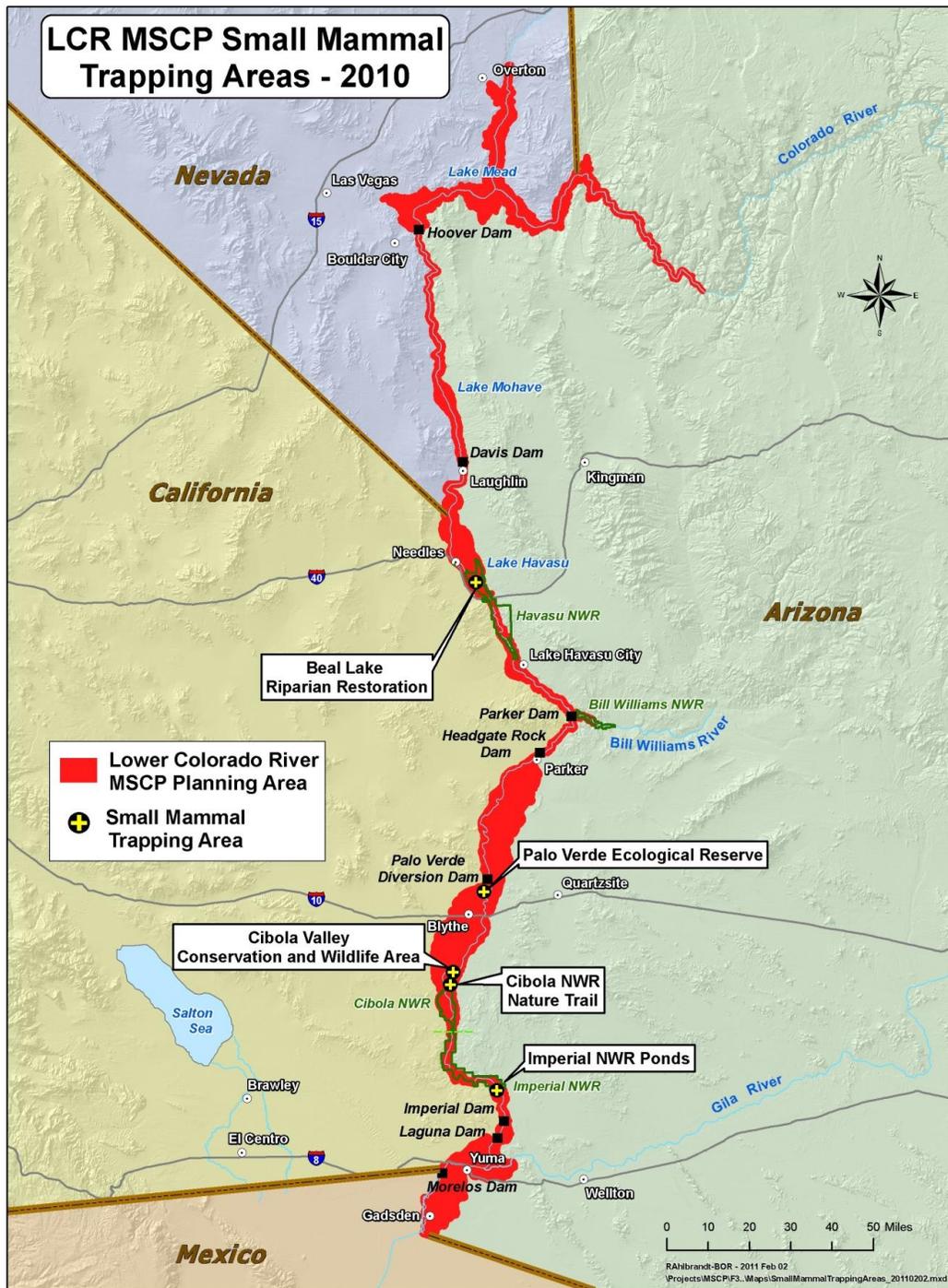


Figure 1.—Small mammal trapping locations.

Most of Phase 2 is planted with cottonwood-willow habitat, with one small area of honey mesquite and quailbush (*Atriplex lentiformis*). Phase 4 was planted with

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mesquite and quailbush. In addition to the habitat creation areas, a 194-acre (78.5-ha) area planted in alfalfa, which will be converted into habitat in the future, was monitored to obtain baseline data of a managed agricultural field.

Cibola National Wildlife Refuge Unit 1 Conservation Area

The Cibola NWR Unit 1 Conservation Area is located on Cibola NWR, which is located along the LCR south of Interstate 10 near Blythe, California, and Cibola, Arizona. The refuge was established in 1964 to provide habitat for wildlife (U.S. Fish and Wildlife Service 2007). The refuge is divided into six managements units. Unit 1 is in the northernmost area of the refuge. The conservation area encompasses about 900 acres (364 ha) of Unit 1 and contains undeveloped areas, agricultural fields, and fields being used as research by Reclamation for the LCR MSCP (Garnett and Calvert 2007). One of these fields is the Nature Trail, which is a 34-acre (14-ha) section planted with cottonwood, willow, and mesquite in three distinct areas separated by trails. In the mesquite and willow areas, a dense understory of Johnsongrass (*Sorghum halepense*) and *Baccharis* spp. has become established.

Imperial Ponds Conservation Area

The Imperial Ponds Conservation Area is located on the Imperial NWR, east of the Colorado River, near River Mile 59, just north of Martinez Lake. The project area is within a portion of the refuge known as the Intensive Management Area, which consists of fields and marshes that are managed for waterfowl, marsh birds, native fish, riparian obligate bird species, and other wildlife (Lenon and Dodge in prep.). The entire Intensive Management Area is restricted from public access. Currently, the six ponds have been dredged and excavated material from the ponds has been spread across some of the fields. These fields will be planted for waterfowl, and an additional 34 acres (14 ha) of cottonwood and willow habitat will be planted adjacent to the nursery as part of the Imperial Ponds Conservation Area (Lenon and Dodge in prep.). Most of the edges of the site are edged in dense riparian vegetation including common reed (*Phragmites australis*), *Baccharis* spp., mesquite (*Prosopis* spp.), and some cottonwood and willow trees.

METHODS

Traps were first placed in areas with the highest density of vegetation at ground level, which is known to be the preferred habitat of *Sigmodon* spp. along the LCR

and elsewhere (Andersen and Nelson 1999). Once the densest habitats had been sampled, other less densely vegetated habitats were sampled. These surveys are focused on finding *Sigmodon* spp. All other captures are incidental to our main focus; therefore, the numbers of individuals of each species (including *Sigmodon*) reported here should be interpreted with caution.

Traps were baited with a mixture of oats, peanut butter, and vanilla. A small handful of cotton was also added to each trap to provide insulating cover for any animal trapped overnight. Sherman live traps were used, which are triggered by the animal stepping on a pressure plate that then closes a trap door behind the animal. Traps were set out in transects of 30 traps per transect whenever possible. Transects were then set out at 10-meter (m) intervals, with trap stations set every 10 m. Two traps were set at each station.

Trapping focused on areas of each site where cotton rat presence was most likely. This involves subjective opinion in where trapping effort will be focused. The goal of this project at this time is to determine if *Sigmodon* are present in an area and not to establish a systematic unbiased sample on our restoration sites. Research and design during FY11 is focused on developing a protocol for sampling rare animals with specific habitat requirements (such as *Sigmodon*) that will allow for systematic sampling to detect presence at restoration sites that will be cost effective and systematically sound (see Work Task C-27). When not using the grid method, transects were placed so that the entire focus area was saturated with traps. Because the focus of this effort is to find cotton rats, areas where it would be highly unlikely to find them were not trapped. These areas include bare ground and under dense high (>5 m) canopy.

Traps were set out in the afternoon and collected the following morning after sunrise. Captured animals were transferred into a clear plastic bag and identified to species. Animals were identified using a key to local small mammal species provided by the University of Nevada, Las Vegas (UNLV), a key included in the Mammals of California field guide (Jameson and Peeters; 2004 Hoffmeister (1986). Field notes were recorded in a notebook and include, at a minimum, the location of the transects, what ground cover/macrohabitat was found in the trapping area, number of transects and traps, and number of each species captured. Voucher specimens were taken when appropriate, and all other animals were released back into the trapping area once identification was made.

RESULTS

A list of scientific and common names for all species captured during this project can be found in appendix 1.

Beal Lake Riparian and Marsh Project

The Beal Lake site was sampled in October 2009, for a total of 74 trap nights. Trapping was focused around fields K–M. The soils were very sandy, with Bermuda grass creating a relatively dense grassy layer interspersed with arrowweed. Other areas were dominated by cottonwoods. No *Sigmodon* were captured at the Beal Lake site.

History of Trapping at the Beal Lake Site

No cotton rats have been captured since 2006. In 2006, 1,415 traps were set, with a total of 55 small mammals captured. In 2007, 575 traps were set, with a total of 81 small mammals captured. A total of 600 traps were set in 2008, with 32 total captures of small mammals (table 1). One new species, the southern grasshopper mouse (*Onychomys torridus*), was captured in 2008, bringing the total species captured at the Beal Lake site to nine. A total of 225 traps were set in 2009. Arrowweed was the dominant cover where most captures occurred. Pocket mice (*Chaetodipus penicillatus*) and *Peromyscus* were the most commonly captured species.

Table 1.—Summary of all captures at the Beal Lake site

Species	FY06	FY07	FY08	FY09	FY10
<i>Sigmodon arizonae</i>	1	0	0	0	0
<i>Peromyscus eremicus</i>	8	42	17	7	11
<i>Peromyscus maniculatus</i>	13	9	6	9	0
<i>Chaetodipus penicillatus</i>	17	17	6	2	6
<i>Dipodomys merriami</i>	15	6	2	3	0
<i>Mus musculus</i>	0	4	0	2	2
<i>Neotoma albigula</i>	0	2	0	0	0
<i>Sylvilagus audubonii</i>	0	1	0	0	0
<i>Onychomys torridus</i>	0	0	1	0	0
Unknown species	1	0	0	0	0
Totals	55	81	32	23	19

Palo Verde Ecological Reserve

Sigmodon arizonae have been detected in Phase 4 where a large amount of weeds, including alfalfa, Amaranth, Atriplex, and other non-native species have created a dense shrubby, grassy layer approximately 0.5–1 m high. A total of 78 trap nights

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resulted in two males being captured and marked in this plot. This plot is directly across the dirt road from the accretion bench where a large population of *Sigmodon* is currently being monitored under Work Task C-27.

The grassy area on the edges of the fields at the border of Phases 2 and 3 was trapped with less effort (45 trap nights). This area is dominated by thick *Cynodon* (~30 centimeters), *Baccaris*, and *Conyza*. Only *Mus musculus* was captured in this area.

History of Trapping at Palo Verde Ecological Reserve

In 2006, Phase 2 was trapped (195 trap nights) while it was still being farmed for alfalfa, with no captures. In the spring of 2007, Phase 2 was trapped again (255 trap nights) when it was a barren field prior to tree planting, and two deer mice (*Peromyscus maniculatus*) were captured. In the fall of 2007, Phase 2 was trapped (120 trap nights) as well as two additional areas. The edge of a drainage ditch along the west side of Phase 2 was trapped (59 trap nights), and the nursery was also trapped (60 trap nights). In 2008, 370 traps were set in Phase 2, and 40 traps were set in Phase 3. In 2009, 240 traps were set for 1 night. A summary of captures for each year can be found in table 2. A total of six species have been captured at PVER, with the house mouse (*Mus musculus*) the most captured species. The herbaceous understory of the trapping areas was a mixture of alfalfa, Bermuda grass, and other grass species. No cotton rats were captured within the boundary of PVER prior to 2010; however, as part of the UNLV study, traps were set adjacent to PVER along a low bench of land that is partially inundated on the river (figure 2). There is a population of *Sigmodon arizonae* on this island that is still present. The habitat in this area is dominated by Spanish false fleabane (*Pulicaria paludosa*), a non-native bushy forb that grows to approximately 1 m high. Interspersed within the *Pulicaria* are areas of dense grasses, including Bermuda grass (*Cynodon dactylon*) and to a lesser extent dallis grass (*Paspalum dilatatum*). The areas surrounding the shrubby area are a mixture of bulrush (*Scirpus* spp.) and cattail (*Typha* spp.) that are inundated on a regular basis.

Table 2.—Summary of all captures at PVER

Species	2007	2008	2009	2010
<i>Mus musculus</i>	27	60	30	40
<i>Peromyscus maniculatus</i>	2	6	4	1
<i>Peromyscus eremicus</i>	8	1	0	3
<i>Chaetodipus penicillatus</i>	6	5	0	0
<i>Reithrodontomys megalotus</i>	0	0	0	2
<i>Sigmodon arizonae</i>	0	0	0	2
Totals	43	72	34	48

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Figure 2.—Area adjacent to PVER where cotton rats are currently being monitored.

Cibola Valley Conservation and Wildlife Area

A single male *Sigmodon arizonae* was captured at CVCA in March 2010, with 59 trap nights. The specimen is vouchered under SAN393 and will be deposited at the Museum of Southwestern Biology (catalog number will be entered when available). The capture was on the east side of a field in Phase 3 in an opening with few cottonwoods and dominated by low (~0.75-m-tall) grassy and shrubby vegetation, including a dead sedge (unknown species), *Baccaris*, *Conyza*, and other dead grassy vegetation in a sparsely planted area of cottonwood (figure 3).

History of Trapping at Cibola Valley Conservation and Wildlife Area

In 2006, trapping was conducted in the spring (484 trap nights) before planting occurred on Phase 1, and then again after the first growing season in the fall (255 trap nights). Five deer mice were captured prior to planting, and only one was captured in the fall. The control alfalfa area was also trapped in 2006 (195 trap nights), with no captures. In the spring of 2007, there were no captures in Phase 1 (300 trap nights), three captures in the control area (300 trap nights), and one capture in Phase 3 pre-planting (150 trap nights). One of the control area captures was a Merriam's kangaroo rat (*Dipodomys merriami*); the others were deer mice. In the fall of 2007, there were 31 captures in Phase 1 (195 trap nights),

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Figure 3.—Picture of habitat where a single *Sigmodon arizonae* was captured at CVCA.

no captures in the control area (45 trap nights), and four captures in Phase 3 (225 trap nights). In 2008, 450 traps were set in Phase 1, 150 traps in Phase 2, 450 traps in Phase 3, and 105 traps in the control field, with a total of 85 captures (table 3). Phase 2, which was the last phase planted, had the highest capture rates for all four species captured in 2008. Phases 2 and 3 were trapped in 2009, for a total of 195 trap nights. A total of six species have been captured at CVCA.

Table 3.—Summary of all captures at CVCA

Species	2006	2007	2008	2009	2010
<i>Mus musculus</i>	0	27	24	4	0
<i>Peromyscus maniculatus</i>	6	9	31	4	0
<i>Peromyscus eremicus</i>	0	1	27	0	0
<i>Chaetodipus penicillatus</i>	0	1	3	0	0
<i>Dipodomys merriami</i>	0	1	0	0	0
<i>Sigmodon arizonae</i>	0	0	0	0	1
Totals	6	39	85	8	0

Cibola NWR Unit 1 – Nature Trail

Cibola Unit 1 was surveyed concurrently with a long-term demographic and vegetation study under Work Task C-27. One hundred and twenty traps were set for 4 nights at permanent trapping stations in fall 2009 and spring 2010, for a total of 960 trap nights. Sixty-three *Sigmodon arizonae* were captured primarily in the dense Johnson grass that had invaded the open areas between mesquite trees in the center of the field.

History of Trapping at Cibola NWR Unit 1

Trapping was conducted in 2007, and one *Sigmodon* was recorded. Trapping has since been intermittent, primarily to collect DNA samples in 2008. A long-term trapping grid was established in fall 2009 and is expected to continue until at least spring 2012 (table 4).

Table 4.—Summary of all captures at Cibola NWR Unit 1

Species	2007	2010
<i>Mus musculus</i>	0	0
<i>Peromyscus maniculatus</i>	1	65
<i>Peromyscus eremicus</i>	4	19
<i>Chaetodipus penicillatus</i>	2	0
<i>Neotoma albigula</i>	0	4
<i>Sigmodon arizonae</i>	1	63
<i>Reithrodontomys megalotus</i>	0	94
Totals	8	245

Imperial Ponds Conservation Area

A total of 68 trap nights resulted in two *Sigmodon hispidus* being captured at Imperial Ponds. Trapping was conducted within the “cottonwood forest” (15 traps) and in the tract of habitat to the north of the road next to the cottonwoods (53 traps) in a dense mixture of *Phragmites*, *Prosopis pubescens*, *Pluchea*, *Typha*, and *Baccharis*. Both *Sigmodon* were captured in the mixture of plant species on the north side of the road.

History of Trapping at Imperial Ponds

In 2006, 75 total traps were set out at the cottonwood-willow nursery and an area across the road from the nursery, with a total of five small mammals captured. In 2007, a total of 297 traps (149 in March and 148 in October) were set out around the perimeter of most of the conservation area, and 60 rodents were captured. No cotton rats were captured in 2006, but six were captured in 2007 across the road from the nursery in a dense stand of vegetation dominated by common reed. One additional juvenile cotton rat was captured in the spring across the road from bare fields in a sparse mixture of common reed, arrowweed, and *Baccharis* spp. In 2008, 59 traps were set in the area where cotton rats had been captured in 2007. A total of 44 rodents were captured, including 1 cotton rat (table 5). No trapping was conducted in 2009. A total of seven species have been captured at Imperial Ponds.

Table 5.—Summary of all captures at Imperial Ponds

Species	2006	2007	2008	2010
<i>Sigmodon hispidus</i>	0	6	1	2
<i>Peromyscus eremicus</i>	4	34	37	8
<i>Peromyscus maniculatus</i>	0	1	0	0
<i>Chaetodipus penicillatus</i>	0	16	4	1
<i>Neotoma albigula</i>	0	2	0	3
<i>Reithrodontomys megalotis</i>	1	1	0	0
<i>Mus musculus</i>	0	0	2	1
Totals	5	60	44	15

DISCUSSION

Rodent trapping and monitoring for Reclamation at habitat creation sites as part of the LCR MSCP has been ongoing since 2006. Reclamation’s primary focus during these surveys has been on the presence or absence of *Sigmodon* spp., therefore, even relative species abundance may not be correctly represented in these surveys. Traps were not set out equally among habitat types, and the number of traps varied with the size of available habitat in which *Sigmodon* spp. might be found. Because of this, true comparisons between sites cannot be made in regards to small mammal assemblages. This issue is being addressed by Reclamation personnel. Permanent trapping grids with the intent of estimating population size of all mammals captured are established at sites where *Sigmodon* are present, and more information on the study design and preliminary results can be obtained under Work Task C-27. A two-stage protocol that incorporates

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presence-only sampling initially, then once presence is documented, establishes a separate population monitoring methodology, is expected to be implemented in FY12.

One *Sigmodon* spp. was captured at the Beal Lake site in 2006, but none have been captured since. Trapping outside of the Beal Lake site has resulted in the discovery of Colorado River cotton rats at Pintail Slough in Havasu NWR. This site was an older attempt at restoration of cottonwood-willow habitat. It is currently a mix of native and non-native grasses, forbs, and trees, and there appears to be a stable population of *Sigmodon arizonae* present. Planting appropriate habitat at the Beal Lake site is therefore likely to result in colonization by *Sigmodon arizonae* because of the close proximity of this population. Habitat that should be considered for the Beal Lake site, if increasing the probability of capturing *Sigmodon* is a priority, could include open canopy in between large cottonwoods with *Chlorocantha* and native grasses, similar to what is present at Pintail Slough, for continuity and aesthetics, although other habitat (including marsh vegetation) may work equally well. The Pintail Slough population is currently being monitored in a broader habitat analysis of *Sigmodon* spp. along the river. For more information and a more detailed discussion, see the C-27 year-end report.

PVER and CVCA are very similar both in planting design and in being agricultural conversions. Because trapping prior to habitat conversion has resulted in few captures, it is recommended that no additional trapping occur in agricultural fields prior to planting. Also, as the mass-planted cottonwood and willow trees have grown and shaded out the herbaceous understory, captures have decreased (Phase 1 on figure 3). The capture rates in these dense stands of riparian trees are similar to capture rates in other older habitat creation areas that Reclamation has trapped. Future trapping at these two sites will focus on areas where there is still a dense herbaceous understory. In cottonwood and willow plantings, this typically means that traps will be placed on edges of these stands or in gaps of trees where grassy and shrubby vegetation occurs. This type of scenario is where a single *Sigmodon* was captured in CVCA Phase 3.

Future habitat creation at the PVER site includes planting some areas with native herbaceous plants with minimal planting of mesquite trees, which will allow enough sunlight for successful establishment of a native herbaceous understory. Trapping in these phases will focus on areas where the native plants successfully grow into a dense understory. In 2009, native grass was planted in a couple of plots in Phase 4 of PVER that is next to a large source population of *Sigmodon*. *Sigmodon* have since been detected in this phase; however, the vegetation is largely non-native, and the relatively few captures have been exclusively males, suggesting these individuals are dispersing from the source population and may or may not actually be residents. Those individuals were PIT tagged. Future trapping will help clarify whether a consistent, stable population is present or whether this area is a population sink.

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Sigmodon hispidus are still present at Imperial Ponds; however, they appear to be uncommon. In 2010, alkali sacaton and *Baccharis* were planted around the ponds. These strips of shrubby and grassy vegetation will be monitored once established because they may provide habitat structure that is preferred by *Sigmodon*. At this time, no *Sigmodon* have been recorded in alkali sacaton although limited attempts at surveying that habitat have been made.

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APPENDIX 1

Scientific and Common Names of All Species Captured
during this Project

Scientific name	Common name
<i>Sigmodon hispidus eremicus</i>	Yuma hispid cotton rat
<i>Sigmodon arizonae plenus</i>	Colorado River cotton rat
<i>Peromyscus eremicus</i>	Cactus mouse
<i>Peromyscus maniculatus</i>	Deer mouse
<i>Chaetodipus penicillatus</i>	Desert pocket mouse
<i>Dipodomys merriami</i>	Merriam's kangaroo rat
<i>Neotoma albigula</i>	White-throated woodrat
<i>Reithrodontomys megalotis</i>	Western harvest mouse
<i>Sylvilagus audubonii</i>	Desert cottontail
<i>Mus musculus</i>	House mouse
<i>Onychomys torridus</i>	Southern grasshopper mouse