

Work Task E4: Palo Verde Ecological Reserve

FY09 Estimates	FY09 Actual	Cumulative Accomplishment Through FY09	FY10 Approved Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate
\$1,250,000.00	\$1,349,593.46	\$3,618,294.65	\$1,683,000	\$1,950,000	\$2,174,000	\$1,000,000

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Start Date: FY05

Expected Duration: FY55

Long-term Goal: Habitat creation

Conservation Measures: WIFL1, WRBA2, WYBA3, YBCU1, ELOW1, GIFL1, GIWO1, VEFL1, BEVI1, YWAR1, SUTA1, MNSW2, CLMB2, PTBB2

Location: Reach 4, CDFG, river miles 129-133, California

Purpose: Create and manage a mosaic of native land cover types for LCR MSCP covered species.

Connections with Other Work Tasks (past and future): Vegetation and species monitoring are being addressed under D2, D3, D5, D6, D7, D9, and F1-F6. Various related research projects are being conducted under C5, C7, C24, C27, C28, and C35.

Project Description: The Palo Verde Ecological Reserve (PVER) encompasses more than 1,300 acres. This property (formerly known as the Travis Ranch) has been made available to the LCR MSCP for habitat restoration activities by CDFG.

The eastern boundary of the property (more than 4 miles) is adjacent to the Colorado River; the western boundary is adjacent to active agricultural fields. PVER has an extensive infrastructure consisting of miles of lined irrigation ditches, roads, and a pump. Currently, the acreage is leased to a contract farmer and is planted with crops of alfalfa and wheat. Each year a portion of the active crop acreage will be taken out of production to develop the next phase of native habitat. The intent is to create as much riparian habitat as practical. Generally, all phases at PVER are targeted for SWFL, YBCU, and other avian riparian obligate covered species.

To date, standard farming practices are an efficient and effective way to convert agricultural cropland to habitat. Costs for development and maintenance of the habitat include such farming methods as land leveling, disking, irrigation of crops, repair and maintenance of the irrigation system, and the application of fertilizer and herbicide. Palo

Verde Irrigation District provides water to PVER. The costs associated with irrigation, electricity, and water are proportional to the amount of acreage that has been converted to habitat.

It is desirable to have a mosaic of habitats that contain areas of riparian species (including mesquite) and ground covers or open areas. Ground cover is an effective method of controlling nonnative species and provides another layer of vegetation for habitat. Typically, mesquite costs are based on a 1-gallon planted tree.

Agricultural areas have irrigation systems in place that are conducive to water management of riparian species. Checks, which are small borders placed within a given field, allow for flooding of only a portion of a field. This provides additional flexibility to create and maintain standing water or saturated soil areas for covered species.

Previous Activities: Through FY08, 323 acres of cottonwood-willow and mesquite land cover types have been established in phases 1-4 and are being managed for the LCR MSCP covered species.

FY09 Accomplishments: The *Palo Verde Ecological Reserve Development Plan: Phase 5* document was reviewed and approved by CDFG. According to the design, 100 acres of cottonwood-willow were planted in Phase 4. On the 84 acres in Phase 3, approximately 12 acres of cottonwood-willow land cover type was planted in the spring of 2009, as well as 22 acres of mesquite.

Soil samples were taken by the contract crop consultant in Phase 4 prior to planting. The samples indicated deficiencies of NO₃-N (nitrogen), and PO₃-P (phosphorus). An application of 10-34-0 was added in an irrigation cycle.

In March 2009, trees and shrubs were planted in Phase 4, checks 1-16, utilizing mass transplanting. Over 188,000 trees and shrubs were planted within a five-day period. The checks were planted according to the design (*Palo Verde Ecological Reserve: Restoration Development Plan Phase 4, 2008*). The 2008 planting contained the following average percentages of plants and trees: 1% *Atriplex*, 17% cottonwood, 7% *Baccharis*, 36% Goodding's willow, 36% coyote willow, and 0.05% mesquite. The average number was 2,100 plants per acre.

Checks 1-3, Phase 3 were planted with *Atriplex* in 2008; the mid-section of each of these checks was planted with a cover crop until spring of 2009. At that time, 1,800 mesquite trees were planted through the cover crop areas. The 12 acres in checks 9 and 10 were mass transplanted with 20% cottonwood, 10% *Baccharis*, 40% Goodding's willow, and 30% coyote willow.

In July 2009, CDFG proposed a land exchange at PVER involving the land they retained located to the west and north of Phase 5, for the land identified as Phase 8 and the eastern part of Phase 9. This was determined to benefit both parties, resulting in a contiguous

riparian land area. This exchange will affect the phase schedule by increasing the acres developed in Phase 5 and decreasing the acres in Phase 8.

Post-development vegetation monitoring was conducted at phases 2, 3, and 4. Canopy closure ranged from 0 to 100% with an average of 68% in Phase 2 and 33% in Phase 3. Average height and DBH for the intermediate and shrub layer category in Phase 2 were 11 m and 10 cm, respectively; Phase 3 averages were 7 m and 9 cm, respectively. Phase 4 plots (planted in 2009) did not have trees that met the overstory or intermediate shrub layer size requirements, so no data were collected in these categories. Land cover classifications consist of cottonwood-willow types II-V and honey mesquite III-VI. Overall land cover has not yet been determined.

The *Atriplex lentiformis* and alfalfa plot at Phase 3 was surveyed for MacNeill's sootywing; only one sootywing was observed.

Rodent trapping has been conducted and no *Sigmodon* have been captured within PVER to date. The species, however, continues to maintain a population on an accretion bench in the Colorado River just below Phase 4 of PVER.

Anabat bat detectors were deployed quarterly across the site in different habitat types to determine bat activity. All four MSCP species were found using the site in FY09, with western yellow bat and Townsend's big-eared bat only detected acoustically one time for each species. Capture surveys will be implemented in 2010.

General avian species were surveyed to determine breeding status at PVER, Phase 2 using area search and spot mapping techniques. No LCR MSCP covered species were detected by this method.

Willow flycatchers were surveyed five times in PVER Phase 2 using standard taped playback methods. One willow flycatcher was detected on May 27 and one on June 3. Due to the dates the birds were present, they were considered migrants.

PVER phases 1 and 2 were visited on 20 separate dates to conduct yellow-billed cuckoo surveys. Two nests were found. One nest successfully fledged young, as adults were observed feeding an unknown number of young. The other nest failed, likely due to predation. One returning adult was banded as a nestling at CVCA in 2008.

FY10 Activities: The development of Phase 5 (216 acres) is the focus in FY10. The ground will be prepared for Phase 5 planting, which includes disking, laser leveling, and plowing as needed for mass transplanting the trees and shrubs. Soil samples will be taken, analyzed for fertilizer needs, and applied prior to planting. Since the dense matting of cover crop was successful in reducing weed infestations in phases 2, 3, and 4, this method will continue to be utilized in Phase 5. In the checks planted with cottonwood-willow land cover types, crops of alfalfa and rye will be seeded, while in the checks of mesquite, a native seed mix will be used. Mass transplanting of approximately 200 acres of riparian species (approximately 400,000 of cottonwood, willows, and *Baccharis*) will take place

in March. Spacing will be 6-foot inline with 40 inches between rows to reduce cost and still provide the structural density required by the species. Mesquite and *Atriplex* will also be hand planted on the remaining 16 acres. The planting will integrate three different percentages of Goodding's willow, coyote willow, and cottonwood. Open areas will be incorporated along the borders, allowing for the flexibility to rework the borders, if needed, without disturbing the trees and shrubs.

A crop consultant will be contracted for soil analysis, soil moisture, and general health checks. Weeds will be managed with the application of a pre-emergent herbicide, manual removal where possible, and target herbicides. Visual monitoring for destructive insects will continue and, when applicable, pesticides may be used.

Irrigation will continue on the same schedule until data become available that indicate adjustments are needed. The plan and design for Phase 6, development of approximately 220 acres, will be drafted and is expected to establish this phase with cottonwood-willow land cover type. Monitoring activities conducted in 2009 will continue in 2010. Locations of surveys will be adjusted based on the growth and development of the planted phases.

Proposed FY11 Activities: Field preparation and planting of Phase 6 (216 acres) will be conducted to create as much riparian habitat as practical with the intent to target habitat for SWFL, YBCU, and other covered species. Previous phases will be monitored and adaptively managed for the targeted species. The plan and design for development of Phase 7 will be developed and will continue the expansion of riparian habitat. Monitoring activities conducted in 2010 will continue in 2011. Locations of surveys will be adjusted based on the growth and development of the planted phases.

Pertinent Reports: The *Palo Verde Ecological Reserve Restoration Development Plan: Overview*, which outlines the general development of the property, the *Palo Verde Ecological Reserve Restoration Development Plan: Phase 1*, which described the restoration activities planned for FY06, *Palo Verde Ecological Reserve Restoration Development Plan: Phase 2*, which described the restoration activities planned for FY07, the *Palo Verde Ecological Reserve Restoration Development Plan: Phase 3*, the *Palo Verde Ecological Reserve Restoration Development Plan: Phase 4*, and the *Palo Verde Ecological Reserve Restoration Development Plan: Phase 5*, which described the restoration activities planned for FY10 are posted on the LCR MSCP Web site.