

## Work Task E4: Palo Verde Ecological Reserve

FY10 Estimates	FY10 Actual	Cumulative Accomplishment Through FY10	FY11 Approved Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate
\$1,683,000	\$1,553,565.67	\$5,171,860.32	\$1,950,000	\$1,950,000	\$1,011,013	\$732,493

**Contact:** Gail Iglitz, (702) 293-8138, [giglitz@usbr.gov](mailto:giglitz@usbr.gov)

**Start Date:** FY05

**Expected Duration:** FY55

**Long-term Goal:** Habitat creation.

**Conservation Measures:** WIFL1, WRBA2, WYBA3, YBCU1, ELOW1, GIFL1, GIWO1, VEFL1, BEV11, 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 F1-F4, and F6. Insect populations are being evaluated under C5 and C7.

**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. The 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 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 is proportional to the amount of acreage that has been converted to habitat.

It is essential 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. Ground covers are planted with transplants or by seed; costs vary with the methods of planting used. Mesquite trees are generally planted by a tree planter or auger. Typically, mesquite costs are based on a 1-gallon planted tree.

Agricultural areas have irrigation systems in place that are conducive for 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:** To date, 539 acres of cottonwood-willow, honey mesquite, and upland-buffer land cover types have been established in phases 1-5 and are being managed for the LCR MSCP covered species.

**FY10 Accomplishments:** *The Palo Verde Ecological Reserve Development Plan: Phase 6* document was reviewed and approved by CDFG. In March, 216 acres of cottonwood-willow were planted in Phase 5.

Soil samples were taken by the contract crop consultant in Phase 5 prior to planting. The samples indicated deficiencies of NO<sub>3</sub>-N (nitrogen), and PO<sub>3</sub>-P (phosphorus). An application of 10-34-0 was added in an irrigation cycle.

In March, 2010, trees and shrubs were planted in Phase 5, Checks 2-11, 13-6 and 18-24 utilizing mass transplanting. Over 390,000 trees and shrubs were planted within a 14-day period. This year the cottonwood trees propagation rate was lower than previous years, as a result fewer cottonwood trees and more willows were planted. Changes to the planting plan are reflected in the final as-built (*Palo Verde Ecological Reserve: Annual Report 2010*). The 2010 planting contained the following averaged percentages of plants and trees: 6.1% *Atriplex*, 19.4% cottonwood, 5.3% *Baccharis*, 43% Goodding's willow, and 25.7% coyote willow and 0.5% mesquite. The average number was 2,100 plants per acre. Checks 1 and 17 were planted with both *Atriplex* and mesquite, and checks 12 and 25 were planted with mesquite only. An understory of blue grama grass and alkali sacaton were seeded in the previously mentioned checks of *Atriplex* and mesquite.

In addition to the small population of *Sigmodon* on the accretion bench just below Phase 4 of PVER, Colorado River cotton rats have been documented within the site.

Acoustic survey methods were used to monitor bats at PVER in 2010, with Anabat bat detectors deployed across the site quarterly to determine bat activity across habitat types. A dramatic increase in western red bat and western yellow bat activity was observed in 2010 sampling. For a detailed analysis of this data see the report *Post-Development Bat*

*Monitoring of Habitat Creation Areas along the Lower Colorado River – 2010 Acoustic Surveys.*

General avian surveys of habitat creation sites with more than two years growth were conducted using an intensive area search method. The Arizona Bell's vireo and yellow warbler were confirmed breeding. Summer tanagers were detected but classified as non-breeders.

Yellow-billed cuckoos were confirmed nesting in Phase 2 and Phase 3, with one nest found in each Phase. The Phase 2 nest, found July 13, was successful in fledging 2 young. Two young were also fledged from the nest found July 15 in Phase 3.

Southwestern willow flycatchers were surveyed 5 times during the breeding season in both Phases 2 and 3. Two flycatchers were detected in Phase 2, 1 on 25 May and 1 on 10 June; both are considered migrants. None were detected in Phase 3.

**FY11 Activities:** The development of Phase 6 (220 acres) is the focus in FY11. The ground will be prepped for Phase 6 planting, which includes disking, laser leveling, and plowing as needed for mass transplanting the trees and shrubs. Since the dense matting of cover crop was successful with reducing weed infestations in all previous phases (2-5), this method will continue to be utilized in Phase 6. 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 218 acres of riparian species (approximately 420,000 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 22 acres. The planting will integrate three different percentages of Goodding's willow and 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. Trees and shrubs will be planted a minimum of 40 feet away from the roads and irrigation canals.

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 becomes available that indicates adjustments are needed.

The plan and design for Phase 7, development of approximately 226 acres, will be drafted and is expected to establish this phase with cottonwood-willow land cover type.

Data will continue to be collected on vegetation, *Sigmodon*, bats, and avian species following the same protocols and schedules as in previous years.

**Proposed FY12 Activities:** Field preparation and planting of Phase 7 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. Site preparation for mass transplanting of riparian trees and shrubs on approximately 226 acres will be conducted. The plan and design will be developed for continued expansion of riparian habitat and will be included in Phase 8.

**Pertinent Reports:** The *Palo Verde Ecological Reserve Restoration Development Plan: Overview* and the *Palo Verde Ecological Reserve Restoration Development Plan: Phase 6* are posted on the LCR MSCP website. *Palo Verde Ecological Reserve Annual Report 2010* will be posted when available.