

Work Task E14: Imperial Ponds Conservation Area

FY10 Estimates	FY10 Actual	Cumulative Accomplishment Through FY10	FY11 Approved Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate
\$651,840	\$655,197.95	\$7,570,575.36	\$610,000	\$525,000	\$395,000	\$395,000

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Start Date: FY05

Expected Duration: FY55

Long-term Goal: Habitat creation.

Conservation Measures: CLRA1, BONY2, RASU2, LEBI1, and BLRA1.

Location: Reach 5, Imperial NWR, River Mile 59, Arizona.

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

Connections with Other Work Tasks (past and future): Work task vegetation and species monitoring is being conducted under F1, F2, F3, F4, F5, and D9.

Project Description: The Imperial Ponds Conservation Area is an integrated mosaic of native land cover types, including isolated backwaters, cottonwood/willow, and marsh. It is situated within the Intensive Management Area of the Imperial National Wildlife Refuge, an area of focused management for sensitive wildlife species including native fish, marsh birds, neo-tropical migratory birds, and migratory waterfowl. By partnering with Imperial NWR to implement this project within an area already so rich in biodiversity, the LCR MSCP is creating a unique native landscape like no other found on the LCR.

Previous Activities:

Ponds: Between FY05 and FY07, extensive site development was undertaken to excavate six isolated, independently managed backwater ponds, to create habitat primarily for razorback sucker and bonytail. Since that time, the ponds have been stocked and managed primarily for razorback sucker and bonytail, and secondarily for the benefit of marsh species. Six ponds have been constructed to provide approximately 80 surface acres of backwater habitat for endangered razorback sucker and bonytail, as well as provide marsh habitat for western least bittern and Yuma clapper rail. The ponds provide a diversity of depths and habitat features, including rip-rap for fish cover and hummocks on which to place native wetlands plants.

Colorado River water is supplied to the ponds by a pump that uses state of the art fish screening technology (wedge-wire screen). The screen was constructed to prevent the eggs and larvae of nonnative, predatory fish from entering into the ponds. The ponds are not interlinked; each pond is independently managed. In FY09, through work task (G3) an evaluation of the wedge wire screen system on the 6,000 gallon per minute pump, supplying the ponds, was conducted. As mentioned in G3, the preliminary results found that eggs and larvae of the smallest size class of nonnative fishes (those with eggs less than 1 mm in diameter) were entrained through the screen in nearly all the samples taken, which raised concern over continued use of the screened pump to supply the ponds without additional filtering. Additionally, pH levels in two of the ponds during mid-summer exceeded 9.0; these levels were quickly resolved by pumping from the well (which has a consistently lower pH than the Colorado River). Since the summer of 2009, water supply to the ponds has been exclusively via the 750-1,500 gallon per minute well pump, to reduce the risk of introducing non-native fish larvae into the ponds, as well as to manage pH. When water is released from a pond, it enters a drainage ditch where native wetland and riparian vegetation has been planted.

Riparian: Using material excavated from the ponds, an existing 4 acre cottonwood nursery on the refuge will be expanded by 34 acres to develop cottonwood-willow land cover for the yellow-billed cuckoo. The pond material was spread over approximately 100 acres; the acreage not used for cottonwood-willow will be managed by the refuge for migratory waterfowl. Both the yellow-billed cuckoo and willow flycatchers have been sighted in the existing nursery. Field leveling and irrigation system installation for the area were completed in FY08. However, due to unfavorable soil conditions, tree planting is not anticipated until at least FY13.

Marsh: A 12 acre marsh unit was created at Field 18 in the southeast corner of Imperial NWR. This field was cleared in the winter of 2007-2008, and was converted into a bulrush-dominated marsh. Because the field is adjacent to several marsh units currently occupied by California black rail, the objective was to increase habitat acreage for this species and other species of concern.

During FY09, onsite maintenance, utility payments, and water management for the site were conducted. This funding and tasks are reviewed and modified annually by both agencies. Additionally, a fuel contract was executed to supply heavy equipment use onsite, in support of site maintenance and development.

FY10 Accomplishments:

Maintenance/Restoration/Management: Onsite maintenance, utility payments, and water management for the site continued. E14 was also used to support dewatering, evaluations, maintenance of Pond 1.

Several infrastructure maintenance tasks were conducted in FY10. Reclamation has performed patching of cracks in the concrete of the new irrigation canal. Gravel road base was purchased and stockpiled for later use as road base.

Staff gauges were purchased and installed throughout the site in FY10 to monitor and manage water levels. A series of surveyed benchmarks were placed in FY09 as reference points for positioning the staff gages, relative to actual elevations. Design, purchase, and installation of a data telemetry system to manage water levels and water quality were initiated, using the staff gauges installed in FY09.

Ponds. Construction was done in a series of six spawning beds for Pond 1, in support of ongoing native fish habitat. The design of these spawning beds was intended to evaluate the use of geotextiles (as a vegetation barrier), a prototype gradation of gravels and rock, and site fidelity of razorback suckers to a particular spawning location.

During FY10, clearing, preparing, planting, irrigating, and monitoring of shoreline plantings along selected areas of the pond shorelines with native grasses, baccharis, mesquite, and coyote willows occurred. In total 30,772 plants were installed along the shorelines of ponds 1, 2, 3, and 5. The functions these plantings are intended to provide a reduction in shoreline erosion, limit encroachment of undesirable non-native vegetation, maintain open areas for wind circulation in the ponds, and improve marsh habitat in the ponds.

Riparian. Reclamation performed soil mapping and sampling of the future cottonwood-willow field areas to evaluate salt concentrations and nutrient levels. The results indicated moderately high salinity and nitrogen deficiencies in the soils. Therefore, the cottonwood-willow planting has been delayed until at least FY13. During the spring and fall of FY10 the fields were fertilized with a high nitrogen fertilizer (to increase nutrients) and humic acid to help mobilize salts and facilitate salt flushing. The previous rye grass cover crop was rotated to a salt-tolerant grass cover crop, to continue amending and managing the soil.

Monitoring: Rodent surveys were conducted and Yuma hispid cotton rats have been documented at the site. The area was surveyed five times for southwestern willow flycatchers from May to July and no birds were detected. Anabat bat detectors were deployed across the site quarterly to determine bat activity across habitat types. In 2010, 8 call minutes were recorded for western red bats, 42 call minutes were recorded for western yellow bats, 81 call minutes were recorded for California leaf-nosed bats, and 1 call minute was recorded for Townsend's big-eared bat. Yellow-billed cuckoo surveys were conducted at the area and no nesting birds were found.

The following water quality parameters, dissolved oxygen, temperature, conductivity, pH, and total dissolved solids were monitored monthly until water temperatures reached 27°C monitoring was then increased biweekly. Monitoring data are used to direct pumping operations.

Population and habitat monitoring were conducted in ponds 2, 4, and 6. Population estimates were calculated for RASU, no population estimates were calculated for BONY as no adults were captured although they are known to persist in pond 2. In pond 2, the RASU population is at 60% of what was stocked and 24% in pond 6. Pond 4 has not had

a population estimate since March due to low recaptures however individuals continue to be contacted suggesting 11% survival.

Habitat use for RASU shifted across seasons, but habitat preference in any given season was different for RASU populations in each pond. In addition, radio telemetry conducted in ponds 2 and 4 during the summer months located the fish in deep open water locations.

Autumn sampling was conducted in October 2009 and resulted in the capture of 17, 18, and 10 adult RASU in ponds 2, 4, and 6 respectively. No adult BONY were captured in FY10 although they are known to persist in Pond 2. One BONY larvae and 11 RASU larvae were collected in Pond 2.

FY11 Activities:

Maintenance/Restoration/Management: Funding for onsite maintenance, utility payments, and water management for the site will continue. E14 will also be used to support the dewatering, evaluations, maintenance of each pond. Vegetation management is an ongoing action which keeps the pond shorelines clear of excessive growth of undesired *Phragmites*.

During FY11, the data telemetry instrumentation purchased and installed in FY10 will be connected and networked to a single data collection hub. Future plans include beginning wireless transmitting of the recorded data off site.

Ponds. Additional non-native fish entrainment studies will be conducted, to test secondary filtering of Colorado River surface water to a size capable of excluding all non-native fish eggs and larvae, in the spring at Imperial Ponds. This research is intended to supplement the primary wedge wire screen system, by providing secondary filtration. We are currently evaluating the installation of a temporary line from the existing well into pond one using left over pipe material available from other projects.

Riparian. Soil mapping and sampling was conducted on the 34 acres of the future cottonwood-willow field areas to evaluate salt concentrations and nutrient levels. Fertilizing of the riparian fields will continue during the fall and spring, with a high nitrogen fertilizer and humic acid, to help mobilize salts and facilitate salt flushing.

FY12 Activities:

Maintenance/Restoration/Management: Onsite maintenance, utility payments, and water management for the site will continue.

Ponds. Management of water surface elevation (WSE) and water quality will cease on ponds 2-6. Monitoring will be conducted monthly during this time, to answer questions regarding the similarity or contrast of the natural WSE and water quality parameters between the ponds, the LCR, and the Martinez lake inlet. After monitoring has been completed, collected information will be used to develop and study methods to reduce or simplify water delivery to the ponds and enhance water quality.

Riparian. Soil sampling will continue on the 34 acres of the future cottonwood-willow field areas to evaluate salt concentrations and nutrient levels. Fertilizing of the riparian fields will continue during the fall and spring, with a high-nitrogen fertilizer and humic acid, to help mobilize salts and facilitate salt flushing. If favorable soil conditions are found, crop rotation (replacing the existing grass with native vegetation having salt tolerances comparable to cottonwoods and willows) will occur.

Pertinent Reports: *Evaluation of the Cylindrical Wedge-Wire Screen System at Imperial NWR 2009* is posted on the LCR MSCP website. *Imperial Ponds Conservation Area 2008 Annual Report* and *Imperial Ponds Conservation Area 2009 Annual Report* will be posted to the LCR MSCP website.