

Work Task E14: Imperial Ponds Conservation Area

FY11 Estimate	FY11 Actual Obligations	Cumulative Expenditures Through FY11	FY12 Approved Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate
\$610,000	\$508,610.43	\$7,939,916.59	\$525,000	\$395,000	\$395,000	\$950,000

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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.

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 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 FY14.

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.

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.

FY11 Accomplishments:

Maintenance/Restoration/Management. Onsite maintenance, utility payments, and water management for the site continued. E14 was used to support the dewatering, evaluations, maintenance of each pond. Vegetation management was an ongoing action that keeps the pond shorelines clear of excessive growth of undesired *Phragmites*.

Several infrastructure maintenance tasks were conducted in FY11. The overflow pipe in pond 1 was replaced, the ponds drainage ditch was excavated to facilitate water movement, the boat ramp in pond 3 was repaired, and the air burst system which keeps the wedge-wire screen clean for the 200 hp pump resumed automated daily operation.

Pond. In April 2011, additional non-native fish entrainment studies were conducted, to test secondary filtering of LCR surface water to a size capable of excluding all non-native fish eggs and larvae. This research was intended to supplement the primary wedge wire screen system, by providing secondary filtration in the form of sand filters. In preparation for this study a

temporary line from the existing well into pond one using left over pipe material was constructed and native fish were captured from ponds 2-6 and released into pond 1. Results from this study were promising with 100% exclusion of eggs and larvae through the sand filter but presence in collections taken before filtration and in sand backwash.

In May 2011, the addition of LCR surface water for management of water surface elevation (WSE) on ponds 2 – 6 was stopped. WSE and water quality monitoring was conducted on all the ponds 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 channel (south channel). Monitoring will continue for the next 2 years, at which time, 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 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 FY14. During the spring of FY11 the fields were fertilized with a high nitrogen fertilizer (to increase nutrients) and humic acid to help mobilize salts and facilitate salt flushing. Fertilizer was not applied in the fall of 2011, based on high nitrogen levels detected in water samples taken from the adjacent well feeding pond 1.

Marsh. The 12 acre marsh created in Field 18 in the southeast corner of Imperial NWR was managed for marsh covered species.

Monitoring.

Ponds. 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 larva and 11 RASU larvae were collected in Pond 2.

Riparian. Surveys for WIFL were conducted five times in the area immediately to the north of Pond 1 from May to July. Four birds were detected on 22 May and two birds were detected on 5 June. These birds were all considered migrants, and no signs of breeding SWFL were found. Bat acoustic driving transects were conducted in May, July and September. The western red bat was detected in July, the western yellow bat was detected in May, and the Townsend's big-eared bat was detected in July. Capture surveys were conducted five times as part of the red/yellow bat roosting study being conducted by AGFD. The California leaf-nosed bat was the only LCR MSCP species captured. YBCU surveys were conducted at the area and one bird was detected on 21 June, 2 birds were detected on 8 July and one bird was detected on 16 July. No nests were found but a possible breeding pair was detected at the site.

Marsh. Marsh bird surveys were conducted at the Imperial Ponds and at Field 18 over three survey periods from March to late April. One least bittern was detected in Pond 2 during the second survey period. In Field 18, black rails, clapper rails, and least bitterns were detected in all three surveys periods. An average of 1.7 black rails, 4 clapper rails, and 1.3 least bitterns were detected per survey period.

FY12 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*.

Ponds. No LCR surface water was supplied to ponds 2-6. WSE and water quality monitoring will be conducted monthly on all ponds 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 south channel. 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 mapping and sampling was conducted on the 34 acres of the future cottonwood-willow field areas to evaluate salt concentrations and nutrient levels. Crop rotation in fields to alfalfa is anticipated. Changing the cover crop to alfalfa is expected to reduce nitrogen levels and assist in nutrient levels in the field.

Marsh. The 12-acre marsh created in Field 18 in the southeast corner of Imperial NWR will continue to be managed for marsh covered species.

Monitoring. Monitoring that was conducted in FY11 will continue in FY12.

Proposed FY13 Activities:

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

Ponds. Monitoring of ponds WSE and water quality will be conducted monthly to answer questions regarding the similarity or contrast of the natural WSE and water quality parameters

between the ponds, the LCR, and the south channel. Methods to reduce or simplify water delivery to the ponds and enhance water quality will be implemented and monitored.

Riparian. Soil sampling will continue on the 34 acres of the future cottonwood-willow field areas to evaluate salt concentrations and nutrient levels.

Marsh. The 12-acre marsh created in Field 18 in the southeast corner of Imperial NWR will continue to be managed for marsh covered species.

Monitoring. Monitoring will continue in FY13.

Pertinent Reports: *Imperial Ponds Conservation Area Development Plan, Evaluation of the Cylindrical Wedge-Wire Screen System at Imperial NWR 2009 and Evaluation of Secondary Filtration Technology for Nonnative Fish Exclusion at Imperial NWR 2011* are posted on the LCR MSCP website. *Imperial Ponds Conservation Area 2011 Annual Report* will be posted when available.