

Work Task E14: Imperial Ponds Conservation Area

FY09 Estimate	FY09 Actual	Cumulative Accomplishment Through FY09	FY10 Approved Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate
\$483,000	\$540,515.32	\$6,915,377.41	\$651,840	\$610,000	\$525,000	\$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.

Previous Activities: 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 and other habitat areas by a pump that uses state-of-the-art fish screening technology developed specifically for the LCR MSCP. 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. This is a key component to successful water quality and fisheries management. When water is released from a pond, it enters a drainage ditch where native wetland and riparian vegetation has been planted.

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. The additional cottonwood-willow forested area, and the waterfowl acreage, will create a vegetation mix that makes this an ideal site for attracting the threatened and endangered species the LCR MSCP is designed to protect. Field leveling and irrigation system installation for the area were completed in FY08; tree planting will not occur until soil salinity levels have been decreased, which is not anticipated until at least FY12.

A 12-acre marsh unit was created at Field 18 in the refuge's southeast corner. 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, it is an ideal site for attracting this species and other species of concern.

FY09 Accomplishments:

Maintenance/Restoration/Management. During FY09, Reclamation executed a three-year interagency agreement with Imperial NWR, which funds the onsite maintenance, utility payments, and water management for the site. This agreement is reviewed and modified annually by both agencies. Additionally, Reclamation executed a fuel contract to supply heavy equipment use onsite, in support of site maintenance and development.

Ponds. Water management was the largest focus area during FY09 at Imperial Ponds. Pond 1 was dewatered (twice), in support of efforts to remove non-native fish, as well as to document drawdown rates, performance of the drainage ditch, and to better predict resource requirements for future dewatering events. During the dewatering, the boat ramp was re-graded and the southeast corner of the pond was resurfaced with large cobble to prevent erosion. Pipe elbows were also installed on pond outflow pipes, to prevent water from backflushing from the drainage ditch and entering ponds, a potential vector for non-native fish contamination.

New staff gages were purchased to be installed throughout the site to monitor and manage water levels. A series of surveyed benchmarks were placed in FY 2009 as reference points for positioning the staff gauges, relative to actual elevations.

Through G3, an evaluation of the wedge-wire screen system on the 6,000 gallon per minute pump supplying the ponds was conducted. The preliminary results showed 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 an action level of 9.0, which was 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 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.

Vegetation management was the second-largest focus area during FY09 at Imperial Ponds. FY09 funding was used to acquire 10,000 bulrushes and 3,000 Baccharis for hummocks and pond shorelines, planting was completed in October 2009 (FY10). These plantings are intended to reduce 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. Reclamation also assisted INWR with vegetation control onsite through application of herbicides and mechanical removal. FY09 funds were also expended to purchase herbicides, personal protective equipment, and gasoline powered brush clearing tools, to be used by vegetation crews at INWR over the next several years.

A preliminary design was completed for a series of spawning beds to be constructed within the ponds, in support of ongoing research efforts regarding habitat use by native fish (C25). Lessons learned from constructing a series of experimental spawning beds will be applied at other backwaters developed in the future.

Fields. Soil mapping and sampling of the future cottonwood-willow field areas was performed 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 FY12. During the spring of 2009, 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 ryegrass cover crop was rotated to a salt-tolerant grass cover crop, to continue amending and managing the soil.

Marsh. During FY 2009, Reclamation continued to work closely with INWR to adaptively manage water levels in Field 18, in response to field observations and recommendations by USGS researchers. A small portion of the field typically remains above the high water level, and cannot be submerged as effectively as the deeper marsh areas. In response to this need, design work was completed for a new water control structure, which will allow for expansion of the marsh area in Field 18, as well as more precise adjustments in water level.

Monitoring. Pre-restoration bird monitoring was conducted in the fields to be planted with riparian habitat, and post-restoration bird monitoring was conducted in the adjacent

nursery site and the planted cottonwood-willow habitat. The following LCR MSCP covered species were detected: Gila woodpecker, summer tanager, willow flycatcher (migratory only), and yellow-billed cuckoo.

Marsh bird surveys were conducted in Field 18 and in the created ponds through the breeding period. In Pond 5, one clapper rail was detected. In Field 18, one black rail, up to three clapper rails, and one least bittern were detected.

Vegetation monitoring was conducted for both the ponds and Field 18. In Field 18, California bulrush is the most dominant plant species, but common threesquare, southern cattail, and river/alkali bulrush also occur. In the ponds, some *Phragmites* occurs along the pond margins in thin strips and the hummocks are covered in bulrush and *Phragmites*.

Anabat acoustic surveys were conducted at the Imperial Ponds Conservation Area for bat species. Eight western red bats and six western yellow bats were detected.

Water quality was monitored to ensure that parameters measured below thresholds set by the Imperial Ponds fisheries coordination team, and to direct pumping operations if thresholds were exceeded. Dissolved oxygen, temperature, conductivity, and total dissolved solids remained within the set thresholds. Mean pH exceeded the set threshold (< 9). Well water was added, which has a consistently lower pH than surface water, to effectively lower the pH.

Population and habitat monitoring were conducted in ponds 1, 2, 3, 4, and 6. Population estimates and post-stocking estimates were calculated. Pond 1 was renovated in 2009; prior to renovation the RASU population declined to less than 10%. In pond 4, the RASU population is at 44.5% of what was stocked. Ponds 2 and 3 were stocked with BONY; pond 2 has less than 1% survival and there was no survival in pond 3. Pond 2 was also stocked with RASU and has 84.7% survival. Additionally, pond 6 was stocked with RASU and has 65.7% survival. RASU habitat use in ponds 2, 4, and 6 was not consistent among ponds.

Autumn sampling was conducted in ponds 2, 3, 4, and 6 using hoop nets, box traps, minnow traps, and trammel nets. There were 0 BONY captured, and a total of 45 RASU captured: 17 from pond 2, 18 from pond 4, and 10 from pond 6.

Larval collections were conducted during the spawning season; three larvae were collected and sent for genetic analysis, but none were identified as BONY or RASU larvae.

FY10 Activities: Funds will be provided to the USFWS to continue onsite maintenance, make utility payments, and provide water management for the site. E14 will also be used to support the dewatering, evaluations, and maintenance of one pond.

Several infrastructure maintenance tasks are being conducted in FY10. Cracking in the concrete of the new irrigation canal was sealed. Additionally, gravel road base will be

stockpiled for surfacing and maintaining roads at the site. Surfacing roads near the irrigation canal would be expected to reduce maintenance costs at the canal because of reduced sediment and dust coming off of the roads, as well as reducing the frequency that road grading would need to occur.

Additional non-native fish entrainment studies to resolve outstanding needs to filter Colorado River surface water to a slot size capable of excluding all non-native fish eggs and larvae are being discussed. The expanded research will be performed at Imperial Ponds. This research is intended to result in a set of revised slot size criteria for filtering water through a primary system (wedge wire screen), as well as development of secondary screening systems (sand filter or other technique). The study would also include testing of a secondary filtration system, to determine the effectiveness of such a configuration. If the recommended slot size criteria can be met, then Reclamation would use this information to determine what site improvements to make at Imperial Ponds (or potentially Beal Lake also) to meet the needs of the program.

Placement of a series of six spawning beds in pond 1 in support of ongoing native fish habitat use research is anticipated. The design of these spawning beds is 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. A new water control structure will be installed in Field 18 as a part of the spawning beds contract, to expand marsh area and provide ability for more precision in water levels.

A data telemetry system will be designed to manage water levels and water quality. The staff gages purchased during FY09 will be surveyed in and installed in the ponds and Field 18 to assist with more accurate water measurement and applications. The monitoring instrumentation will be purchased in FY10 and installed to begin monitoring. During FY11, this instrumentation will be linked together into a network.

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 will continue. The functions these plantings are intended to provide are to reduce 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.

FY11 Activities: Funds will be provided to the USFWS to continue onsite maintenance of the site, make utility payments, and provide water management for the site. E14 will also be used to support the dewatering, evaluations, and maintenance of one pond. Vegetation management is anticipated to occur during FY11 to keep the pond shorelines clear of excessive growth.

During FY11, assuming adequate soil conditions, cottonwoods and willows will be acquired to plant on approximately 34 acres; planting is expected to be performed during FY12. Fertilizing of fields will continue, as needed. A data telemetry system will be

completed to provide remote water level and water quality monitoring at all of the ponds, marsh units, and fields under management by the LCR MSCP.

Pertinent Reports: *Imperial Ponds Conservation Area 2009 Annual Report* will be posted to the LCR MSCP Web site.