

## Work Task C25: Imperial Ponds Native Fish Research

FY14 Estimate	FY14 Actual Obligations	Cumulative Expenditures Through FY14	FY15 Approved Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate
\$250,000	\$179,807.87	\$1,465,017.91	\$200,000	\$200,000	\$200,000	\$200,000

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**Start Date:** FY08

**Expected Duration:** FY18

**Long-Term Goal:** Inform management and provide ways to improve created backwaters through species research

**Conservation Measures:** RASU2 and BONY2

**Location:** Reach 5, Imperial NWR, Arizona

**Purpose:** To evaluate six ponds created as backwater habitats at the Imperial NWR to assess the efficacy of the ponds for native fish species, specifically bonytail and razorback sucker

**Connections with Other Work Tasks (Past and Future):** Bonytail and razorback sucker to be stocked into the ponds are provided through Work Tasks B1–B5. Ponds were developed under Work Task E14, and additional monitoring support will be provided through Work Task F5. Data are maintained under Work Task G1.

**Project Description:** The development of native fish refugia in six constructed ponds on the Imperial NWR will be monitored and evaluated. Incorporated into pond construction were design features such as riprap, spawning gravels, hummocks, and increased depth, which were all thought to provide suitable habitat for life cycle completion by bonytail and razorback sucker. The role and importance of each of these features toward developing self-sustaining native fish populations will be evaluated.

**Previous Activities:** Habitat use was evaluated for razorback sucker in Ponds 2, 4, and 6. Habitat use for razorback sucker shifted across seasons, but habitat selection in any given season was different for razorback sucker populations in each pond. There were consistently more contacts for both species at night than during the day. During the summer, deep open water areas were selected by both species, and little activity was detected. Bonytail contacts were

few, and habitat associations generally equivocal. Razorback sucker were associated with gravel beds during the nominal spawning season that peaked in late winter/spring.

Bonytail and razorback sucker were implanted with acoustic transmitters to assess distribution. Bonytail were distributed in deep waters along the north, south, and northeast corner during the day, and in open water across the length of the pond, avoiding shallow areas during the night. Razorback sucker used deep waters west of the hummocks during the day. Nighttime monitoring results indicated that razorback sucker concentrated on the boat ramps and on or around the spawning beds. Spatial overlap was minimal between the two species.

A water management study was completed in May 2013 in order to evaluate and compare water quality in Pond 1 (where regular water management was continued) with Ponds 2 through 6 (without a managed water supply). A trend analysis from the physicochemical profiles indicated that temperature had increased over time in all six of the ponds; however, it appeared to be increasing at a slightly higher rate in Pond 1. Specific conductivity levels suggested a gradual increase in all ponds over time as well. The pH levels also indicated a trend of increasing values over time with variation among all ponds. The pH commonly exceeded the management guideline of 9.0 in Ponds 2 through 6 in the summers of 2011 and 2012. The pH levels were lowest in Pond 1. DO varied in all ponds, and recorded levels did not appear to be a cause for concern in the absence of water management.

**FY14 Accomplishments:** Trammel nets, hoop nets and Oneida traps were deployed to remove bonytail and razorback sucker from Pond 1 in preparation for the renovation of all six ponds. Twenty-six razorback sucker were captured, 17 had previously been PIT tagged, and 9 were untagged. All razorback sucker were stocked into the A-10 backwater near Ehrenberg, Arizona; any razorback sucker that did not have a tag received one prior to stocking. Thirty-three bonytail were captured from Pond 1, and only one was PIT tagged. Three bonytail were transferred to the Imperial NWR display tank, and the remaining bonytail were transported to the Lake Mead Fish Hatchery for later stocking.

Obligations in FY14 were less than estimated. Funds for Work Task C25 reserved for the purchase of rotenone (chemical piscicide) were not used. Rotenone for pond renovations was instead purchased in FY14 under Work Task E14.

**FY15 Activities:** Efforts have continued to remove razorback sucker and bonytail from Pond 1 prior to renovation efforts that began in December 2014. Beginning in January 2015, the ponds will be monitored on a monthly basis using various sampling gear to detect all life stages of fish. Post-renovation monitoring will occur for up to 2 years or until fish are detected in all of the ponds.

A study plan will be developed to determine a water input schedule for the ponds. The design will include actions to mitigate for pH and specific conductivity.

Water chemistry and quality, as well as zooplankton and phytoplankton samples, will be collected on a quarterly basis. Continuous sampling units will be deployed to record water quality parameters at 6-hour intervals. These parameters will include temperature, pH, DO, and specific conductivity. Downloads will occur monthly.

**Proposed FY16 Activities:** Post-renovation monitoring and water quality measurements will continue at all six ponds. A draft a report that outlines the successes and lessons-learned from the renovation effort will be developed. A native fish stocking plan, including research questions to be addressed, will be drafted in FY16; implementation of the stocking plan is expected to begin in FY17.

**Pertinent Reports:** The scopes of work are available upon request. Annual reports are posted on the LCR MSCP Web site.