Work Task C25: Imperial Ponds Native Fish Research

FY13 Estimate	FY13 Actual Obligations	Cumulative Expenditures Through FY13	FY14 Approved Estimate	FY15 Proposed Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate
$250,000	$226,898.52	$1,295,571.67	$250,000	$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, BONY2.

Location: Reach 5, Imperial National Wildlife Refuge, Arizona.

Purpose: Evaluate six ponds created as backwater habitats at Imperial NWR to assess the efficacy of the ponds for native fish species, specifically BONY and RASU.

Connections with Other Work Tasks (past and future): BONY and RASU to be stocked into the ponds are provided through: Lake Mohave Razorback Sucker Larvae Collection (B1), Willow Beach National Fish Hatchery (B2), Achii Hanyo Rearing Station (B3), Dexter National Fish Hatchery (B4), and Bubbling Ponds Fish Hatchery (B5). Ponds were developed under Imperial Ponds Conservation Area (E14), and additional monitoring support will be provided through Post-Development Monitoring of Fish Restoration Sites (F5). Data are maintained in part under Data Management (G1).

Project Description: This activity will monitor and evaluate the development of native fish refugia in six constructed ponds on Imperial NWR. Pond construction incorporated design features such as riprap, spawning gravels, hummocks, and increased depth, all thought to provide suitable habitat for life cycle completion by BONY and RASU. This research program will evaluate the role and importance of each of these features toward developing self-sustaining native fish populations.

Previous Activities: Habitat use was evaluated for RASU in pond 2, 4, and 6. Habitat use for RASU shifted across seasons, but habitat preference in any given season was different for RASU populations in each pond. There were consistently more contacts for both species at night than during daytime. During summer, deep open water areas were selected by both species and little activity was detected. BONY contacts were few and habitat associations generally equivocal. RASU were associated with gravel beds during the nominal spawning season that peaked in late winter/spring.

BONY and RASU were implanted with acoustic transmitters to asses distribution. BONY were distributed in deep waters along the north, south, and northeast corner during daylight, and in open water across the length of the pond avoiding shallow areas during nighttime. RASU utilized deep waters west of the hummock during the day. Night time monitoring results found RASU concentrated on the boat ramp and on or around the spawning beds. Spatial overlap was minimal between the two species.

FY13 Accomplishments: Remote PIT scanners were used to monitor populations of BONY and RASU in Pond 1. BONY population estimates ranged from 31 (March 2013) to 57 (June 2013). RASU population estimates ranged from 49 (December 2012) to 148 (January 2013). Four additional BONY were captured from Pond 2 during routine sampling in FY13 and were moved into Pond 1.

A water management study was completed in May 2013. Its goal was to evaluate and compare water quality in Pond 1 (where regular water management was continued) and ponds 2 through 6 (without a managed water supply). Trend analysis from the physico-chemical profiles indicated that temperature has increased over time in all six of the ponds; however, it appears to be increasing at a slightly higher rate in Pond 1. Specific conductivity levels suggest a gradual increase in all ponds over time as well. pH also indicated a trend of increasing values over time with variation between all ponds. pH commonly exceeded a set guideline of 9.0 in ponds 2 – 6 in the summers of 2011 and 2012. pH levels were lowest in Pond 1. DO levels did not appear to be a cause for concern in a absence of water management.

FY14 Activities: BONY and RASU are to be removed from the ponds and designated to research projects as needed. A second well will be plumbed to provide groundwater to all six ponds. Pre-renovation planning and site preparations will occur in FY14. Intensive water quality monitoring will continue in all six ponds.

Proposed FY15 Activities: All six ponds are to be renovated in the fall. The majority of the costs for this effort will be covered under conservation area management using funds from E14. Post renovation monitoring will include sampling for all life stages of fish. Intensive water quality monitoring will continue in all six ponds.

Pertinent Reports: The scopes of work are available upon request. Annual reports are posted to the LCR MSCP website.