Work Task B7: Lake-Side Rearing Ponds

FY13 Estimate	FY13 Actual Obligations	Cumulative Expenditures Through FY13	FY14 Approved Estimate	FY15 Proposed Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate
$200,000	$190,829.84	$1,630,479.13	$200,000	$200,000	$200,000	$200,000

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Start Date: FY05

Expected Duration: FY55

Long-term Goal: Maintain fish-rearing capability, provide RASU and BONY for the LCR MSCP Fish Augmentation Program, and accomplish species research.

Conservation Measures: RASU3, RASU4, RASU5, RASU6, BONY3, BONY4, and BONY5.

Location: Reach 2, Lake Mohave, Arizona/Nevada.

Purpose: Operate and maintain fish grow-out areas along the Lake Mohave shoreline to contribute to RASU brood stock development.

Connections with Other Work Tasks (past and future): Activities are related to B2, B4, and B5, as fish for grow-out ponds may come from Willow Beach NFH, SNARRC, and/or Bubbling Ponds SFH. In addition, some of the fish-rearing research activities outlined in C10, C11, C34, C40, C41 and C44 may be conducted at these ponds.

Project Description: Lake Mohave is operated by Reclamation as a re-regulation reservoir. It fluctuates annually within a 15-foot vertical range, filling by mid-May and lowering to an annual minimum in October. Wave actions redistribute sediment deposits from desert washes and shape these deposits into natural berms. In some areas these berms isolate the lower portions of the desert washes from the lake proper, and when the lake is at full pool, lake-side ponds form at many of these washes. Reclamation and its partners in the Lake Mohave Native Fish Work Group have been using these lake-side ponds since 1993 as rearing and grow-out areas for RASU and BONY. The ponds are stocked with juvenile fish as the reservoir fills in the spring (typically stocked in March). Reclamation staff monitor the fish and manage the ponds throughout the growing season. This work includes periodic fertilization with alfalfa pellets and ammonium nitrates to sustain algae blooms and plankton production, removal of weeds and debris, installing and maintaining floating windmills or solar well pumps to mix the water and provide sufficient oxygen levels, and routine monitoring of physical, chemical, and biological parameters. The ponds are normally harvested in the fall as the lake elevation declines. The fish from these ponds are then released back into Lake Mohave. Reclamation

anticipates the need for these ponds to support RASU and BONY conservation through the life of the program (FY55).

Previous Activities: These ponds have been in use since 1993 and more than 32,000 RASU have been reared and repatriated to Lake Mohave. In an effort to expedite development of RASU brood stock, the target size for repatriation was increased to 500 mm TL during 2007. Since this new target size went into effect, the ponds have been managed to rear larger size fish for the program. Typically, RASU in excess of 300 mm TL are stocked into the ponds and then harvested in the fall. Any in situ production from volunteer spawning is usually transferred to Yuma Cove pond or Davis Cove pond. These ponds contain water throughout the year and support multiple year classes of fish, and are operated separately from the other ephemeral ponds. Beginning in 2012, surplus in situ spawned fish were harvested and either fin-clipped or PIT tagged and transferred to Reach 3 below Davis Dam.

FY13 Accomplishments: Six backwaters were stocked at the beginning of the year with juvenile RASU that were originally collected from Lake Mohave as larvae and then reared at Willow Beach National Fish Hatchery. All fish were stocked in February at a size of at least 300 mm TL. AJ and Dandy backwaters were stocked as part of the C40 work task and expanded in 2013 to include Yuma backwater. The remaining stocked backwaters included North Chemehuevi, and Willow. The last backwater stocked was Davis as part of the C41 work task in March of 2013. The backwaters received 200, 200, 200, 198, 50, and 52 RASU, respectively, for a total of 900 RASU. An additional 300 BONY were stocked into Davis in April 2013 as part of the C41 work task and remained in the backwater. The total number of fish repatriated to Lake Mohave from the 2013 stockings was 349. Mean TL for all backwater pond fish at harvest was 454 mm with a range of 370 mm to 541 mm. Year class for all fish stocked in 2013 was 2009 except for Willow, which was year class 2010. North Nine Mile, Nevada Larvae, and Nevada Egg backwaters did not receive any fish in 2013.

All fish were PIT-tagged prior to the initial stocking into the backwaters. Fish were re-scanned at the time of harvest and a new tag was inserted if the original PIT tag was not detected. A total of 137 (Mean TL = 442 mm) RASU were netted from Yuma backwater in November 2013 and all fish were returned to the backwater as part of the C40 work task. Likewise, all 2013 Davis fish contacted were returned to the backwater as part of the C41 work task. A total of 136 in situ-produced fish captured from Yuma and Dandy were PIT-tagged and transferred to Reach 3 to supplement MSCP augmentation initiatives. An additional lot of more than 250 RASU less than 300 mm TL were fin clipped and released to Reach 3. A subset of these fish were randomly selected from the various size classes and used for genetic analysis (C40); all the remaining fish of all sizes were stocked in Reach 3. Table 1 lists numbers of fish repatriated to Lake Mohave from the 2013 harvest excluding Yuma and Davis.

Table 1. 2013 stocked adult razorback suckers repatriated to Lake Mohave from lake-side rearing ponds.

Pond/Backwater	# Stocked	Mean Length at Stocking (mm)	# Harvested	Mean Length at Harvest	% Harvested from 2013 Stocking
Yuma*	200	405	0	0	0.0
Willow	50	353	27	456	54.0
Dandy	200	404	123	455	61.5
Arizona Juvenile	200	412	99	433	49.5
N. Chemehuevi	198	396	100	471	50.5
Davis*	52	322	0	0	0.0
Total	**900**	**391**	**349**	**454**	**38.8**

*Ponds sampled with no repatriates released to Lake Mohave. Ponds were excluded from totals due to project goals related to C40 and C41 work tasks.

FY14 Activities: Lake-side ponds are again being used for RASU brood stock maintenance and development. Genetic and demographic investigations related to C40 work task in Arizona Juvenile, Yuma, and Dandy backwaters will continue to be gathered and in situ voluntarily spawned fish will continue to be harvested and released to downstream locations in Reach 3 below Davis Dam. Based on results from experimental fertilization regimes conducted in the backwaters from the previous three years (C44), the use of artificial propagation techniques to increase food resources will be discontinued.

Out-of-production backwaters, including North Nine Mile, Nevada Larvae, and Nevada Egg, will be stocked with BONY to quantify genetic and demographic parameters. This work is related to investigations into reproductive success of RASU in Arizona Juvenile, Yuma, and Dandy ponds (C40).

Proposed FY15 Activities: Efforts are expected to be consistent in FY 15; lake-side ponds along the shoreline of Lake Mohave will be operated and maintained for native fish. The ponds will be monitored in the spring and harvested in the fall as lake elevation declines, and fish reared in these ponds will be released back into Lake Mohave for development and maintenance of RASU brood stock. Voluntarily spawned fish from backwaters will continue to be transported downstream of Davis Dam. Any of these fish that are 300 mm or larger will continue to be recorded as a creditable fish under the program for RASU in Reach 3.

Pertinent Reports: N/A