

## Work Task B7: Lake-Side Rearing Ponds

FY09 Estimates	FY09 Actual	Cumulative Accomplishment Through FY09	FY10 Approved Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate
\$175,000	\$185,238.41	\$930,829.50	\$150,000	\$250,000	\$175,000	\$175,000

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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, Dexter NFH, and/or Bubbling Ponds SFH. In addition, some of the fish-rearing research activities outlined in C10, C11, C34, C40, 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 into sandbars or natural berms. In some areas these sandbars 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 29,000 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 transferred to Yuma Cove pond or Davis Cove pond, as these two ponds are more secure and support fish life all year.

**FY09 Accomplishments:** In 2009, some 1,653 large PIT-tagged RASU (275-440 mm TL) were transferred from Willow Beach NFH and stocked into seven lake-side ponds. Harvest for the seven ponds was conducted in May, September, and October. A total of 520 RASU were harvested from the ponds and repatriated to Lake Mohave (note that while this represents only 29% of the fish stocked, neither Davis nor Yuma coves were completely harvested). Results are presented in the table below.

**Table 1. 2009 RASU Repatriated to Lake Mohave**

<b>Ponds RASU</b>	<b># Stocked</b>	<b>Mean Length at Stocking</b>	<b># Harvested</b>	<b>Mean Length at Harvest</b>	<b>% Harvested</b>
Yuma*	464	356	194	426	42
Willow	40	394	3	480	8
Dandy	200	394	131	458	66
Arizona Juvenile	200	394	19	465	10
Nevada Larvae	50	394	0	0	0
N. Chemehueve	200	394	145	457	73
Davis*	499	317	28	495	1.4
<b>Total</b>	<b>1,653</b>	<b>378</b>	<b>520</b>	<b>448</b>	<b>29%</b>

\*Yuma Cove and Davis Cove ponds sustain fish all year long and have multiple year class fish.

Neither Nevada Egg nor South Sidewinder were used in 2009. Nevada Egg's earthen berm had breached, and it was invaded by non-native fish. South Sidewinder has not been successful the past few years due to poor water quality. It will be reevaluated next year. Nine Mile backwater was not stocked with large RASU from Willow Beach; however, it

did receive 1,724 young-of-year RASU (19 mm) from experiments conducted in our Boulder City, Nevada fish laboratory.

In addition to the repatriated fish, more than 4,000 young-of-year fish were generated by in situ production. These young fish were transferred into ponds at Yuma Cove (2,600 fish, 199 mm) and Davis Cove (1,442 fish, 198 mm).

Zooplankton samples were collected at these ponds under work task C31. Samples of any larvae produced by in-pond production are being captured and analyzed under work task C31.

**FY10 Activities:** Lake-side ponds are again being used for RASU brood stock maintenance and development. Characterization of zooplankton communities in these ponds continues under work task C34, and available larvae are being sampled for analyses under work task C31.

**Proposed FY11 Activities:** Lake-side ponds will continue to be used for RASU brood stock maintenance and development. An additional \$100,000 is requested for this year to rebuild the earthen berm at Yuma Cove. A new research investigation will be initiated to look at ways to better manage natural food resources in these ponds (C44). Investigations will look into how origin site affects survival.

**Pertinent Reports:** The *2005-2009 Fish Augmentation Summary* is under development and will be posted to the LCR MSCP Web site.