

## Work Task C13: Lake Mead Razorback Sucker Study

FY09 Estimates	FY09 Actual	Cumulative Accomplishment Through FY09	FY10 Approved Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate
\$150,000	\$149,876.40	\$963,379.63	\$300,000	\$125,000	\$125,000	\$125,000

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**Start Date:** FY05

**Expected Duration:** FY15

**Long-term Goal:** Determine conditions that allow for natural recruitment of RASU.

**Conservation Measures:** RASU7

**Location:** Reach 1, Lake Mead, Nevada/Arizona

**Purpose:** Assess RASU population and recruitment in Lake Mead.

**Connections with Other Work Tasks (past and future):** This work task was previously included in the Draft FY05 Work Tasks as Lake Mead Razorback Study (D7). Larvae collected during this effort are to be reared at Lake Mead Hatchery (B6) and Overton WMA (B11).

**Project Description:** The LCR MSCP will continue to fund and support the ongoing studies of RASU in Lake Mead that were implemented under the SIA BO. The focus areas of these studies are:

1. Locate populations of RASU in Lake Mead.
2. Document use and availability of spawning areas at various water elevations.
3. Monitor potential nursery areas.
4. Continue aging of captured RASU.
5. Confirm recruitment events that may be tied to physical conditions in the lake.

These studies began in 1995 and were anticipated to be completed within a 5-10 year period. However, under Conservation Measure RASU7, these studies may be followed by further research and monitoring within the LCR MSCP adaptive management program.

**Previous Activities:** The SNWA began a monitoring program for RASU in Lake Mead in 1995, partnering with NDOW and Reclamation. Between 1995 and 2004, some 200 adult and 30 juvenile RASU were captured. Aging data showed that a low level of recruitment has occurred in at least 22 of the past 30 years. This remarkable recruitment

has happened in the face of extensive non-native fish populations and declining lake elevations. A summary report of the first 10 years of the study was completed and posted to the LCR MSCP Web site.

**FY09 Accomplishments:** Trammel netting surveys during the spawning season resulted in the capture of 80 RASU: 4 from Echo Bay, 49 from Las Vegas Bay, and 27 from the Muddy River/Virgin River inflow area. Thirty-five of the RASU collected were subadult fish, and 28 were recaptures. Aging and growth information was obtained from captured RASU, and evaluation of captured fish suggests continued, recent recruitment in Lake Mead. Eight hundred and eighty larval RASU were also captured during the spawning season. All larvae were subsequently delivered to the Lake Mead SFH for grow out (B6). Monitoring of sonic-tagged fish continued to gather information on habitat use and movement patterns of RASU. Data obtained from monitoring sonic-tagged fish provided valuable information including the general location of the RASU population, the location of spawning sites, and the movement patterns of RASU within and between spawning areas. An additional 12 RASU were implanted with sonic tags and released at identified spawning locations during this study year to allow for continued monitoring of the Lake Mead population for the next several years.

**FY10 Activities:** All RASU monitoring actions are expected to continue. These actions will include larval sampling, adult trammel netting, monitoring of sonic-tagged fish, evaluating growth rates of recaptured fish, and fin-ray collection and aging of subadult and adult RASU. Data obtained through these monitoring actions will further assist in understanding the size and habitat use of the RASU populations in Lake Mead, help document the exchange of fish between the major spawning areas, identify problems or habitat shifts associated with the known spawning aggregates, and provide information on recruitment patterns in Lake Mead.

A cooperative research study between Reclamation and the Glen Canyon Dam Adaptive Management Program will take place in the Colorado River inflow area of Lake Mead. Investigations in this area of the lake are being performed to determine the presence or absence of an additional population of Lake Mead RASU.

**Proposed FY11 Activities:** Monitoring of RASU ecology in Lake Mead will continue. However, this work has been separated from the research task and has been reassigned to an existing work task under the System Monitoring portion of the LCR MSCP (see D8). Investigations will continue in the Colorado River inflow area of Lake Mead in conjunction with researchers from the Grand Canyon area.

**Pertinent Reports:** The *Razorback Sucker Studies on Lake Mead, Nevada and Arizona 2008-2009 Final Annual Report*, the *2007-2008 Final Annual Report*, the 10-year comprehensive report, *Razorback Sucker Studies on Lake Mead, Nevada and Arizona 1996-2007*, and *Lake Mead Razorback Sucker Monitoring Recommendations* are available on the LCR MSCP Web site.