

## Work Task C13: Lake Mead Razorback Sucker Study

FY15 Estimate	FY15 Actual Obligations	Cumulative Expenditures Through FY15	FY16 Approved Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate
\$135,000	\$135,241.40	\$1,695,608.41	\$0	\$0	\$0	\$0

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**Start Date:** FY05

**Expected Duration:** Closed in FY15

**Long-Term Goal:** Investigate conditions that allow for natural recruitment of razorback suckers in Lake Mead

**Conservation Measures:** RASU7

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

**Purpose:** To assess the razorback sucker 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 Work Task D7. The long-term monitoring portion of this work has now been moved to Work Task D8, and larvae collected through that effort are being reared at the Lake Mead Fish Hatchery (B6) and Overton Wildlife Management Area (B11).

**Project Description:** The focus areas of this study are to:

- Locate populations of razorback suckers in Lake Mead
- Document use and availability of spawning areas at various water elevations
- Monitor potential nursery areas
- Continue aging of captured razorback suckers
- Confirm recruitment events that may be tied to physical conditions in the lake

**Previous Activities:** In 1995, the Southern Nevada Water Authority, Nevada Department of Wildlife, and the Bureau of Reclamation began a monitoring program for razorback suckers in Lake Mead. Between 1995 and 2004, some 200 adult and 30 juvenile razorback suckers were captured. Aging data showed that a low level of recruitment had occurred in at least 22 of the past 30 years. This 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 on the LCR MSCP Web site. The general sites identified in that report are now part of the long-term monitoring for razorback suckers in Lake Mead (D8). Research under this work task began focusing on an additional area of Lake Mead, the Colorado River inflow, in FY10, and was further expanded to include the lower Grand Canyon in FY13 as part of a multi-agency cooperative effort. Similar to past research efforts on Lake Mead, this work utilizes hatchery-reared and wild, sonic-tagged razorback suckers to assist researchers in locating spawning aggregates. Through FY13, 27 hatchery-reared and wild razorback suckers have been sonic or radio tagged as part of this effort. These fish have provided information that assisted in the capture of 82 razorback sucker larvae, 12 flannelmouth sucker larvae, 42 wild adult razorback suckers, and approximately 500 flannelmouth suckers from the Colorado River inflow. All captured adult and subadult native fish were passive integrated transponder tagged for individual identification before being released back into Lake Mead, and all captured razorback suckers have been aged between 2 and 11 years old. In FY14, habitat use and information pertaining to movement patterns of razorback suckers were obtained from 25 sonic-tagged fish that were contacted during the year. These 25 fish included the 11 released in 2014 as well as an additional 14 fish that were released during prior study years. Some sonic-tagged fish were observed to use both the Colorado River inflow and lower Grand Canyon regardless of where they were released, which may indicate that both areas provide important habitat for this species.

**FY15 Accomplishments:** Sonic-tagged razorback suckers were used in FY15 to locate potential spawning sites in the Colorado River inflow area of Lake Mead. Contacts with sonic-tagged fish were used to direct sampling efforts within the study area, and larval sampling and trammel netting were conducted where concentrations of razorback suckers were suspected. During the 2015 spawning period (February – May), a total of 45 larval razorback suckers were captured from two primary locations deemed to be spawning areas. Trammel netting (1,658 net-hours) conducted in similar areas resulted in the capture of 17 razorback suckers, 3 razorback-flannelmouth sucker hybrids, and 129 flannelmouth suckers. Of the 17 razorback suckers captured, 11 were wild, and 6 were pond-reared fish stocked in previous years. Three of the 11 wild fish were successfully implanted with sonic tags during the study year. These fish will help maintain an effective presence of sonic-tagged fish in the lake, and will be beneficial to the continuing work in the Colorado River inflow and lower Grand Canyon as well as ongoing monitoring occurring throughout the lake.

The expansion of sonic telemetry efforts into the lower Grand Canyon in 2013, and the continued use of sonic telemetry through 2015, has helped to document the connectivity and movement of razorback suckers between the Colorado River inflow and lower Grand Canyon. Movement of sonic-tagged razorback suckers from the Colorado River inflow to other areas of Lake Mead, and vice versa, has also been documented. Considering the size, dynamic nature, and the previously unknown status of razorback suckers using the study area, sonic-tagged fish were crucial in providing new information regarding razorback sucker general habitat use. The documentation of movement between the Colorado River inflow, lower Grand Canyon, and the greater Lake Mead study area may also indicate that all of these areas provide important habitat for this species.

All monitoring actions, including larval sampling, trammel netting, tracking of sonic-tagged fish, evaluating growth rates of recaptured fish, and fin ray sectioning for aging adult and subadult razorback suckers are expected to continue. Data obtained through these continuing actions will help further identify the size, age structure, habitat use, spawning areas, and recruitment patterns of razorback suckers located in the Colorado River inflow and lower Grand Canyon. All remaining FY15-initiated research activities will be completed in FY16 using FY15 funding that was obligated for this work but has yet to be expended. Parts of this specific research may also transition into long-term monitoring and be continued at a reduced effort under Work Task D8 in subsequent years.

**FY16 Activities:** This work task was closed in FY15.

**Proposed FY17 Activities:** This work task was closed in FY15.

**Pertinent Reports:** The 2015 final annual report titled *Razorback Sucker Research and Monitoring in the Colorado River Inflow Area of Lake Mead and the Lower Grand Canyon, Arizona and Nevada* will be posted on the LCR MSCP Web site upon completion.