

## Work Task C57: Sonic Telemetry of Lake Mead Juvenile Razorback Sucker

FY14 Estimate	FY14 Actual Obligations	Cumulative Expenditures Through FY14	FY15 Approved Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate
\$250,000	\$229,689.31	\$312,391.65	\$250,000	\$0	\$0	\$0

**Contact:** Jim Stolberg, (702) 293-8206, [jstolberg@usbr.gov](mailto:jstolberg@usbr.gov)

**Start Date:** FY13

**Expected Duration:** FY15

**Long-Term Goal:** Support RASU conservation

**Conservation Measures:** RASU 6

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

**Purpose:** To investigate habitat use of immature razorback sucker and evaluate conditions that allow for natural recruitment of Lake Mead razorback sucker

**Connections with Other Work Tasks (Past and Future):** This work task is related to Work Tasks C13 and D8.

**Project Description:** From 1996 to 2011, 95 sonic-tagged adult razorback sucker have aided researchers in locating spawning populations of this species in Lake Mead and in understanding the habitat use and spawning preferences of the adult population. Trammel netting efforts during this time also provided valuable information on Lake Mead razorback sucker demographics and included the capture of over 100 juvenile/subadults. Limited effort has been expended trying to capture this young life stage, which is an important element in understanding why razorback sucker recruitment is occurring in Lake Mead. The habitat use of immature razorback sucker will be investigated through the use of sonic telemetry, and an attempt will be made to capture additional wild, immature razorback sucker through traditional fisheries techniques.

**Previous Activities:** This study builds upon work conducted on the Lake Mead adult razorback sucker population (C13 and D8).

Sonic telemetry of juvenile, Lake Mead razorback sucker was initiated in FY13. Eighteen juvenile razorback sucker were surgically implanted with 3- or 12-month sonic transmitters in May and released as three groups into Las Vegas Bay, Echo Bay, and the Muddy River/Virgin River inflow area. Following the

release of sonic-tagged fish, 3 months of intensive fish community sampling was conducted in an effort to capture wild, juvenile razorback sucker. Active and passive sonic surveillance were also used throughout the year to characterize the movements and habitats occupied by these juvenile fish as well as to provide locations for sampling efforts. Contacts resulting from active sonic surveillance allowed for quantification and assessment of 74 habitat replicates. Individual fish were observed to use similar habitat throughout the lake regardless of location or season, associating with shallow, densely vegetated habitat in the spring and deeper habitats with no apparent cover other than turbidity in the summer and early fall.

**FY14 Accomplishments:** An additional 18 juvenile razorback sucker were obtained from the Lake Mead Fish Hatchery (B6) and surgically implanted with sonic transmitters in 2014. Fish were again selected from two separate size classes of juveniles and received sonic tags with either a 3- or 12-month battery life. Twelve fish received 12-month sonic tags and were released into Lake Mead in March. These fish were released in cohorts of four fish at Las Vegas Bay, Echo Bay, and the Muddy River/Virgin River inflow area. This group allowed for sonic surveillance and habitat assessments to be conducted throughout the year. The remaining six fish received 3-month sonic tags and were released in pairs at Las Vegas Bay, Echo Bay, and the Muddy River/Virgin River inflow area in September. This group allowed for an increased presence of sonic-tagged fish during the fall intensive community sampling effort.

Active and passive sonic surveillance were used throughout the year to characterize movements and habitat(s) occupied by these juvenile fish. In association with sonic surveillance efforts, electrofishing, minnow traps, hoop nets, trammel nets, fyke nets, and seines were also used to sample the fish community in areas where sonic-tagged fish were located. At the end of the 2014 calendar year, active sonic surveillance had resulted in a total of 120 contacts among all 18 individuals. These contacts allowed for the quantification and assessment of over 300 habitat replicates, which showed that individuals associated with inshore, shallow habitat characterized by varying amounts of inundated cover and high turbidities during the spring and early summer; offshore, deeper habitat following mid-summer increases in water temperatures; and a shift back to shallower habitats with cover during the fall. In addition to cover and depth, general water quality parameters and substrate samples were also collected. While no additional wild, juvenile razorback sucker were contacted during the study year, 11 adult razorback sucker were captured in direct association with sonic-tagged juvenile razorback sucker in Echo Bay and Las Vegas Bay during the September and November intensive community sampling efforts. Nine of these fish were new, wild captures. Although these individuals were relatively large in comparison to their sonic-tagged counterparts,

similarities in behavior and habitat selection were observed. This discovery also highlighted the continued success in using sonic-tagged razorback sucker to locate additional wild individuals.

**FY15 Activities:** As 12-month sonic tags from the FY14 field season near the end of their expected battery life, an additional 18 juvenile razorback sucker will be implanted with sonic transmitters. Twelve of these fish will again receive 12-month sonic tags and be stocked at the start of the FY15 field season (May). The remaining six fish will receive 3-month sonic tags, but these fish will be stocked in December 2015 to observe any seasonal variation in habitat use for this smaller class of fish. Sonic surveillance, habitat assessment, and collection of physicochemical data will again occur throughout the year, and intensive sampling of the conspecific fish community is anticipated to begin with the December 2015 stocking. Funds were obligated in FY15 to complete this effort; therefore, no additional costs are anticipated in FY16.

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

**Pertinent Reports:** The *Sonic Telemetry and Habitat Use of Juvenile Razorback Suckers in Lake Mead: 2014–2015 Annual Report* will be posted on the LCR MSCP Web site following review.