Work Task C57: Sonic Telemetry of Lake Mead Juvenile Razorback Suckers

FY13 Estimate	FY13 Actual Obligations	Cumulative Expenditures Through FY13	FY14 Approved Estimate	FY15 Proposed Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate
$250,000	$232,247.32	$164,854.07	$250,000	$250,000	$0	$0

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Start Date: FY13

Expected Duration: FY15

Long-term Goal: Support razorback sucker (RASU) conservation.

Conservation Measures: RASU 6.

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

Purpose: Investigate habitat use of immature RASU and conditions that allow for natural recruitment of Lake Mead RASU.

Connections with Other Work Tasks (past and future): This work task is related to the Lake Mead Razorback Sucker Study (C13) and Razorback Sucker and Bonytail Stock Assessment (D8) work tasks.

Project Description: From 1996 to 2011, 95 sonic-tagged adult RASU have aided researchers in locating spawning populations of RASU 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 RASU demographics and included the capture of over 100 juvenile/sub-adult RASU. To date only limited effort has been expended trying to capture this young life stage, which is an important element in understanding why RASU recruitment is occurring in Lake Mead. This project will investigate habitat use of immature RASU through sonic telemetry and attempt to capture additional wild, immature RASU through traditional fisheries techniques.

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

FY13 Accomplishments: Eighteen juvenile RASU were obtained from the Lake Mead Hatchery (B6) and surgically implanted with sonic transmitters in May 2013. Fish were selected from two separate size classes of juveniles and received sonic tags with either a 12 or 3-month battery life, 12 and 6 fish, respectively. These fish were then divided into

groups of 6, four fish with 12-month tags and two fish with 3-month tags, and stocked into three separate locations in Lake Mead including Las Vegas Bay, Echo Bay, and the Muddy River/Virgin River inflow area. Active and passive sonic surveillance were used throughout the year to characterize the movements and habitat(s) occupied by these juvenile fish. In association with sonic surveillance efforts, traditional sampling of the fish community using minnow traps, hoop nets, trammel nets, fyke nets, and seines was also conducted in areas where sonic-tagged fish were located. At the end of the 2013 calendar year, active sonic surveillance had resulted in a total of 97 contacts with 15 individuals. These contacts allowed for the quantification and assessment of 74 habitat replicates, which showed that individuals occupied inshore habitats characterized by dense inundated vegetation in the spring, and offshore habitats with greater depths and no apparent cover other than turbidity in the summer and early fall. Furthermore, habitats for contacted individuals were observed to be similar throughout the lake regardless of location. In addition to cover and depth, general water quality parameters and substrate samples were also collected. While no additional wild, juvenile RASU were contacted during the study year, fish community sampling conducted at the location of sonic-tagged juvenile RASU did result in the capture of 4 new wild adult RASU. Though all of these individuals were relatively large in comparison to their sonic-tagged counterparts, it is worth noting the observed similarities in both behavior and habitat selection, as well as highlighting the continued success in utilizing sonic-tagged RASU to locate additional wild individuals.

FY14 Activities: As 12-month sonic tags from the FY13 field season near the end of their expected battery life, an additional eighteen juvenile RASU 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 FY14 field season (May). The remaining 6 fish will receive 3-month sonic tags as was done during the previous year, but these fish will be stocked later in the year (September) 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 September stocking.

Proposed FY15 Activities: Additional hatchery reared juvenile RASU will be sonic tagged for the purposes of tracking, and follow up sampling will be conducted with the goal of capturing wild juveniles for inclusion in the tracking portion of this work. All other project elements will also continue.

Pertinent Reports: The *Sonic Telemetry and Habitat Use of Juvenile Razorback Suckers in Lake Mead: 2013-2014 Annual Report* will be posted to the LCR MSCP website following review.