

Work Task C64: Post-Stocking Movement, Distribution, and Habitat Use of Razorback Suckers and Bonytail

FY15 Estimate	FY15 Actual Obligations	Cumulative Accomplishment Through FY15	FY16 Approved Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate
\$700,000	\$686,445.37	\$502,874.59	\$700,000	\$750,000	\$750,000	\$750,000

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Start Date: FY15

Expected Duration: FY27

Long-Term Goal: To maintain an effective LCR MSCP Fish Augmentation Program

Conservation Measures: BONY3, BONY 4, BONY5, RASU3, RASU4, and RASU6

Location: Reaches 2–5

Purpose: To provide information on movement, distribution, and habitat use of stocked razorback suckers and bonytail and to use this information to set up an appropriate monitoring network to suggest potential stocking locations and track post-stocking survival

Connections with Other Work Tasks (Past and Future): This work task represents the merger of three previously funded work tasks: C39, C45, and C49. The intent of this combination was to capture these activities with similar purposes and scope into a consolidated, multi-reach effort for both razorback suckers and bonytail. This work task is related to Work Tasks B2, B3, B4, and B6, all of which provide razorback suckers and bonytail for augmentation stocking and may also build on information gained in Reach 1 through Work Tasks C13 and C57. Information collected under this work task will be added to the database used to complete Work Task D8. This work task also has a past relationship with Work Task C8 (closed) and is expected to have future interactions with Work Task C61 or other work tasks that can benefit from the information and/or the monitoring network created under Work Task C64. Funds from Work Task G3 were provided in FY14 to accomplish preliminary work in Reach 2 that will be covered by this work task in FY15.

Project Description: The activities covered under this work task both consolidate and build on the work that has been undertaken and accomplished under closed Work Tasks C39, C45, and C49. The approaches used to identify appropriate stocking locations throughout Reaches 2–5 will be formalized, which will be accomplished through pilot releases of tagged fish to identify dispersal and movement of individuals or groups of fish. Information on preliminary post-stocking habitat selection and use and survival will be provided and can then be used to: (1) establish a more appropriate monitoring network in terms of where to locate remote sensing equipment or other sampling gear with higher probabilities for contacts, (2) indicate locations that may be better suited for stocking fish, and (3) possibly identify additional aggregations of native fishes.

The networks that are established under this work task will also provide monitoring information on the effectiveness of different stocking treatments (conducted under Work Task C61) as well as longer-term information on survival, habitat use, and movement of native fishes in these reaches. Eventually, these established long-term monitoring networks may be used for system-wide monitoring and would be covered under Work Task D8.

Previous Activities: Detailed accounts of work and accomplishments covered under closed Work Tasks C39, C45, and C49 have been reported under these tasks and in their associated technical reports. They include the tracking and monitoring of stocked razorback suckers and bonytail in specific areas in Reaches 3 and 4. Post-stocking movement and habitat use have been documented, and post-stocking survival estimates have been developed for razorback suckers and/or bonytail in these reaches.

FY15 Accomplishments:

Reach 2: Nineteen adult razorback suckers were captured from Lake Mohave in February 2015, implanted with 3-year sonic tags, and released back into the lake in March. These fish were released as two groups, with 9 released at Willow Beach (River Mile 52) and 10 released at Katherine Landing (River Mile 2). The fish were monitored monthly through passive and active tracking, which allowed for identification of large-scale movements and use of specific habitats, respectively. Based on passive contacts, fish were observed to disperse throughout the lake within approximately 3 months of release, often traveling more than 40 miles from their release location. Active contacts provided information regarding seasonal habitat use, with fish using deeper, mid-channel habitat in late spring and summer and shallow inshore habitat in late fall. Approximately 50% of sonic-tagged razorback suckers were observed to return to their point of capture within 11 months following release.

Reach 3: FY15 was the last year of a 5-year project to look at the habitat use of razorback suckers in eight backwaters and the lower Colorado River from Park Moabi downstream to the Lake Havasu delta. During FY15, two trammel

netting efforts (November and February) and monthly passive integrated transponder (PIT) scanning efforts were completed. During the 5 years of trammel netting (2011–15), 556 unique razorback suckers were contacted, and 3,770 unique razorback suckers were contacted during the 3 years of PIT scanning (2013–015). Backwater monitoring with both trammel nets and PIT scanners had a similar pattern of contacting recently released fish (< 3 years), and 42% of fish contacted by both trammel net and PIT scanner were released within 1 year.

Razorback catch per unit effort for trammel nets and PIT scanners was much higher in Park Moabi when compared to the seven other backwaters: 78 razorback suckers per 1,000-square-meter trammel net were contacted in Park Moabi compared to less than 10 razorback suckers per same-sized trammel net in the other seven backwaters. Scanning catch per unit effort was similar to trammel netting: the contact rate at Park Moabi was estimated to be 35 razorback suckers per 1,440 minutes of scanning compared to < 4 razorback suckers per 1,440 minutes of scanning in the other seven backwaters. Water quality is distinctly different in Park Moabi (primarily lower in temperature). It is suggested that the composition of aquatic vegetation is a likely result of these different limnological characteristics. Razorback suckers have been more frequently associated with the vegetation that predominates in Park Moabi as opposed to different vegetation types that typify the other backwaters that were sampled. The greater razorback sucker contact rates in Park Moabi suggest selection for these specific habitat features. These features may also be contributing to improved long-term survival; Reach 3 monitoring accomplished under Work Task D8 has shown that Park Moabi stocking cohorts have relatively higher re-contact rates, which may be an indication of increased survival.

Bonytail survival, distribution and habitat use was assessed at two different locations in FY15: Bill Williams River in the fall of 2014 and Park Moabi in the spring of 2015. Information was obtained through the use of sonic telemetry and remote PIT scanning. The Bill Williams River release site continues to result in low re-contacts for bonytail; 17 of 19 telemetered fish were confirmed mortalities within 1 month of tracking. Of the remaining two fish, only one fish was active, and another left the study area. Four of 14 study fish released in Park Moabi were confirmed mortalities, 1 left the study area, and 9 were lost (not recorded as leaving the study area – potential bird depredation) within the study area. Active contacts for telemetered fish within Park Moabi occurred in bulrush 20% of the time, and there were several other direct observations of non-telemetered bonytail also in bulrush.

Remote PIT scanning for these two locations shows that initial contact rates are high within the first weeks post-release and then drop rapidly in subsequent weeks. The Bill Williams River study resulted in the contact of 84% of the released fish within the first 2 weeks and less than 5% by week three. Similarly, the Park Moabi study resulted in the contact of 73% of the released fish within the

first 2 weeks and approximately 8% by week three. Apparent daily survival for Park Moabi fishes is approximately 93%, which is considerably higher than the previous estimate of 71% at Blankenship Bend.

Reach 4: A total of 1,797 razorback suckers and 4,864 bonytail were stocked within Reach 4, downstream of Palo Verde Diversion Dam, during the calendar year. Per the study plan for Reaches 4 and 5, monthly PIT tag scanning surveys below Palo Verde Diversion Dam began in November 2014 (FY15). Efforts involved deploying 12–14 PIT tag scanners within the main stem river as well as the backwaters from River Mile 94 to River Mile 120. Scanners were set overnight and then retrieved, data downloaded, and the scanners then redeployed in another location on the following day. Over the 11 months of scanning in FY15, 236 razorback suckers and 258 unique bonytail were contacted. Of these 258 bonytail, 222 were scanned within 4 days after their release into the A-10 backwater on September 23, 2015.

One netting survey in February 2015 resulted in the capture of three bonytail in the A-7 backwater. These fish were stocked on December 10, 2014, at the A-10 backwater, which is about 5 miles downstream from the A-7 backwater. In February 2015, 18 razorback sucker larvae were also collected from five different backwaters that were connected to the main stem river.

Reach 5: No fish were stocked into Reach 5; however, there is no physical barrier to prevent fish movement between Reach 4 below Palo Verde Diversion Dam and the upper section of Reach 5. Per the study plan for Reaches 4 and 5, monthly PIT tag scanning surveys below Palo Verde Diversion Dam began in November 2014.

Efforts involved deploying 12–14 PIT tag scanners within the main stem river as well as the backwaters from River Mile 54 to River Mile 60, within Reach 5. Scanners were set to operate overnight and then retrieved, data downloaded, and the scanner then redeployed in another location the following day. One razorback sucker was contacted in FY15 in a side channel on the California bank, about 0.80 river mile downstream of Ferguson Lake in Reach 5. One night of netting was conducted in Martinez Lake in February 2015; no native fishes were captured during this event. Later in February 2015, three razorback sucker larvae were collected from two different backwaters, Fisher’s Landing and Martinez Lake, which were connected to the main stem river in Reach 5.

FY16 Activities: The budget estimates reflect the projected costs for FY16 from combined closed Work Tasks C39, C45, and C49 plus the additional work described below for Reaches 2, 4, and 5.

Reach 2: Nineteen bonytail were obtained from the Lake Mead Fish Hatchery (B6), implanted with 9-month sonic tags, and released into Lake Mohave with a cohort of approximately 400 bonytail in early FY16. These fish were released at

Arrowhead Cove, a site where bonytail were historically captured. Active tracking was conducted intensively for 6 weeks after release to maintain contact with these fish. Less intensive active tracking and continuous passive tracking will continue throughout FY16.

Sonic tags from the FY15 study year are near the end of their battery life, so an additional 20 bonytail will be implanted with sonic tags and released at locations in the lake where they were historically found. Following release, fish will be intensively tracked to evaluate dispersal, movement patterns, habitat selection, and survival rates. Data gathered from this effort will be used to inform managers of future stocking of bonytail in Lake Mohave to meet LCR MSCP commitments.

Sonic-tagged razorback suckers released in FY15 will also continue to be tracked as part of this effort, as this work can be performed concurrently and will help to maximize resources and the use of acquired equipment. Tracking of razorback suckers will be used to evaluate movement patterns, seasonal habitat use or preference, and spawning site fidelity. Contacts with sonic-tagged razorback suckers will also be used to inform sampling locations for ongoing monitoring efforts.

Reach 3: Due to promising flannelmouth and razorback sucker observations in Laughlin Lagoon, an additional iteration of bonytail telemetry and PIT scanning was initiated. This release also included radio-tagged fish to help determine the fate of fish lost within the study area. As with previous iterations, relative survival and habitat usage will be evaluated.

Reaches 4 and 5: Razorback sucker and bonytail stockings, as well as survey and monitoring efforts below Palo Verde Diversion Dam, will continue in FY16. Monthly PIT tag scanning surveys for FY16 began in October 2015 and will continue through September 2016. One netting survey in November 2016 resulted in the capture of two razorback suckers and seven bonytail. One electrofishing survey in the main stem river and two backwaters (A-7 and C-7) in December 2016 resulted in 14 razorback suckers and 1 bonytail captured. The razorback suckers were released 1 week prior to the survey.

Sonic telemetry of razorback suckers and bonytail will begin in the spring of 2016. Surveys and monitoring efforts below Palo Verde Diversion Dam will be used to inform managers of potential release locations in this portion of Reach 4.

Proposed FY17 Activities: Proposed activities for this work task have been summarized by river reach. Paired experimental releases of razorback suckers and bonytail exposed to predator avoidance conditioning and non-conditioned fish will be initiated. The location for the experiment is undecided, but one will be selected based on conditions suited for the experiment. Increases in the budget estimates for FY17 and out-years are in preparation for potential experimental stocking efforts and associated monitoring in Reaches 4 and 5.

More intensive monitoring is expected to commence along with the increased yearly experimental stocking numbers of razorback suckers and bonytail in these reaches. In order to offset some of the costs of this work task, monitoring efforts under Work Task C64 will be reduced in Reach 3 until hatchery rearing capacity is sufficient to allow the increased experimental stocking rates to commence in Reach 3. Overall increases in expenditures are still expected, however, due to the size, complexity, and accessibility issues involved in conducting work in Reaches 4 and 5.

Reach 2: Sonic-tagged razorback sucker monitoring will continue. Continued releases of sonic-tagged bonytail will also occur in Lake Mohave and will build upon the results from previous years.

Reach 3: No work is scheduled from this work task for this reach.

Reach 4: Surveys and monitoring efforts will continue in FY17. Collected data will be used to inform managers of potential release locations in Reach 4.

Reach 5: Pilot releases of pit-tagged and sonic-tagged razorback suckers and bonytail will occur in a number of locations in Reach 5.

Pertinent Reports: A report summarizing the Reach 3 bonytail work for the past several years will be posted on the LCR MSCP Web site upon completion.