

Work Task B1: Lake Mohave Razorback Sucker Larvae Collections

FY16 Estimate	FY16 Actual Obligations	Cumulative Expenditures Through FY16	FY17 Approved Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate	FY20 Proposed Estimate
\$200,000	\$216,932.74	\$2,354,070.71	\$215,000	\$215,000	\$215,000	\$215,000

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Start Date: FY04

Expected Duration: FY55

Long-Term Goal: Fish augmentation

Conservation Measures: RASU3, RASU5, and RASU8

Location: Reach 2, Lake Mohave, Arizona/Nevada

Purpose: To develop the razorback sucker (*Xyrauchen texanus*) broodstock in Lake Mohave, maintain the broodstock, and harvest offspring for rearing as needed for the LCR MSCP Fish Augmentation Program

Connections with Other Work Tasks (Past and Future): Work Tasks B2, B3, B4, B5, B6, and B7 are related to this work task, as the razorback suckers to be reared under these work tasks originate from Lake Mohave. Other research related to larvae collection, handling, and genetics include Work Tasks C30 (closed), C31, and C40.

Project Description: The razorback sucker broodstock in Lake Mohave provides a level of genetic diversity found nowhere else in the world. Under this project, wild-born razorback sucker larvae from Lake Mohave are captured and delivered to the Willow Beach National Fish Hatchery (Willow Beach NFH) for initial rearing. The work involved under this work task includes surveys to locate spawning groups, nighttime larvae collection, and maintaining the boat fleet and field station at Cottonwood Cove. Larvae are captured one at a time, making this a labor-intensive program.

Work normally commences in January and extends into late April or early May. Equipment is delivered to and staged at Cottonwood Cove where a field station is established. The lake's shoreline is surveyed, and locations of spawning aggregations of razorback suckers are recorded. Razorback sucker larvae attracted to submerged lights suspended from boats are captured by net and

counted. The larvae are transferred to the Willow Beach NFH, by either boat or vehicle, where they are logged in by date received, number collected, and location. This work task is repeated 3 to 4 nights per week through mid-to-late April. Research under Work Task C31 has helped to define larvae collection protocols. In order to represent the high genetic diversity of razorback sucker larvae used for rearing, collection efforts will continue to be distributed both temporally across the spawning season and spatially among the known spawning areas on Lake Mohave.

Previous Activities: This work task is part of a program started by the Lake Mohave Native Fish Work Group in 1989 to rebuild the adult stock of razorback suckers in Lake Mohave so that these fish could be used as brood fish for razorback sucker conservation and recovery. A portion of the larvae collected is used to sustain the broodstock, and the remaining larvae are reared for release into Reaches 2–5 to accomplish the augmentation goals of the program. In 2007, an invasive species, quagga mussels (*Dreissena bugensis*), were found within the Lake Mead National Recreational Area, which includes Lake Mohave. To avoid transferring this species into other waters where they currently do not exist, larvae are no longer transported outside the lower Colorado River to the Southwestern Native Aquatic Resources and Recovery Center in Dexter, New Mexico, or the Bubbling Ponds Fish Hatchery. Therefore, there is no longer a connection with Work Tasks B4 or B5.

FY16 Accomplishments: A target of 18,000 larvae was established for FY16 in coordination with the Lake Mohave Native Fish Work Group. This quantity was established to provide the appropriate number of larvae for the new rearing strategy at the Willow Beach NFH. Of these larvae, 14,607 were reserved for rearing at the Willow Beach NFH, and the remaining were reserved for rearing at the Lake Mead Fish Hatchery.

A total of 18,050 wild larvae were collected from four areas of Lake Mohave. The Willow Beach NFH received 14,607 larvae for further grow-out. The remaining 3,443 were delivered to the Lake Mead Fish Hatchery for further grow-out. The contribution from each zone of Lake Mohave by month of capture is presented in table 1.

Table 1.—Larval Razorback Suckers Collected from Lake Mohave, 2016*

Location	January	February	March	April	May	Total
Nine Mile	0	1,670	2,823	618	0	5,111
Tequila	150	1,800	2,290	762	0	5,002
Yuma	300	2,100	2,464	628	0	5,492
Above Owl Point	0	928	598	919	0	2,445
Total	450	6,498	8,175	2,927	0	18,050

* Larvae collection numbers should be considered approximations. Larvae are collected by hand and counted during collection; however, exact counts of larvae are not verified.

Remote passive integrated transponder scanners were placed throughout the spawning areas to assess the population of fish spawning at each location. Telemetry tags have also been used on adult stocked fish in an attempt to find new spawning areas.

FY17 Activities: A target of 33,000 larvae was established for FY17 in coordination with the Lake Mohave Native Fish Work Group. The increase in the larval collection goal for FY17 is to prepare for future razorback sucker augmentation goals, rebuild fish stocks due to losses at the Willow Beach NFH in early FY17, and provide contingencies for other unforeseen events. Distribution of the 33,000 larvae is as follows: 3,500 larvae will be delivered to the Lake Mead Fish Hatchery for further grow-out, and the Willow Beach NFH will receive 20,500 larvae. Of these, 15,000 larvae will remain on station for rearing. Once 5,500 of these larval fish at the Willow Beach NFH have reached fingerling size, they will be transferred to the Lake Mead Fish Hatchery for continued rearing. The remaining 9,000 larvae collected from Lake Mohave will be delivered to the Achii Hanyo Native Fish Rearing Facility for rearing. As part of the effort to better represent larvae collections from the Lake Mohave riverine subpopulation, up to 5,000 of the larval goal of 33,000 will be collected from areas upstream of the Willow Beach NFH. Increasing the collection effort in this area may provide a better representation of the total genetic makeup of razorback suckers within the Lake Mohave system.

The projected increase in the budget estimate for FY17 is attributed to the implementation of additional safety measures associated with collecting larvae as well as the increased effort needed to achieve FY17 larval goals, which includes the use of check-in/check-out protocols with National Park Service radio dispatch to ensure nighttime crews get off the water safely. Additional resources may be necessary to achieve the increased larval goals for FY17. These increased efforts may result in exceeding the approved FY17 budget estimate.

Proposed FY18 Activities: Razorback sucker larvae collections will continue. The target level for FY18 is expected to be 25,000–30,000 larvae.

Pertinent Reports: The status report titled *Five-Year Summary of Razorback Sucker (*Xyrauchen texanus*) Larval Collections on Lake Mohave: 2010–2014* will be posted on the LCR MSCP Web site upon completion.