

Work Task C38: Stable Isotope and Microchemistry Analyses of Fin Rays to Determine Habitat Use and Movement Patterns of Razorback Sucker in Reach 3

FY10 Estimates	FY10 Actual	Cumulative Accomplishment Through FY10	FY11 Approved Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate
\$80,000	\$6,250.70	\$6,250.70	\$0	\$0	\$0	\$0

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Start Date: FY10

Expected Duration: Closed in FY10

Long-term Goal: Assess the effectiveness of the fish augmentation program.

Conservation Measures: RASU3, RASU6.

Location: Reach 3 to include main stem and backwater habitats.

Purpose: To determine unknown hatchery origins and habitat use of RASU within Reach 3 using strontium isotope microchemistry analyses of fin rays.

Connections with Other Work Tasks (past and future): This work is related to C29 and D8. Fin ray segments that were collected for aging will be retained and further analyzed relative to their stable isotope and microchemistry composition. The results of this work will assist in directing our system monitoring efforts for the program.

Project Description: This study is to determine hatchery origin and age-related habitat use for RASU within Reach 3 of the Colorado River using strontium isotope ratios (^{87}Sr : ^{86}Sr) of pectoral fin ray samples used in the Reach 3 aging study. The use of stable isotopes and microchemistry analyses of bony structures, which utilize naturally occurring chemical compounds from the fish's environment throughout its lifetime, is a promising measure of hatchery origin and habitat use. Matching chemical signatures found in a specific river and hatchery locations with fin ray samples collected during the aging study may identify the association of successful hatchery stockings and age-specific habitat use of repatriated RASU introduced under the Lake Havasu Fishery Improvement Project and the Lower Colorado River Multi-Species Conservation Program.

Previous Activities: Samples from more than 300 RASU collected from Reach 3 of the Colorado River in FY09 as part of work task C29, along with water samples collected throughout Reach 3 (river, backwaters, hatcheries, etc.), were provided to the University of California, Davis for quantifying ^{86}Sr : ^{88}Sr isotopic ratios.

FY10 Accomplishments: An oral presentation of results was given at the Colorado River Aquatic Biologists (CRAB) meeting in Laughlin, Nevada. Results from analyses suggest that there is too little separation between sites and that fish did not appear to spend enough time in any one habitat or water mass to allow differentiation at a level that would be useful to LCR MSCP researchers. A completion report has been prepared.

FY11 Activities: Closed in FY10.

Proposed FY12 Activities: Closed in FY10.

Pertinent Reports: A report titled, *Stable Isotope and Microchemistry Analyses of Fin Rays to Determine Habitat Use and Movement Patterns of Razorback Sucker (*Xyrauchen texanus*) in Reach 3*, is completed and will be posted to the LCR MSCP website.