

Work Task C31: Razorback Sucker Genetic Diversity Assessment

FY10 Estimates	FY10 Actual	Cumulative Accomplishment Through FY10	FY11 Approved Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate
\$125,000	\$100,903.63	\$204,596.85	\$125,000	\$125,000	\$125,000	\$125,000

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Start Date: FY09

Expected Duration: FY15

Long-term Goal: Maintain genetic quality of RASU utilized in the LCR MSCP.

Conservation Measures: RASU2, RASU3, RASU5, RASU6.

Location: Arizona State University, Tempe, Arizona.

Purpose: To maintain a sound genetic management program for RASU within the LCR MSCP.

Connections with Other Work Tasks (past and future): This work is related to larval RASU collections (B1) and to management of fish habitat restoration sites (for example, E14, and C40). Fin clips were collected from RASU captured during the Age Characterization Study (C29) and will continue to be captured through work tasks (C45) and (D8).

Project Description: This study will monitor genetic structure of RASU communities in reservoirs, river reaches, and off-channel habitats within the LCR and characterize the various RASU stocks relative to the founder population from Lake Mohave. Our fish augmentation program continues to produce large numbers of fish annually and these large pulses of fish have the potential to change the genetic diversity of a population in a short period of time. It is important to monitor the genetic structure of the various RASU communities over many years in order to detect changes in the genetic diversity as these populations mature.

Larval fish and adult fin clips will be collected and preserved from each stock during numerous annual surveys and the continuing Lake Mohave larvae collections. These samples will be delivered to ASU's genetics research laboratory for analyses. Results will be used to determine the genetic health of these communities, to assess effectiveness of the Fish Augmentation Program, to continue monitoring of the Lake Mohave repatriation effort, and to provide guidance on management of RASU populations developing in newly constructed floodplain habitats within the LCR MSCP area.

Previous Activities: Genetic evaluation of the Lake Mohave Razorback Sucker Repatriation Program, funded by Reclamation prior to the LCR MSCP, was completed in 2008. These studies resulted in genetic characterization of the Lake Mohave RASU population, including the larval fish being used by the LCR MSCP Fish Augmentation Program. This base of information will be the reference point against which the genetic diversity of all future RASU populations will be measured.

An analysis of larval fish samples collected in 2009 showed that genetic variation among and within larval samples of razorback sucker on Lake Mohave continues to be passed to the adult repatriate population, indicating that the Native Fish Work Group program is functioning as originally designed.

FY10 Accomplishments: An additional 657 larvae and 205 adult fin clips were obtained in 2010. DNA has been extracted from all samples and characterization of mtDNA will be initiated in late 2010.

Efforts were expended to complete analysis of microsatellite variation in order to characterize variation in the nuclear genome. These markers have been applied to 979 adult samples and over 1500 larval samples. Initial analyses of microsatellite data are consistent with those from mtDNA indicating that the razorback sucker conservation strategy employed in Lake Mohave is maintaining genetic diversity in the nuclear genome as well.

FY11 Activities: Reclamation will continue to assess razorback sucker genetics for the LCR through analyses of RASU fin clips and larvae collected from all spawning areas, reservoirs, river reaches, and off-channel habitats within the LCR MSCP area.

Proposed FY12 Activities: Collection of larval RASU, fin clips, and muscle plugs will continue from all spawning areas within the LCR MSCP area.

Pertinent Reports: The study plan for Razorback Sucker Genetic Diversity Assessment is available upon request. *Razorback Sucker Genetic Diversity Assessment Interim Report* is posted to the LCR MSCP website.