

Work Task C31: Razorback Sucker Genetic Diversity Assessment

FY11 Estimate	FY11 Actual Obligations	Cumulative Expenditures Through FY11	FY12 Approved Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate
\$125,000	\$111,372.84	\$315,969.69	\$125,000	\$130,000	\$130,000	\$130,000

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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, F5, and C40). Larval and tissue samples are collected from each Reach of the program wherever RASU are captured. This includes work accomplish under work task D8, C13, C33, C45, C49.

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: Samples of larvae and adult fin clips were obtained on an annual basis from multiple time periods and from various spawning areas, reservoirs, river reaches, and off-channel habitats within the LCR MSCP area. DNA was extracted and samples characterized for

mtDNA and microsatellite variation. 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 Accomplishments: Annual analyses of samples for mtDNA and microsatellite variation were completed. All available data (from samples collected over the past 15 years) was analyzed and a draft final report generated that summarizes all results to date. Analyses indicate that the razorback sucker conservation strategy employed in Lake Mohave is maintaining genetic diversity. Interpretation of the data in the context of effective number of breeders and census size identifies the importance of increasing census population size in Lake Mohave.

FY12 Activities: Reclamation will continue to assess razorback sucker genetics for the LCR through analyses of RASU fin clips and larvae collected from spawning areas, reservoirs, river reaches, and off-channel habitats within the LCR MSCP area.

Proposed FY13 Activities: Collection of larval RASU, fin clips, and muscle plugs will continue from spawning areas within the LCR MSCP area. DNA will be extracted and samples characterized for mtDNA and microsatellite variation.

Pertinent Reports: The study plan for Razorback Sucker Genetic Diversity Assessment is available upon request. All interim reports are posted to the LCR MSCP website. A draft final report is under review and will be posted to the website upon completion.