

Work Task G3: Adaptive Management Research Projects

FY08 Estimates	FY08 Actual	Cumulative Accomplishment Through FY08	FY09 Approved Estimate	FY10 Proposed Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate
\$230,000	\$414,505.30	\$1,039,049.30	\$230,000	\$300,000	\$380,000	\$380,000

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Start Date: FY06

Expected Duration: FY55

Long-term Goal: Effective conservation of native species and their habitats.

Conservation Measures: MRM1, MRM2, MRM4, WIFL1, MRM5, BONY5, RASU6, CRCR1, YHCR1, MRM3, FLSU3, LLFR1, LLFR3

Location: System-wide

Purpose: Develop tools to effectively evaluate conservation actions.

Connections with Other Work Tasks (past and future): Research projects initiated under this work task may be continued as Species Research (Section C). Information obtained may be used for Fish Augmentation (Section B), System Monitoring (Section D), Habitat Creation (Section E), Post-Development Monitoring (Section F), or Habitat Maintenance (Section H).

Project Description: The Adaptive Management Program is an assurance that the conservation actions presented in the HCP are effectively accomplished. This work task develops and evaluates tools by which the conservation actions can be measured, and provides data to improve the efficacy of techniques to successfully create habitat.

Three principal activities comprise this work task: 1) Evaluate species accounts and suggest research to update, expand, and/or refine life history data; 2) Review and evaluate conservation actions implemented prior to the LCR MSCP along the Colorado River or implemented by other entities; and 3) Assess existing and potential monitoring tools and protocols so to improve evaluation capabilities.

This work task enables Reclamation to initiate priority research projects in a timely manner. For example, opportunistic research proposals (e.g. time sensitive such as spawning or breeding season dependent) can be considered and initiated during the funding year and then be elevated to full research or monitoring status (Section C, D or F) the following year. Also, experimental techniques can be evaluated through research to assess their utility, and if found to be useful, they would be incorporated into monitoring activities.

Previous Activities: An evaluation of monitoring techniques for assessing relative abundance of RASU in riverine reaches was conducted, providing population estimates for adult RASU spawning in the Colorado River near Needles, California. A telemetry study was initiated in FY07 to determine range and habitat use by repatriated RASU in Reach 3.

Research was begun to experimentally determine lethal salinity limits for RASU eggs and larvae. Results indicate that upper salinity tolerances are between 10-15,000 $\mu\text{S}/\text{cm}$ for eggs and 23-26,000 $\mu\text{S}/\text{cm}$ for larvae. Remote sensing applications for PIT tagged fish were evaluated. This was continued as Work Task C23.

FY08 Accomplishments: A system-wide avian survey was initiated in 2008 under a cooperative agreement with Great Basin Bird Observatory. The work is reported under Work Task C24. An investigation to identify predators of open-cup nesting passerine birds was initiated. This work will be continued and reported in Work Task C28. A study was initiated to develop a conceptual design to provide habitat requirements for CLRA, LEBI, and BLRA, and is reported under Work Task C24. Research has been initiated to examine the use of soil amendments to improve water-retention capacity of sandy soils for habitat restoration.

The RASU telemetry study in Reach 3 continued with addition of more fish and sonic tags with longer battery life (this work will be reported in Work Task D8). The evaluation of monitoring techniques for RASU in river environments was completed. Final report was accepted and is available. A study was initiated to evaluate a technique to age native suckers by removing fin ray sections. The technique appeared to work well on fish from tail water areas. The research will be expanded and incorporated into Work Task C29 to do an age characterization of RASU in Reach 3. Refined values for upper salinity tolerances were observed to range from 11,000-12,000 $\mu\text{S}/\text{cm}$ for eggs and from 27,300-27,750 $\mu\text{S}/\text{cm}$ for larvae. This work continues under Work Task C32. A study was initiated to characterize zooplankton communities in backwater habitats and off-channel areas being used to grow RASU and BONY. A sampling design was developed, new microscope and lab materials were purchased, and zooplankton samples were collected and stockpiled. This work will continue as Work Task C34.

FY09 Activities: New avian research projects to effectively and efficiently create marsh habitat for covered bird species are being developed. The hydrology of existing willow flycatcher habitat will be further examined to determine the extent occupied sites are saturated and/or contain standing water. This study will be reported on under Work Task C37.

A study is being initiated to evaluate using stable isotope and micro-chemistry analyses of fish tissues to determine habitat use of RASU and BONY. This work will be continued in FY10 under Work Task C38. A study to assess post-stocking survival of BONY in Reach 3 is being developed. This work is proposed for FY10 as Work Task C39. A genetic study is being developed to assess population ecology of RASU and BONY. This work will quantify genetic and demographic parameters that are necessary for informed, long-term management of RASU and BONY in off-channel habitats. The research will be conducted under Work Task C40. A research investigation is being scoped in order to evaluate use of artificial habitat by native fishes. This is proposed for a new start in FY10 as Work Task C41.

Other expenditures in FY09 will include continuation of the restoration research component at Beal Lake. Funding for restoration research in FY09 will be supported by G3. This includes the final evaluation of long-term effectiveness and maintenance of the screen system at Beal Lake. In addition, an in-situ evaluation of this technology's effectiveness will be conducted to determine exclusion potential and entrainment rates in a real-world application. These entrainment tests will occur in the spring of FY09 at Imperial Ponds on Imperial NWR.

Proposed FY10 Activities: Research questions identified during fish augmentation, species research, system-wide monitoring, habitat creation, and post-development monitoring will be evaluated for development into adaptive management research projects under this work task. A report on the egg and larval fish entrainment study will be finalized.

Pertinent Reports: The final report, *Techniques for Monitoring Razorback Sucker in the Lower Colorado River, Hoover to Parker Dams, 2006-2007* has been posted to the LCR MSCP web site.