

Work Task G3: Adaptive Management Research Projects

FY14 Estimates	FY14 Actual Obligations	Cumulative Expenditures Through FY14	FY15 Approved Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate
\$300,000	\$260,667.43	\$2,326,051.38	\$300,000	\$300,000	\$300,000	\$300,000

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Start Date: FY06

Expected Duration: FY55

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

Conservation Measures: All conservation measures relating to habitat creation, species research, system monitoring, and fish augmentation

Location: System-wide

Purpose: To 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), Conservation Area Development and Management (Section E), Post-Development Monitoring (Section F), or Funding Accounts (Section H) work tasks.

Project Description: The AMP process is an assurance that the conservation actions presented in the HCP are effectively accomplished. Tools by which the conservation actions can be measured will be developed and evaluated, and data to improve the efficacy of techniques to successfully create habitat will be provided.

LCR MSCP staff will be able 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 work tasks) 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: All previous activities were moved to other work tasks after the initial year of funding.

FY14 Accomplishments:

Flannemouth Sucker Radio Telemetry Testing: Field testing of low-frequency radio tags showed limited use of this technology in its current state; depth and conductivities proved to be the biggest obstacles to good reception. Short-term surgical effects on juvenile flannemouth sucker implanted with appropriate sized tags showed no adverse impacts on health or swimming. Conversations with the manufacturer of the tags provided some additional opportunities to optimize this technology for use on juvenile flannemouth sucker in Reach 3. It was suggested that the transmitting signal could be boosted in exchange for a shortened tag life, or the trailing antenna could be extended to maximize the signal. Both of these tradeoffs greatly increased the viability of the technology, and it was implemented in FY15 for the research being conducted under Work Task C53.

Reach 3 Juvenile Razorback Sucker Monitoring: Additional effort was expended targeting juvenile razorback sucker in Reach 3. Small mesh nets and larval surveys were conducted throughout Topock Gorge. No juvenile native fish were contacted during the surveys, and larvae were present throughout the study reach but decreased in abundance the further downstream the surveys were conducted. The downstream decrease in abundance indicated that the majority of spawning was occurring above Topock Gorge and was likely larval drift from the Needles spawning aggregation. The lack of juvenile fish in the netting surveys was not unexpected; flannemouth sucker are known to reproduce in this reach and, they too, are extremely rare as juveniles. Small mesh netting continue to be incorporated into general monitoring surveys in order to maintain the potential to detect juvenile life stages for all native species. The field work will be completed through Work Task C64 beginning FY15.

Evaluation of Immediate Post-Stocking Survival of Razorback Sucker and Bonytail: Preliminary investigations to assess the potential sources and relative magnitude of immediate post-stocking mortality were initiated in FY14. A study plan was developed to assess latent mortality of stocked fish in LCR MSCP Reaches 2 and 3. This protocol had been drafted to determine latent mortality associated with transport and handling stress, building on the knowledge gained from Work Task C46 (closed). These data may be important to assess the effect of stocking treatments relative to stress-related mortality; stress may be accounting for immediate post-stocking mortality. In addition, a bioenergetics model of piscivorous bird predation has been initiated. The model will be a first step in assessing the relative effect that bird predation is having on the survival of stocked fish. The field work for both these investigations of post-stocking latent mortality will be completed through Work Task C65 beginning FY15.

Pilot Releases of Sonic-Tagged Bonytail: FY14 funding from this work task was used to acquire sonic tags, manual tracking equipment, and SURs for use in the FY15 pilot release of sonic-tagged bonytail in Lake Mohave (C64). Additional sonic tags were also purchased for use with Lake Mohave razorback sucker, as this work can be performed concurrently and will help to maximize this effort and the use of acquired equipment. Data gathered from this effort will be used to inform managers of future stocking needs of bonytail in Lake Mohave to meet program commitments.

FY15 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.

Assessment of Avian Predation on Native Fish: Monitoring data from current research projects show that cormorants can be implicated as major predators of recently released bonytail, and under other projects, razorback sucker PIT tags have been detected at known avian roosting sites for both herons and cormorants. The current knowledge base for this predation pressure has primarily been from anecdotal observations during monitoring and research projects. Funding will be provided this year to evaluate various techniques designed to detect and document avian predation through observation and monitoring of roosting sites. This information will assist in quantifying the avian pressure on native fish. Quantification of this pressure will provide for more robust modeling and estimates for survival and may assist ongoing work under Work Task C65.

Proposed FY16 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.

Pertinent Reports: The report titled *Development and Characterization of Microsatellite PCR Primers for Bonytail Chub for use in Assessing Relatedness of Fishes Produced in Off-Channel Habitats* is posted on the LCR MSCP Web site.