

Work Task C63: Evaluation of Habitat Features that May Influence Success of Razorback Sucker and Bonytail in Backwater Environments

| FY14 Estimate | FY14 Actual Obligations | Cumulative Accomplishment Through FY14 | FY15 Approved Estimate | FY16 Proposed Estimate | FY17 Proposed Estimate | FY18 Proposed Estimate |
|---------------|-------------------------|--|------------------------|------------------------|------------------------|------------------------|
| \$0 | \$0 | \$0 | \$125,000 | \$135,000 | \$150,000 | \$100,000 |

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Start Date: FY15

Expected Duration: FY18

Long-Term Goal: To inform future design and management of created backwater habitats

Conservation Measures: BONY3, BONY5, RASU3, RASU5, and RASU6

Location: Reaches 2–5

Purpose: To provide information on how natural and artificial habitat features are used by razorback sucker and bonytail and their relative importance for influencing survival and long-term success

Connections with Other Work Tasks (Past and Future): This work task represents the merger of two previously funded work tasks: C41 and C58. This work task is related to all work tasks in Fish Augmentation (Section B) that provide razorback sucker and bonytail for augmentation stocking, specifically Work Tasks B7, C23 (closed), and F5. Future work may occur under Work Task C25, and the results may indicate that modifications in future stocking treatments are needed (C61).

Project Description: The activities covered under this work task both consolidate and build on the work that has been undertaken and accomplished under Work Tasks C41 and C58. These tasks represent a logical merger because of their similarities in scope and intent and potential overlap in ongoing experimental investigations.

Habitat features are important to success (growth, survival, and reproduction) of fish in aquatic environments. In particular, structural features such as submerged woody debris, reefs, rock cavities, and submerged vegetation can provide cover for multiple life stages of fish. Cover allows fish to hide and rest and can be vital to survival by allowing fish to avoid predation through concealment and direct

protection. The types of features (both artificially constructed and those that are existing/natural) that may be used by native fishes and which are selected with greater frequency will be investigated. The use of other forms of cover, such as aquatic vegetation and turbidity, may also be investigated to determine which of these types of features plays a more important role as cover for razorback sucker and bonytail; by including these features, both immediate and long-term survival and success may improve. Determining these features is important, especially in created backwater environments where they may not be present or may not be in sufficient quantities, to promote the success of these species. This work task was created to:

- Inform managers of habitat structures to include when designing and creating backwaters
- Help improve existing created backwaters by providing options for adding structural elements (both “natural” and artificial) to afford adequate cover
- Potentially assist in improving post-stocking survival by suggesting stocking sites with adequate cover or adding features to stocking locations to provide cover from predatory fish and/or piscivorous birds

Previous Activities: Detailed accounts of work and accomplishments covered under Work Tasks C41 and C58 have been reported under these tasks and in their associated technical reports. This work includes monitoring the use of artificial habitat features in Davis Cove (on Lake Mohave) by both razorback sucker and bonytail. Investigations have also been ongoing to characterize the existing riprap shoreline at High Levee Pond because of documented frequent use of its cavities by bonytail. Preliminary investigations suggested that bonytail regularly used both artificial (constructed and installed) and more “natural” existing structures (riprap) as cover. No difference has been detected in the use of these features by razorback sucker, and this suggested that this species may use other forms of cover; aquatic vegetation and/or turbidity have been speculated as potential cover used by razorback sucker.

FY14 Accomplishments: This is a new start in FY15.

FY15 Activities: Investigations of the selection and use of artificial structures in Davis Cove will continue with an emphasis on habitat use by bonytail. These investigations will be similar to work begun under Work Task C41.

Cavity selection studies were initiated under Work Task C58. A refinement of cavity selection by bonytail will take place with repeated trials. If sufficient space and other resources become available, then alternate cavity sizes will be tested with bonytail at the Lake Mead Fish Hatchery. The proposed budget estimate for FY15 reflects the combination of the FY15 estimates from Work Tasks C41 and C58.

Proposed FY16 Activities: Cavity selection trials will continue at Lake Mead Fish Hatchery. These data may help with the refinement of constructed artificial habitats. Depending on the results and analyses of FY15 habitat selection trials at Davis Cove, the artificial habitat selection study may be expanded to include tests in environments occupied by non-native fish predatory species. Investigations will expand to identify other types of cover habitats that may benefit razorback sucker, including vertical structures and turbidity, if deemed practical. Budget estimates for FY16 reflect this study expansion.

Pertinent Reports: All findings and statistical analyses will be presented in a report titled *Evaluation of Habitat Features that may Influence Success of Razorback Sucker and Bonytail in Backwater Environments: 2015*, and it will be posted on the LCR MSCP Web site upon completion.