

## Work Task C65: Evaluation of Immediate Post-Stocking Survival of Razorback Sucker and Bonytail

FY14 Estimate	FY14 Actual Obligations	Cumulative Accomplishment Through FY14	FY15 Approved Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate
\$0	\$0	\$0	\$60,000	\$120,000	\$120,000	\$120,000

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**Start Date:** FY15

**Expected Duration:** FY18

**Long-Term Goal:** To maintain an effective LCR MSCP Fish Augmentation Program

**Conservation Measures:** BONY3, BONY4, BONY5, RASU3, RASU4, and RASU6

**Location:** Reaches 2–5

**Purpose:** To identify the most important sources of immediate post-stocking mortality and to inform managers of how to best target and prioritize solutions

**Connections with Other Work Tasks (Past and Future):** This work task is related to Work Tasks B2, B3, B4, C10, C11, C46 (closed), and C61. Preliminary planning, acquisition of materials, and study design development will occur in FY14 with funds from Work Task G3.

**Project Description:** Observations from past stocking events have indicated relatively high and immediate post-stocking mortality of razorback sucker and bonytail. This pattern appears more commonly in backwater situations and occurs even in instances where no or low numbers of predatory fish are present and where water quality parameters should not be a source of mortality. Transport and handling stress and predation by piscivorous birds have been suspected as causes of this low survival. Only anecdotal evidence exists to support the speculation that piscivorous birds are the major cause of this mortality, and although handling and transport stress have been measured for stocked fish, little evidence exists that connects this stress to actual latent mortality.

This work task builds directly on the knowledge gained from Work Task C46 (closed) and takes the next step from observing stress indicators in stocked fish to investigating how this translates into actual latent post-stocking mortality. This work may involve holding a subset of stocked fish in a protected area for observation and recording survival rates after 24, 48, and 72 hours. Longer durations may also be explored. A subsample of these fish may also have their blood tested for levels of stress-indicating compounds.

In addition, a bioenergetics model of piscivorous bird predation will be further developed and tested, and observational studies may be employed to help calibrate the model. These studies may include performing counts of confirmed feeding of piscivorous birds on stocked razorback sucker and bonytail. This model is intended to help inform managers of the relative pressure that bird predation may be having on stocked native fish.

These data are important to assess the effect of stocking treatments relative to stress-related mortality, bird predation, or other factors that may be accounting for immediate post-stocking mortality and will allow managers to better prioritize and target solutions, like those being tested under Work Task C61, or find new ways to improve survival of stocked fishes by identifying what factors are the greatest sources of immediate mortality.

**Previous Activities:** This is a new start in FY15. Previous activities have been conducted under Work Task G3 and include the development of a protocol and study plan to assess latent mortality of stocked fish. The development of a bioenergetics model was initiated in FY14. The purpose of the model is to suggest the potential pressure that available piscivorous birds could exert on stocked fish.

**FY14 Accomplishments:** This is a new start in FY15.

**FY15 Activities:** Latent mortality within the first 72 hours following selected stocking events in Reach 2 and 3 in FY15 will be evaluated. A subsample of fish will be held in net pens to provide protective cover from predators for 72 hours and to monitor survival; it will also allow for the evaluation of factors outside of predation that may impact survival of fish immediately following release.

A bioenergetics model is being created to determine a range of mortality that may be expected immediately following stocking. Data including piscivorous bird abundance, the energy content of bonytail and razorback sucker, and energy requirements for piscivorous birds will be collected or researched.

**Proposed FY16 Activities:** The methods being used for the latent mortality study will be refined based on the results from FY15, if needed. A number of stocking locations will be identified to conduct post-stocking observations of bird predation on razorback sucker and bonytail. These observations will be used to

provide an estimate of the number of razorback sucker and bonytail consumed per day to be input into the bioenergetics model. The larger-scale implementation of this study is expected to increase expenditures in FY16.

**Pertinent Reports:** N/A