

Work Task C11: Bonytail Rearing Studies

FY14 Estimate	FY14 Actual Obligations	Cumulative Expenditures Through FY14	FY15 Approved Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate
\$150,000	\$153,129.68	\$1,010,411.59	\$0	\$0	\$0	\$0

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Start Date: FY06

Expected Duration: FY14

Long-Term Goal: Provide information from research to inform managers of ways to improve the efficiency and effectiveness of the LCR MSCP Fish Augmentation Program

Conservation Measures: BONY3, BONY4, and BONY5

Location: Various locations, including hatcheries, rearing ponds, universities, and private research facilities

Purpose: To evaluate factors affecting growth of subadult bonytail to maximize quantity and quality of bonytail produced for the LCR

Connections with Other Work Tasks (Past and Future): This work task is a companion to study Work Task C10 and may share some of the same locations, source data, and testing staff during implementation. Also, investigations carried out may be conducted at hatcheries identified in Fish Augmentation (Section B).

Because of similarities in goals and scope with Work Task C61, this work task will be merged with Work Task C61 in FY15. The proposed activities and corresponding budget estimates for FY15 will likewise be captured under Work Task C61. This is a logical merger of these work tasks, as information from this type of research will allow the development and testing of conditioned fish as experimental stocking treatments. These treatments will then be used to test whether different types of conditioning will translate to improved survival of stocked fish. Additionally, the sharing of overlapping resources is expected to increase efficiency in implementation and reporting, and it may also reduce overall expenditures.

Project Description: Funding provided for this work task is to be used for investigating the rearing and culture practices of bonytail. The goal is to investigate ways to accelerate growth and post-stocking survival of bonytail through manipulation of physical, chemical, and biological attributes of the rearing environment.

Objectives:

- Evaluate the species-specific diet for bonytail
- Evaluate predator recognition and avoidance training
- Evaluate predator recognition and avoidance retention

Previous Activities: Five fish feeds were evaluated – four experimental feeds and the currently used feed – to determine if alternative protein sources and/or lipid levels could improve the growth of bonytail. All five diets evaluated performed equally well. It was recommended that bonytail remain on the current diet until further research dictates otherwise.

FY14 Accomplishments: A predator conditioning study was completed at the Bubbling Ponds Native Fish Conservation Facility. Bonytail were exposed to the alarm pheromone in the presence of a predator fish that had its jaw paralyzed using botulinum toxin (making it unable to actively feed) to test if bonytail could be conditioned to recognize largemouth bass and channel catfish as a danger. Bonytail were exposed to the predator and alarm pheromone for 5 minutes and then transferred to a tank of actively feeding predators. Conditioned fish had a higher percent of survival than unconditioned fish. For the largemouth bass trials, 65% of conditioned bonytail survived compared to 34% of unconditioned bonytail. During the channel catfish trials, 98% of conditioned bonytail survived compared to 80% of unconditioned bonytail. When exposed to both the largemouth bass and channel catfish, 70% of conditioned bonytail survived compared to 41% of unconditioned bonytail.

FY15 Activities: This work task was closed in FY14.

Proposed FY16 Activities: This work task was closed in FY14.

Pertinent Reports: Scopes of work and project reports are available upon request. The reports titled *Bonytail Rearing Studies: Literature Review; Passive Integrated Transponders in Gila elegans: Location, Retention, Stress, and Mortality;* and *Stress Inducing Factors of Bonytail Hatchery and Stocking Practices* are available on the LCR MSCP Web site.