Work Task C11: Bonytail Rearing Studies

FY13 Estimate	FY13 Actual Obligations	Cumulative Expenditures Through FY13	FY14 Approved Estimate	FY15 Proposed Estimate	FY16 Proposed Estimate	FY17 Proposed Estimate
$150,000	$152,127.61	$898,740.69	$150,000	$0	$0	$0

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Start Date: FY06

Expected Duration: FY14

Long-term Goal: Provide information from research to inform management in ways to improve the efficiency and effectiveness of the Fish Augmentation Program.

Conservation Measures: BONY3, BONY4, and BONY5.

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

Purpose: Evaluate factors affecting growth of subadult BONY to maximize quantity and quality of BONY produced for the LCR

Connections with Other Work Tasks (past and future): This work task is a companion study to Razorback Sucker Rearing Studies (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 Section B.

Because of similarities in goals and scope with work task C61 (Evaluation of Alternative Stocking Methods), this work task will be merged with C61 in FY15. The proposed activities and corresponding budget estimates for FY15 will 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 weather 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 may also reduce overall expenditures.

Project Description: This work task provides funding for investigations into rearing and culture of BONY. The goal is to investigate ways to accelerate growth and post-stocking survival of BONY through manipulation of physical, chemical, and biological attributes of the rearing environment.

Objectives:

- Evaluate species specific diet for BONY
- 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 growth of BONY. All five diets evaluated performed equally well. It was recommended that BONY remain on the current diet until further research dictates otherwise.

FY13 Accomplishments: A study was initiated to evaluate predator recognition training. BONY were be exposed to the conspecific alarm substance and a predator with a temporarily incapacitated jaw muscle concurrently. Eight survival trials of conditioned and unconditioned BONY when exposed to actively feeding predators were evaluated over 24 hour time intervals. Survival of conditioned BONY was significantly ($p = 0.027$) greater than that of unconditioned fish.

FY14 Activities: Survival trials of conditioned and unconditioned BONY in the presence of catfish and both catfish and largemouth bass will be completed. Data will be analyzed and a final report prepared.

Pond reconstruction and installation of remote PIT scanning antennae is expected to be completed by the end of summer. Post-training survival trials will begin. The frequency of exposure to a predator, largemouth bass, will be evaluated to determine if repeated trainings increase the probability of BONY learning a behavior as compared to BONY trained a single time.

Proposed FY15 Activities: Closed in FY14.

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