

Work Task C11: Bonytail Rearing Studies

FY08 Estimates	FY08 Actual	Cumulative Accomplishment Through FY08	FY09 Approved Estimate	FY10 Proposed Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate
\$165,000	\$128,801.82	\$366,763.82	\$165,000	\$165,000	\$165,000	\$50,000

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Start Date: FY06

Expected Duration: FY12

Long-term Goal: Continuously seek measures to improve quantity, quality, and cost-effectiveness of fish reared for 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 total length at release and reduce rearing time in hatcheries.

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

Previous Activities: Investigations and evaluations of current culture practices for BONY were performed through literature reviews, survey questionnaires, site visits to culture facilities, and interviews with fish culturists. A workshop was held in August 2007 for fish culturists to review survey findings and prioritize research actions. Research hypotheses were formulated for study designs and investigations are being carried out. Findings and results will be documented and reported. Dexter NFH developed and initiated an alternative rearing strategy to assist with BONY restoration in Lake Mohave. Hatchery staff investigated the potential for increased growth and resource conservation by rearing larval BONY within the same pond as adult brood stock, and determined the effect individual size variation has on growth within an intensive culture environment.

Arizona State University conducted a comprehensive review of available published and gray literature, compiled an annotated bibliography, and submitted a report titled, *BONY Rearing Studies: Literature Review*.

FY08 Accomplishments: The multi-year-class production study for BONY, conducted at Dexter NFH, was completed in November 2008. Results show little difference in length gained but apparent difference in weight gained between ponds with multiple year classes and those without. Weight gain in ponds without adults present was significantly greater than in ponds with adults present. Dexter NFH staff spawned adult BONY and prepared ponds for fry production, released 90 female BONY from brood stock in three ponds, and stocked six ponds with 4,000 BONY fry. The ponds were sampled monthly and weight and length data were collected. The ponds were then harvested and total weight, survival, and length/weight data were collected. The female BONY were separated from the larvae and returned to the brood stock.

A new agreement was signed in FY08 between Reclamation and Dexter NFH to investigate and formulate a species-specific diet for BONY. Year one investigations are complete; protein source and protein-to-energy ratio in grower diets for juvenile BONY have been assessed. A report is in progress and will be available upon completion.

Investigations into handling stressors in BONY at Achii Hanyo were completed. A report is available.

FY09 Activities: Investigations into the formulation of a species-specific diet for BONY will continue. Survival and growth of juvenile and sub-adult BONY will be evaluated based on the effects of ingredient sources and palatability in grower diets. An investigation of the effects of an optimal diet on thermal optima and thermal tolerance in juvenile BONY is being conducted.

Proposed FY10 Activities: The planning process will be completed, field testing implemented, and procedures evaluated to examine relationships between BONY growth and physical, chemical, and biological characteristics of their hatchery rearing environment.

Pertinent Reports: The scopes of work and completed work project reports are available upon request.