

Work Task C11: Bonytail Rearing Studies

FY07 Estimates	FY07 Actual	Cumulative Accomplishment Through FY07	FY08 Approved Estimate	FY09 Proposed Estimate	FY10 Proposed Estimate	FY11 Proposed Estimate
\$165,000	\$142,661	\$237,962	\$165,000	\$165,000	\$165,000	\$165,000

Contact: Ty Wolters, (702) 293-8463, twolters@lc.usbr.gov

Start Date: FY06

Expected Duration: FY11

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 hatchery.

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 scheduled for fish culturists to review survey findings and prioritize research actions. Research hypotheses will be formulated for study designs and investigations will be 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. They 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.

FY07 Accomplishments: A workshop was held in August among fish culturists to review final reports and survey findings, prioritize research needs, obtain expert advice on how to optimize hatchery production, and produce preliminary designs and a planning process for field and laboratory experiments to test hypotheses for BONY and RASU (C10). Research investigations from a priority list of research needs developed at the fish culture workshop are being formulated

into study designs and investigations are being carried out. Findings and results will be documented and reported. Arizona State University shared results of the comprehensive review for BONY through a PowerPoint presentation at the workshop. This presentation became part of a CD containing all materials presented and formulated at the workshop and made available to all attendees.

Preliminary findings of the multi-year-class production for BONY, conducted at Dexter NFH, show little differences in length gained but significant differences in weight gained between ponds with multiple year classes and those without. Weight gain in ponds without adults present was significantly greater than those with adults present. Dexter NFH staff spawned adult BONY and prepared ponds for fry production, and 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. Data are being analyzed for growth indices, survival, size, and variation, and a report is expected this spring.

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*.

Investigations into handling stressors in BONY continued at Achii Hanyo. Blood samples have been taken and are being analyzed in the laboratory.

FY08 Activities: A new agreement was signed in FY08 between Reclamation and Dexter NFH to investigate and formulate a species-specific diet for BONY. Dexter NFH will continue the investigation into multi-year class production. Staff will prepare four ponds for production fish. The BONY brood stock will be split between two ponds with a 1:1 ratio of male to female, and five pairs of fish will be held back from each pond to induce spawning. The larval BONY will be combined and each of the four ponds will be stocked with 5,000 larval BONY. The ponds will be monitored daily for water quality and sampled monthly for length and weight gain. The ponds will then be harvested and the brood stock combined into one pond. The larval BONY will be placed into a raceway for a final growth assessment. Data will be compiled and an annual report will be written.

Investigations into handling stressors in BONY will continue at Achii Hanyo. Field samples are expected to be complete by March and laboratory work is expected to be complete by May. A report is expected in FY08.

Proposed FY09 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 for contracted studies are available upon request from the LCR MSCP.