

Work Task C11: Bonytail Rearing Studies

FY05 Estimate	FY05 Actual	Cumulative Accomplishment Through FY05	FY06 Approved Estimate	FY07 Proposed Estimate	FY08 Proposed Estimate	FY09 Proposed Estimate
\$24,000	\$0	\$ 0	\$165,000	\$165,000	\$165,000	\$165,000

Contact: Tom Burke, (702) 293-8711

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 sub-adult bonytail (BONY) in order 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 parallel or companion study to Work Task C10 and may share some of the same locations, source data, and testing staff during implementation. A workshop planned for FY07 will focus on culture needs for both RASU (C10) and BONY (C11). Also, some of the investigations to be carried out under this Work Task may be conducted at hatcheries identified in Section B.

Project Description: This is a five-year investigation into rearing and culture of BONY to determine cost effective techniques to rear BONY to 300 mm for stocking into the lower Colorado River. BONY exhibit many of the same culture problems shown by RASU (see C10), especially the extremely varied growth in captivity, even for fish from the same family lot. However, BONY are even rarer than RASU, and have even less culture history. Diet formulation, feeding rates, best time of day to feed, effects of temperature on food conversion, effects of day length on food conversion, effects of prophylactic treatments on food conversion, and effects of handling on food conversion are just some of the fish culture variables that need investigation. Like RASU, BONY exhibit some nocturnal tendencies both as juveniles and as adults. However, unlike RASU, subadult BONY will eat large insects like crickets, bees, and grass hoppers, and adult BONY will eat other fish and possibly are cannibalistic on their own young. If this is indeed a fact, it must be taken into consideration during the culturing process. It may be necessary to rear bait fish to feed the larger BONY or at least to develop a different diet formulation for larger fish.

The extreme variation in growth presents another problem to the fish culturist. Because this is a protected species, fish culturists do not routinely kill off the small fish following sorting and tagging operations, but instead these small fish are returned to the pond to continue growing.

After a few such operations, the small BONY in the grow-out pond may be some of the oldest fish in the pond. Since it appears that age, not size, determines sexual maturity for this species and since two year old males and three year old females have been shown to be sexually mature, the fish begin reproducing in the pond before they reach target size for stocking. Each spawning event results in thousands of more fish in the pond, and upsets the food conversion balance (more mouths to feed). The end result is that very few of the initial stock reach target size in a reasonable period of time.

This Work Task evaluates the current culture practices for BONY through literature reviews, survey questionnaires, site visits to culture facilities, and interviews with fish culturists. A workshop will be held among fish culturists to review survey findings and to prioritize research actions. Research hypotheses will be formulated into study designs and investigations will be carried out. Findings and results will be documented and reported.

FY05 Accomplishments: This project was delayed and is a new start in FY06.

FY06 Activities: Reclamation contracted with ASU to conduct literature reviews on BONY culture practices; query fish culturists and staff at fish rearing facilities currently raising BONY; and conduct site visits to these facilities.

Proposed FY07 Activities: Begin field testing and evaluations of relationship between fish density and fish growth; conduct a workshop among fish culturists to review survey findings and to prioritize research needs for BONY; and design additional field and laboratory trials to test hypotheses.

Pertinent Reports: Study plans are available upon request.