Work Task C39: Post-Stocking Distribution and Survival of Bonytail in Reach 3

FY12 Estimate	FY12 Actual Obligations	Cumulative Expenditures Through FY12	FY13 Approved Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate	FY16 Proposed Estimate
$250,000	$252,447.59	$643,728.59	$250,000	$250,000	$250,000	$0

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Start Date: FY10

Expected Duration: FY15

Long-term Goal: Assess the effectiveness of the fish augmentation program.

Conservation Measures: BONY3, BONY5.

Location: Reach 3 to include main stem and backwater habitats.

Purpose: To determine the distribution and post-stocking survival of BONY within Reach 3.

Connections with Other Work Tasks (past and future): This work is related to work tasks B2, B3, and B4, all of which provide BONY for augmentation stocking. Study results will add to the database used to complete D8.

Project Description: This study will follow stocked fish after they are released into Reach 3 of the Colorado River to design and test ways to improve post-stocking survival. Techniques for monitoring will include marking, tagging, netting, electro-fishing, and visual observations. A final report will make recommendations for future BONY augmentation stockings.

Previous Activities: The first round of acoustic telemetry implemented under the reported work task was completed. Fish were monitored for a three month post-stocking period using active and passive tracking techniques to determine survival and dispersal. All acoustic tagged bonytail were contacted and by the end of the 90-day study period fish had dispersed as much as 30-km upstream from the stocking area (Bill Williams National Wildlife Refuge). Post-stocking survival over the course of the three-month study was high (95%); only one transmitter was recovered by divers from the bottom of the reservoir. All other fish were assumed to be living at the end of the study.

Concurrent to the work in Lake Havasu, a captive fish experiment was implemented at SNARRCTC to assess surgical techniques and to monitor fish health and tag retention over a three month period. At the conclusion of the study, all fish remained healthy and no transmitters were shed. No adverse effects of tag implantation were apparent when necropsies were performed on five fish.

A second acoustic telemetry study was completed and a third telemetry study was initiated during FY11, both of which used 6 month transmitters. Acoustic tagged bonytail were monitored through June 2011 using active and passive tracking techniques to determine survival and dispersal. All individuals were contacted and by the end of the first month fish had dispersed as much as 30-km upstream from their point of release. The maximum distance fish dispersed away from the stocking site became smaller as the study progressed, and by the end of six months most contacts were recorded within or near the Bill Williams River NWR. Three-month post-stocking survival was lower than the previous study (45% vs. 95%, respectively), and by the end of the six month study period 35% of acoustic tagged fish were alive. A majority of all fish contacts (~99%) for the first two telemetry studies occurred within or near the Bill Williams River NWR.

FY12 Accomplishments: To test whether dispersal and survival was related to stocking location or habitat availability, a dual stocking was implemented at BWRNWR and Cattail Cove State Park. Acoustic-tagged bonytail (10 implanted with six-month battery life transmitters, and 5 with 45-day battery life depth-sensing transmitters) were released at each location. Preliminary active-tracking data indicate depth-tagged bonytail were contacted on average at 80% of the depth of the reservoir water column. Fish location relative to the shoreline indicated bonytail were contacted further from shore during crepuscular and nighttime hours than during the day. Turbidity readings for depth-tagged fish stocked at Cattail Cove were approximately one-third of those associated with fish stocked in BWRNWR. Continuous inhabitance of bonytail stocked at BWRNWR indicated those fish nearly exclusively utilized habitat found within the refuge. Continuous inhabitance of bonytail stocked at Cattail Cove was higher in Lake Havasu than BWRNWR, however, 20% of those individuals showed preferences for habitats found in BWRNWR as opposed to those found Lake Havasu. Data acquisition continued through June 2012, and results and analysis will be presented in the 2012 Annual Report.

FY13 Activities: Another iteration of split stockings was initiated in October 2012; fish were distributed between BWRNWR and a river location near Blankenship Bend, upstream of Lake Havasu. Monitoring of these fish will continue through January 2013, and the results will be presented in the 2012 Annual Report.

Additional iterations of releases will be scheduled if time permits. These releases will focus on daily movements and micro habitat selection for individual fish across different habitats.

Based on current results, bonytail will continue to be released at the BWRNWR, and experimental stockings will take place elsewhere in Reach 3 to determine if other suitable stocking locations can be identified.

Proposed FY14 Activities: It is expected that this work will continue to focus on daily movements and micro habitat selection for individual fish across different habitats.

Pertinent Reports: A report titled, *Distribution and Post-Stocking Survival of Bonytail in Lake Havasu: 2010 Annual Report*, is posted on the LCR MSCP website and the 2011 annual report is completed and waiting to be posted.