

Work Task C41: Role of Artificial Habitat in Survival of RASU and BONY

FY11 Estimate	FY11 Actual Obligations	Cumulative Expenditures Through FY11	FY12 Approved Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate
\$25,000	\$31,150.14	\$37,035.81	\$25,000	\$65,000	\$65,000	\$0

Contact: Jeff Anderson (702) 293-8216, jranderson@usbr.gov

Start Date: FY10

Expected Duration: FY14

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

Conservation Measures: BONY3, BONY5, RASU3, RASU5, RASU6

Location: Reach 2, Davis Pond.

Purpose: To assess use and role of artificial reefs and structures by native fishes released by the LCR MSCP.

Connections with Other Work Tasks (past and future): This work is related to all work tasks in Section B that provide RASU and BONY for augmentation stocking, specifically B7, C23, and F5. Study results will add to the database used to complete D8.

Project Description: Approximately 800 acres of artificial fish habitat have been constructed and deployed in Lake Havasu over the past 15 years. Similar structures have recently been placed into coves in Lake Mohave. RASU have been periodically observed by SCUBA divers in and around these structures, along with numerous species of exotic fishes. This study will determine which if any of these structures may be preferred by native species.

This study was originally to be done in Beal Lake. It was moved to Davis Cove due to low post-stocking survival in Beal Lake. Davis Cove, a rearing pond along Lake Mohave, provides the best opportunity to monitor and assess a native fish population's response to the deployment of artificial habitat. Davis Cove is a 2.7-acre backwater pond that has supported a native fish community since 2005. It is dominated by rock and sand shorelines with little emergent vegetation, and it is devoid of large submerged habitats. This study will place a variety of constructed habitat types into Davis Cove and attempt to determine which types of structures are preferred by native species. The information may be used to guide current habitat projects in Reaches 2 and 3, as well as facilitate the design and development of LCR MSCP backwater habitats. It will also be used to determine future stocking locations in Reaches 2 and 3. For example, if certain types of structures are known to be used as cover by native fishes, fish could be released in the vicinity of these structures.

Previous Activities: PIT-tag antennae have been purchased and are being incorporated into artificial habitats. Beal Lake was stocked with 610 PIT tagged RASU in February 2010 and the population was tracked throughout the year using remote PIT-tag antenna. The population dropped to approximately 130 individuals by the end of the year with more than 50% of the loss occurring during the first three months post-stocking. The reason for the demise of the stocked fish is unknown, but some possibilities are predation by migratory birds, mortalities associated with stocking and handling, or water quality deficiencies.

FY11 Accomplishments: Site location was moved from Beal Lake to Davis pond due to poor fish survival. Davis pond was stocked with 376 PIT-tagged RASU (<300 mm). Two different habitat types (brush bundles, pipe structures) were constructed within a PVC frame and equipped with PIT-tag antennae. Three habitats at a time were deployed at different locations throughout Davis pond. Each habitat was paired with a single antenna, which was placed without a habitat, approximately 10 to 15 feet away. Scanning occurred in five-day intervals (Monday through Friday) for a total of 12 intervals. Brush bundles were deployed May 9- July 1 (5 intervals), and pipe structures were deployed from July 18 to October 10 (7 intervals). Water quality profiles were taken in conjunction with PIT scanner deployment. Data analysis did not show a statistically significant difference in habitat use versus non-habitat use. This was likely due insufficient scanning intervals caused by equipment malfunction, and the emergence of aquatic vegetation which became the dominant habitat in the pond for much of the scanning period. Upon retrieval of the habitats, it was found that YOY and juvenile bonytail were utilizing the inside of the PVC frames which had pulled apart in some places.

FY12 Activities: PIT-scanning efforts will be similar to those in FY11. Scanning will be initiated earlier in the field season to alleviate the problems with the submergent vegetation. Secondly, we will deploy multiple habitat types at the same time over a longer period for a paired comparison. Water quality will continue to be recorded with each remote sensing equipment deployment.

Based on our observations of YOY BONY, we have increased the funding in an attempt to assess their use of constructed habitats. A variety of small habitats will be deployed for assessing use by YOY and juvenile bonytail, as well as any razorbacks that are spawned. Data will be analyzed and developed into an annual report.

Proposed FY13 Activities: Additional funding is sought as we expect to build upon the results from FY12. We will continue to deploy and then monitor different artificial habitats and determine usage in Davis Pond. Habitat thought to be favorable to RASU and BONY may be deployed throughout reaches 2 and 3.

Pertinent Reports: The study design is available upon request and annual reports will be posted to the LCR MSCP website upon completion.