Work Task C12: Demographics and Post-Stocking Survival of Repatriated Razorback Suckers in Lake Mohave

FY08 Estimates	FY08 Actual	Cumulative Accomplishment Through FY08	FY09 Approved Estimate	FY10 Proposed Estimate	FY011 Proposed Estimate	FY12 Proposed Estimate
$215,000	$174,728.02	$532,990.02	$200,000	$200,000	$200,000	$0

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Start Date: FY06

Expected Duration: FY11

Long-term Goal: Species research.

Conservation Measures: RASU5.

Location: Reach 2, Lake Mohave, Arizona/Nevada.

Purpose: Assess population structure for repatriated RASU, and develop a population demographic model for predicting survival and replacement rates to maintain brood stock for the duration of the LCR MSCP.

Connections with Other Work Tasks (past and future): None.

Project Description: This activity will support ongoing RASU conservation efforts at Lake Mohave to develop and maintain a population of 50,000 adult RASU as a genetic refuge. More than 120,000 fish have been reared and repatriated to date, yet brood stock population estimates remain below 2,000 fish. The study will assess causes for poor survival of stocked RASU and make recommendations for corrective actions.

Previous Activities: Rearing, stocking, and recapture data for RASU stocked into Lake Mohave since 1992 were collated and reviewed. Field investigations were implemented during spawning and post-spawning seasons to assess distribution of repatriated fish. Telemetry work was initiated to examine post-stocking dispersal rates, habitat selection, and short-term mortality, and to verify existing population models. A population model was refined using new data to estimate abundance and to describe critical, dynamic life table features such as mortality rates. Data are being acquired to assist in the quantitative assessment of fish predators as a mortality factor for newly stocked RASU.

Extensive radio and sonic tracking of fish was used to assess distribution and survival. Demographic modeling was used to assess population structure. The study was designed as a multi-year, iterative process. Observations and conclusions from first-year activities provided direction for work in subsequent years.

Initial findings in FY06 and FY07 showed that the 300-mm TL RASU released were being eaten by predators immediately after stocking with less than 20% surviving the first 90 days. This prompted a need to evaluate stocking of adult size RASU (500 mm TL). Rearing of these larger fish has taken longer than expected. Only a few hundred fish were available for research subjects during 2007. The plan is to release more of these larger fish through the end of 2009. These fish will then be monitored and their relative survival assessed for up to 24 months. Field studies are expected to be completed at the end of FY10, with a final completion report available in FY11.

FY08 Accomplishments: The sonic studies initiated in 2007 were continued, and a second, 6-month interval of the sonic telemetry portion of this task was completed. This work compared post-stocking survival of subadult (avg. TL 380 mm) and adult (avg. TL 500 mm) RASU repatriates. At the conclusion of the study, 1 of 15 (7%) tagged subadult fish and 5 of 14 (36%) tagged adult fish remained active. For subadult fish in the telemetry study, first-week survivorship was estimated at 82%. For adult fish in the telemetry study, first-week survivorship was estimated at 95%. Mortality was likely due to predation by nonnative striped bass.

Annual monitoring for repatriated and wild RASU continued. Capture data continued to show a decline of the original wild population that had existed prior to the repatriation program. The repatriate population maintained a low abundance but was stable despite only a small number of RASU repatriates (< 1,000 individuals) being stocked during FY08.

FY09 Activities: Activities during FY09 will continue investigations initiated in FY07, including determining survival of target fish released throughout Lake Mohave. Annual monitoring will be conducted November 2008, March 2009, and May 2009, and population demographic modeling will continue as new data are available. A third sonic telemetry study will be initiated using large (500+ mm TL) adult RASU collected from Yuma and Davis Cove backwaters.

Proposed FY10 Activities: Work will continue to focus on monitoring larger RASU stocked during FY09 to refine the relationship between survival and size at release. Contingent on the results of remote sensing evaluation (C23), remote PIT-scanning units may be deployed in conjunction with annual RASU monitoring efforts on Lake Mohave. Post-stocking demographics for the repatriate population will be estimated using mark-recapture data, and additional statistical analyses of the LCR MSCP database (G1) will continue in order to assess factors affecting post-stocking survival.

Pertinent Reports: A report for the 2007-2008 field studies has been posted to the LCR MSCP Web site.