

Work Task G3: Adaptive Management Research Projects

FY06 Estimates	FY06 Actual	Cumulative Accomplishment Through FY06	FY07 Approved Estimate	FY08 Proposed Estimate	FY09 Proposed Estimate	FY10 Proposed Estimate
\$230,000	\$281,328	\$281,328	\$275,000	\$230,000	\$230,000	\$230,000

Contact: John Swett, (702) 293-8574, jswett@lc.usbr.gov

Start Date: FY06

Expected Duration: FY55

Long-term Goal: Species Research

Conservation Measures: MRM1, MRM2, MRM4, WIFL1, AMM1, MRM5, BONY5, RASU6, CRCR1, YHCR1, MRM3, FLSU3, LLFR1, and LLFR3

Location: System-wide

Purpose: Evaluate existing knowledge for each LCR MSCP covered species to determine research needs, develop a research program to complete appropriate conservation measures, and provide data for the habitat creation and maintenance program. As data gaps are identified for each covered species and their habitats, a research activity will be developed to provide information for the Adaptive Management Program. This work task enables Reclamation to implement priority research projects in a timely manner.

Connections with Other Work Tasks (past and future): Research projects initiated under this work task may be continued as Species Research (Section C). Information obtained may be used for Fish Augmentation (Section B), System Monitoring (Section D), Habitat Creation (Section E), Post-Development Monitoring (Section F), or Habitat Maintenance (Section H).

Project Description: To achieve successful habitat creation and an effective Fish Augmentation Program over a long period of time, an Adaptive Management Program must be implemented. Data gaps will be identified during C3 and species research priorities will be defined. These research opportunities will be developed into projects/studies and be implemented by Reclamation staff or via contracts, grants, and agreements. Miscellaneous research projects that relate to LCR MSCP covered species and habitats may also be executed in this work task. New knowledge accumulated during the adaptive management process will be used in planning habitat creation projects for covered species, fish augmentation strategies, and system monitoring programs.

Previous Activities: This is a new start in FY06.

FY06 Accomplishments: Research needs were identified in the Fish Augmentation Program (Section B) to evaluate monitoring techniques for assessing relative abundance of RASU,

especially in riverine reaches. The standard technique used successfully in lakes Mohave and Havasu is trammel netting; however, this technique is not as successful in the river and causes bycatch mortalities of waterfowl and mammals. Techniques evaluated included video and still photography from helicopters, visual counts by drift boats, and using night-time electrofishing. Aerial photography showed promise; however, fish detection was highly influenced by wind, which distorts visibility. Spawning RASU in the Needles, California area proved far more accessible to night electrofishing than to standard trammel netting. More fish were contacted for staff hour, resulting in better population size estimates. Population estimates derived by boat surface counts fell within the population confidence limits resulting from the electrofishing. All three techniques will be tested further.

Also during FY06, Reclamation personnel met with USGS personnel to observe and discuss remote-sensing applications used to detect PIT tags implanted in native sucker species in Upper Klamath Lake and its tributaries. Applications were of two basic types. Multi-channel arrays were deployed in the Sprague River with capabilities for PIT-tag detection across an entire stream channel (stream widths in excess of 15 meters), and smaller (<1 m²), single-channel arrays were deployed on spawning grounds in Upper Klamath Lake. Conditions and substrate are very similar to RASU spawning areas on Lake Mohave and for pilot study purposes, the single channel detection system was selected. A flat plate antenna was acquired and tested at WBNFH for detection of PIT tags implanted in a cohort of 20 adult RASU. Contact data was successfully logged and downloaded. This technique was promising enough that a research work task was put together to be implemented in FY07 (C23).

FY07 Activities: An external science review of the strategy for implementing the conservation measures for avian species will be initiated. Current and proposed activities will be evaluated and recommendations for increasing overall program efficiency will be made.

Three weeks have been dedicated during the RASU spawning period to test, analyze, and refine remote sensing techniques. Reclamation's helicopter will be used to take aerial photography during the second and fourth week of February. During this same period the spawning community will be surveyed by boat surface counts and electrofishing. These data will be compared to data from standard mark/recapture protocols using electrofishing for accuracy, cost, and overall impact and the least favorable survey method will be discontinued. An annual report will be written during the summer of FY07.

Proposed FY08 Activities: The avian program review will be completed and results will be published in refereed outlets. Based on the outcome of the remote sensing work for RASU monitoring from FY07, a final monitoring protocol will be developed, further tested, and refined. A final report will be written in FY08 presenting the outcome of these tests in terms of estimating population trends, cost, and overall impact to the resource.

Pertinent Reports: A draft progress report, *Development of remote sensing techniques to monitor relative abundance of razorback sucker found between Hoover and Parker Dams*, is under review and will be posted to the LCR MSCP web site.