

Work Task C23: Evaluation of Remote Sensing Techniques for PIT-Tagged Fish

| FY07 Estimates | FY07 Actual | Cumulative Accomplishment Through FY07 | FY08 Approved Estimate | FY09 Proposed Estimate | FY10 Proposed Estimate | FY11 Proposed Estimate |
|----------------|-------------|--|------------------------|------------------------|------------------------|------------------------|
| \$145,000 | \$138,945 | \$138,945 | \$145,000 | \$60,000 | \$0 | \$0 |

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Start Date: FY07

Expected Duration: FY08

Long-term Goal: Conduct long-term system monitoring and adaptively manage augmentation stockings of RASU and BONY.

Conservation Measures: BONY5 and RASU6.

Location: Reaches 2 and 3 and Willow Beach NFH, AZ, NV, and CA.

Purpose: Monitor augmentation stockings in a cost-effective and passive manner.

Connections with Other Work Tasks (past and future): This work migrated out of G3. This work task may determine future PIT-tag equipment purchases in B8.

Project Description: This is a 2-year evaluation of native fish monitoring equipment. Reclamation will purchase and test the effectiveness of flat plate, circular and directional antennae, and associated hardware and software for remote sensing of PIT-tagged RASU and BONY. The project will evaluate designs for weir-type guided as well as non-guided systems for the detection of PIT-tagged fish at spawning areas, and methods for collecting, storing, and retrieving contact data. Current efforts to contact repatriated native fish are labor intensive and require direct handling of fish during the spawning season. Remote sensing may prove to be less costly, more efficient, and less stressful on these sensitive native fish species.

Previous Activities: This was a new start for 2007.

FY07 Accomplishments: Passive Integrated Transponder (PIT) antennae and receivers were purchased from suppliers and deployed under controlled laboratory conditions at Willow Beach NFH. In conjunction with fish-tagging operations, flat-plate PIT-tag antennae were set in the bottom of holding tanks with tagged fish introduced above the antennae. Netting was set at known distances (0, 2, 4, and 6 inches) above the antennae. Individual detections were recorded to determine maximum detection distance.

PIT-tag receivers, batteries, and associated equipment were then installed in water-proof containers for field deployment. In the field, the flat-plate antennae, attached to receivers by

5-m cables, were deployed at known RASU congregating sites on gravel shoals below Hoover Dam. These tests evaluated both contact efficiency and field readiness of the deployment package. Modifications were made as needed to improve reliability in the field. Data were collected and submitted to ASU for analysis and will be evaluated in a final report with recommendations for final application to the system monitoring program.

FY08 Activities: Expanded field testing of remote detection equipment at known RASU and BONY spawning sites will be conducted. Currently, there are four, 2-channel remote sensing units to be deployed as free-floating or shore-based stations with a maximum antennae depth of 5 meters and battery life of up to 12 hours. PIT-tag data of adult RASU will be collected in conjunction with RASU larvae collection at known spawning sites. A final report will be developed documenting results of the 2-year evaluation.

Proposed FY09 Activities: Field testing will continue into fall 2008 in association with fish harvest from lake-side ponds (B7). Harvest numbers from the ponds will be used to back-check population estimates made with remote sensing equipment. A final report will be prepared.

Pertinent Reports: The study plan is available upon request from the LCR MSCP.