Work Task F5: Post-Development Monitoring of Fish at Conservation Areas

FY12 Estimate	FY12 Actual Obligations	Cumulative Expenditures Through FY12	FY13 Approved Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate	FY16 Proposed Estimate
$175,000	$172,897.42	$835,057.02	$250,000	$250,000	$250,000	$250,000

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Start Date: FY07

Expected Duration: FY55

Long-term Goal: Post-development monitoring.

Conservation Measures: RASU6 and BONY5.

Location: Reaches 3-6 backwater habitats.

Purpose: Monitor fish use of habitat creation sites to provide data for the adaptive management process and develop management guidelines for created backwater habitats.

Connections with Other Work Tasks (past and future): All backwaters created in Section E. Work Task C23, C31, C33, C34, C40, and C41.

Project Description: This work will monitor the fish and fish habitat at conservation areas. It is anticipated that these sites will play various roles for conservation of target fish species throughout the term of the LCR MSCP. Some habitats will be able to develop self-sustaining populations, others may become overpopulated requiring harvest or thinning, and some will require continuous population augmentation. Most isolated fish habitats will require some stock rotation to maintain genetic diversity through time. Basic surveys of the fish population and the physical and chemical habitat developed or restored will be required. Fish monitoring will include trapping (hoop, fyke, and minnow traps), trammel netting, electro-fishing, larvae light trapping, and ocular surveys (including scuba and snorkeling where necessary and practical). Water quality assessment will require annual measurements of temperature, oxygen, pH, and conductivity (salinity), as well as periodic monitoring of chemical makeup, including electro-ions and selenium.

Previous Activities: Since 2006, Beal Lake has been renovated and stocked with more than 6,000 RASU and 2,000 large BONY (an additional 27,000 YOY BONY have also been released); a limited portion of each of these stockings were marked with PIT tags. Non-natives were identified shortly after the renovation efforts. Annual surveys have contacted subsets of each of these stockings, but long term survival has been low. Closer order monitoring via remote sensing was initiated in FY09 and continued through FY11. Populations of stocked RASU declined rapidly within the first several months post-release and eventually leveled off near 100 individuals. Water quality has been monitored

constantly with multi-parameter water quality loggers and all parameters have remained within the known ranges of acceptability for native fish. Zooplankton collections were initiated as part of Work Task C44 and results show lower than average mean zooplankton biomass. Annual netting and electro-fishing surveys have been coordinated with the USFWS and have resulted in the capture of numerous RASU, as well as large numbers of non-natives. The majority of RASU contacted during survey events have been relocated to the Colorado River near Needles, California.

Routine monitoring of Big Bend Conservation Area is accomplished through monthly monitoring from February through May. This monitoring includes electro-fishing, trammel netting, and larval light trapping in areas dictated by water level and based on historical contacts of native fish. Water quality profiles were conducted during each monitoring trip and at least quarterly the remainder of the year. FY11 monitoring resulted in the capture of 3 RASU and 1 FLSU adult/subadults, and more than 30 FLSU larvae. Water quality was exceptional, as was expected for a habitat with a direct connection to the river. Research and monitoring of Imperial Ponds is being accomplished under C25.

FY12 Accomplishments: Stockings were discontinued at Beal Lake due to poor survival, and fisheries surveys were reduced to a relative abundance and biomass estimate for all species with in the backwater. Results of this survey indicate that the backwater contains nearly 4,000 individual fish and at least 6 different species. Common carp and largemouth bass comprise almost 90% of the total fish (69% and 20% respectively), with carp occupying 88% of the total fish biomass. This level of non-natives is likely leading to a competition of resources and at least contributing to the poor survival of native fish. Water quality was constantly monitored throughout the backwater; low levels of DO and high temperatures were observed locally but not lake wide. Zooplankton and phytoplankton sampling was increased in FY12, and results continue to show relatively low levels of plankton biomass.

Routine monitoring at Big Bend Conservation Area continued in FY12; native fish contacts included seven RASU and four larval FLSU. All of the razorbacks originated from a stocking event, which occurred months earlier approximately ½ mile upstream. Fish surveys at this location are highly influenced by river operations from Davis Dam. Water quality parameters remained with in thresholds for all native fish. Zooplankton and phytoplankton abundance were much lower than at other sites, but not surprising for a system, which is routinely flushed by river water.

FY13 Activities: Monitoring activities for Beal Lake will be reduced until long-term management guidelines are established. Water quality and plankton monitoring will continue, along with periodic remote sensing to track the existing small population of RASU. Monitoring activities at Beal Lake will be replaced by specific research activities to address native fish life history questions, as well as general site management questions.

Big Bend Conservation Area will be monitored at a level similar to FY12. Additional effort will be expended to deploy remote PIT scanners during routine monitoring events and quarterly water quality monitoring.

Proposed FY14 Activities: The activities from FY13 will continue into this year. Recommendations for management guidelines at Beal Lake will dictate future monitoring and research objectives for the site. Big Bend Conservation Area activities will be similar to the previous year, and the remote PIT scanning surveys will be evaluated and incorporated into the routine monitoring if they are productive.

Pertinent Reports: A report titled, *Beal Lake Species Abundance and Biomass*, is completed and will be posted to the LCR MSCP website.