

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

FY16 Estimate	FY16 Actual Obligations	Cumulative Expenditures Through FY16	FY17 Approved Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate	FY20 Proposed Estimate
\$250,000	\$241,313.96	\$1,760,785.26	\$250,000	\$500,000	\$500,000	\$500,000

**Contact:** Jeff Lantow, (702) 293-8557, [jlantow@usbr.gov](mailto:jlantow@usbr.gov)

**Start Date:** FY07

**Expected Duration:** FY55

**Long-Term Goal:** Post-development monitoring

**Conservation Measures:** BONY5 and RASU6

**Location:** Backwater habitats (Reaches 3–6)

**Purpose:** To monitor fish use of habitat creation sites in order to provide data for the adaptive management process and to develop management guidelines for created backwater habitats

**Connections with Other Work Tasks (Past and Future):** Post-development monitoring will be conducted at all backwaters created under Conservation Area Development and Management (Section E) work tasks and Work Tasks C23 (closed), C31, C33 (closed), C34 (closed), C40, and C41 (closed).

**Project Description:** Fish and fish habitat will be monitored at conservation areas. It is anticipated that these areas will play various roles in the conservation of target fish species throughout the 50-year 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 components in developed or restored habitats will be required. Fish monitoring will include trapping (hoop, fyke, and minnow traps), trammel netting, electrofishing, larvae light trapping, and ocular surveys (including scuba and snorkeling where necessary and practical). Water quality assessments will require annual measurements of temperature, oxygen, pH, and conductivity (salinity) as well as periodic monitoring of chemical makeup and selenium.

**Previous Activities:** Since 2006, Beal Lake has been renovated and stocked with more than 6,000 razorback suckers (*Xyrauchen texanus*) and 2,000 large bonytail (*Gila elegans*) (an additional 27,000 young-of-the-year bonytail have also been released); a limited portion of each of these stockings was marked with passive integrated transponder (PIT) tags. Non-native fishes were identified shortly after the renovation efforts. Through annual surveys, subsets of each of these stockings have been contacted, but long-term survival has been low. A more intensive monitoring effort using remote sensing was initiated in FY09 and continued through FY11. Populations of stocked razorback suckers 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 fishes.

In 2012, stockings were discontinued at Beal Lake, and fisheries surveys were reduced to a relative abundance and biomass estimate for all species within the backwater. The results of this survey indicated that the backwater contained at least six different species but, relative to the size of the backwater, had low overall numbers of fishes (approximately 4,000). Non-native fishes were the dominant species in the lake, accounting for almost 90% of the total fishes.

A large fishkill was observed in February 2013; water samples confirmed a golden algae bloom. Monthly golden algae monitoring was initiated immediately following its detection. No fishes were observed for several months after the event. By mid-summer, young-of-the-year largemouth bass (*Micropterus salmoides*) were observed in the backwater. Golden algae have not been detected in the backwater since May 2013, and the non-native fish community has rebounded since the fishkill. The backwater was isolated from Topock Marsh following the detection of golden algae in 2013; this closure resulted in a rapid increase in specific conductivity, which approached 11,000 microsiemens per centimeter in FY14. Due to changes in water delivery, it decreased to approximately 6,000 microsiemens per centimeter in FY15. No fish activities have been conducted due to the lack of native fishes since 2013.

Routine monitoring of the Big Bend Conservation Area (BBCA) has been conducted monthly from February through May and has included electrofishing, trammel netting, remote PIT scanning, and larval light trapping in areas where there have been historical contacts of native fishes and adequate water levels to permit access for sampling. Sonic- and radio-tagged flannelmouth suckers (*Catostomus latipinnis*) released locally as part of Work Task C53 have been found within the dense bulrush stands at the BBCA backwater for extended periods. Water quality profiles were conducted during each monitoring trip and at least quarterly the remainder of the year. Through monitoring, low numbers of razorback and flannelmouth suckers continued to be contacted, including larvae

of both species and an occasional flannelmouth sucker subadult. The backwater has a direct surface connection to the lower Colorado River; consequently, water quality parameters mirror that of the river.

**FY16 Accomplishments:** The water quality at Beal Lake was monitored throughout the backwater using permanently deployed multi-parameter instruments. Low levels of dissolved oxygen and high temperatures were observed locally but not lake-wide. Conductivity has decreased to nearly 2,200 microsiemens per centimeter following wedge-wire screen maintenance. Zooplankton and phytoplankton results continue to show relatively low levels of plankton biomass. No golden algae have been detected in Beal Lake since May 2013. No fish activities were conducted at Beal Lake due to the lack of native fishes in the ponds since 2013.

Routine monitoring at the BBCA continued in FY16; netting resulted in the capture of zero razorback suckers, zero flannelmouth suckers, and one bonytail. Remote PIT scanning resulted in the contact of two razorback suckers, zero flannelmouth suckers, and one bonytail. Both bonytail were from a September 2015 release in Laughlin Lagoon. These are the first bonytail contacted since routine monitoring was initiated in FY13. Larval razorback suckers and flannelmouth suckers were captured at rates lower than FY15, but they were similar to the years prior to FY15. A permanent remote PIT scanner was installed in the summer of FY16 with limited success; improvements to this scanning station will be made in FY17. Water quality parameters remained within thresholds for all native fishes.

**FY17 Activities:** Monitoring activities at Beal Lake will be focused on water quality. Golden algae sampling will continue in spring when conditions are the most favorable for the algae.

Interactions of native and non-native fish species will also be monitored if a sufficient number of razorback suckers are available for stocking in Beal Lake. Areas of the backwater will be partitioned and stocked with equal numbers of razorback suckers; one-half of the partitioned areas will have non-native fishes removed, and the other half will not. Short-term survival will be monitored using remote PIT scanners.

The BBCA will be monitored at a level similar to that in FY16. The permanent remote PIT scanning station will be improved to increase its dependability.

**Proposed FY18 Activities:** The activities from FY17 will continue. Monitoring may continue to focus on the interactions of non-native fishes or the impact of piscivorous bird predation in the lake.

BBCA activities will be similar to those of the previous year and will include trammel netting, remote PIT scanning, larval surveys, and water quality monitoring.

The budget will increase in FY18 when monitoring of the Imperial Ponds Conservation Area, previously conducted under Work Task C25, moves to this work task.

**Pertinent Reports:** The report titled *Beal Lake Species Abundance and Biomass* is complete and will be posted on the LCR MSCP Web site upon completion.