

## Work Task D3: Southwestern Willow Flycatcher Habitat Monitoring

FY11 Estimate	FY11 Actual Obligations	Cumulative Expenditures Through FY11	FY12 Approved Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate
\$90,000	\$120,009.76	\$523,988.23	\$90,000	\$90,000	\$90,000	\$90,000

**Contact:** Chris Dodge, (702) 293-8115, [cdodge@usbr.gov](mailto:cdodge@usbr.gov)

**Start Date:** FY05

**Expected Duration:** Five years after implementation of all water transfers covered under the SIA BO. As of FY11, all water transfers have not been implemented.

**Long-term Goal:** Monitor the effects of reduced flows and the associated reduction in groundwater table, specifically associated with the SIA, on southwestern willow flycatcher breeding habitat between Parker and Imperial dams.

**Conservation Measures:** MRM1, MRM2 (WIFL).

**Location:** Reaches 4 and 5, California and Arizona.

**Purpose:** Monitor SWFL habitat conditions until 5 years after implementation of all water transfers covered under the SIA.

**Connections with Other Work Tasks (past and future):** This work task, in conjunction with surveys conducted under D2, will provide information necessary for the Existing Habitat Maintenance (H1). Data collected may also be used in future habitat creation projects listed under Section E.

**Project Description:** In 2001, Reclamation received a BO on the SIA for the change in point of diversion of up to 400,000 acre-feet of water between Imperial and Parker dams. This work is being implemented through the LCR MSCP. Reduced river flows, created by the change in the point of diversion, may affect SWFL breeding habitat located between these two dams.

In 2005, Reclamation began monitoring 372 acres of SWFL breeding habitat to document changes in habitat conditions specifically attributable to covered SIA activities. Discussions are being held with the USFWS regarding this task, which may be discontinued due to lack of significant evidence of groundwater and habitat relationships during the last six years of surveys.

**Previous Activities:** In 2004, Reclamation identified 372 acres of SWFL habitat between Parker and Imperial dams to monitor for the SIA BO requirements. In each identified site, three to five temperature/humidity data loggers and one groundwater observation well were installed. Soil

moisture measurements were collected at each data logger location during each flycatcher survey period. Vegetation data were also collected after the surveys were completed.

The previously identified 372 acres of SWFL-occupied habitat at 11 sites, along with two control sites, were monitored between Parker and Imperial dams by collecting and analyzing microclimate data, groundwater monitoring, and vegetation monitoring, using similar protocols to those in place for the life history studies. Daily, weekly, and seasonal cycles in groundwater levels were apparent. Water levels drop during afternoon hours when evapotranspiration is high and on weekends when water releases from Parker Dam decline. Seasonal cycle in groundwater levels mirrors the seasonal fluctuations in river flow. Analysis of groundwater data indicates a strong correlation between piezometer water levels and releases from Parker Dam. Data did not show correlations between piezometer water level and soil moisture/vegetation within the habitat monitoring sites.

**FY11 Accomplishments:** Each site was monitored for temperature, relative humidity, soil moisture, vegetation, and groundwater. In 2011, data was compiled for all years since 2005 and compared across this period. Results were similar to those found in 2010. Comparisons of microclimate characteristics among years in 2005-2011 at the habitat monitoring sites indicated hotter and more humid conditions in 2006, cooler conditions in 2009, and less humid conditions in 2010 and 2011. These inter-annual changes were similar between test and control sites, suggesting that these changes were regional, rather than being influenced by local conditions. The inter-annual changes in soil moisture were not similar between test and control sites, with soil moisture declining more sharply at the control sites from 2005 to 2008 and then rising sharply after 2009. This suggests that local conditions, in addition to regional climate, may have influenced soil moisture. Mean daily temperature range and mean maximum diurnal temperature were higher at test sites but lower at control sites in 2008 versus 2007. These metrics decreased sharply in 2009 and then increased in 2010 and 2011 at both test and control sites, presumably in response to climate conditions during portions of each summer. Thus, there have not been any consistent patterns in the changes in microclimate characteristics at test versus control sites that could be attributed to changes in river flows.

Between-year differences were noted at the habitat monitoring sites for several vegetation variables. None of the variables exhibited a constant change across time. Woody ground cover and the percentage of basal area comprising native vegetation were the only variables for which there was a significant interaction with location, meaning the changes in all other variables between years among test sites were not significantly different from the changes at control sites.

**FY12 Activities:** The 372 acres of SWFL breeding habitat between Parker and Imperial dams will continue to be monitored by collecting and analyzing microclimate data, groundwater monitoring, and vegetation monitoring utilizing similar protocols as those in place for the life history studies.

Reclamation is in discussions with the USFWS to determine whether further studies are necessary, given the variability and no correlation of data. If it is determined that these studies are no longer needed, this work task will be closed in FY13.

**Proposed FY13 Activities:** With approval of the USFWS, Reclamation will close this work task after FY12. If it is determined that monitoring is still required, Reclamation will continue to conduct habitat monitoring by collecting and analyzing microclimate data, groundwater monitoring, and vegetation monitoring utilizing similar protocols as those in place for the life history studies.

**Pertinent Reports:** *Southwestern Willow Flycatcher Surveys, Demography, and Ecology along the LCR and Tributaries, 2011* is posted on the LCR MSCP website.