Work Task C37: Hydrology Studies for Avian Riparian Obligate Species

FY09 Estimates	FY09 Actual	Cumulative Accomplishment Through FY09	FY10 Approved Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate
$0	$0	$0	$150,000	$50,000	$50,000	$0

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

Start Date: FY10

Expected Duration: FY12

Long-term Goal: Species Research

Conservation Measures: MRM1 (WIFL, YBCU, ELOW, GIFL, GIWO, VEFL, BEVI, YWAR, SUTA)

Location: Southwestern willow flycatcher and yellow-billed cuckoo breeding sites and LCR MSCP habitat creation sites.

Purpose: To determine hydrologic conditions such as soil moisture, depth to groundwater, and amount of standing water needed underneath habitat for the willow flycatcher and yellow-billed cuckoos in order to duplicate conditions at habitat creation sites.

Connections with Other Work Tasks (past and future): Breeding habitat for willow flycatchers is being determined through studies completed under D2, and breeding habitat for yellow-billed cuckoos is being determined through studies completed under D7. Habitat parameters for other obigate riparian species, such as summer tanagers, yellow warblers, and Bell's vireos that may benefit from these type of studies are being addressed under D6. This study was initiated under G3 in 2009.

Project Description: Based on information gathered since 1997 during surveys for southwestern willow flycatchers on the LCR, it has been noted that within the dense, moist riparian habitats where flycatchers are found, several other LCR MSCP covered species are also commonly encountered. These species include yellow-billed cuckoo, summer tanager, vermilion flycatcher, yellow warbler, gilded flicker, and Gila woodpecker.

Some soil moisture and/or standing water may be an important feature of optimal riparian habitat, but the exact role this water has in habitat use is not known. It may increase vegetation health, which may be related to insect abundance, or it may increase humidity

and lower temperatures. It is also not known how long moisture needs to be present or how large an area needs to be kept in this state during the breeding season. Although much has been determined regarding site conditions needed for breeding southwestern willow flycatchers (flycatchers) and yellow-billed cuckoos (cuckoos), quantification of how much moist soil or standing water within breeding locations, and how to maintain needed hydrological conditions is still undetermined.

This study will review hydrological studies that have been completed already within other river systems that have nesting flycatchers and cuckoos. Monitoring will also begin on hydrologic conditions such as ground water, soil moisture, and standing water under known breeding flycatcher and cuckoos sites along the Virgin River and lower Colorado River systems in order to quantify them.

Previous Activities: This is a new start in FY10.

FY10 Activities: Site selection will be completed and random plots will be selected in known willow flycatcher and yellow-billed cuckoo habitats at Bill Williams River National Wildlife Refuge, Topock Marsh, Mormon Mesa, and at the Cibola Valley Conservation Area. Piezometers will be placed at each site and transects will be established to measure each point for various hydrologic characteristics. Depth to water table, soil texture, soil organic layer, soil moisture and temperature, and standing water, will be measured and indices for evapotranspiration will be created.

Piezometer installation will begin in March 2010. Data will be collected in the first year from March to August and will be used to determine the appropriate sample size for year two. Information gathered in the first year will be used to make adjustments, if necessary, to the measurements taken in the second year of the study.

The data collected will be used along with data collected in year two to characterize hydrologic conditions of breeding yellow-billed cuckoo and southwestern willow flycatcher habitat.

Proposed FY11 Activities: The second year of sampling will take place at the same areas sampled in year one. Sample size and methods may be adjusted based on an analysis of the data from year one. After the second year of data has been collected, a final report will be drafted.

Pertinent Reports: An annual report will be completed in 2011 summarizing the first-year results. The study design is available upon request.