Work Task C6: Insectivore Prey Base Abundance and Diversity in Riparian Restoration Sites

FY11 Estimate	FY11 Actual Obligations	Cumulative Expenditures Through FY11	FY12 Approved Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate
$0	$0	$101,441.68	$0	$150,000	$175,000	$175,000

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Re-Start Date: FY13

Expected Duration: FY15

Long-term Goal: Species Research.

Conservation Measures: WIFL1, WIFL2, YBCU1, YBCU2, GIFL1, GIWO1, VEFL1, BEVI1, YWAR1, SUTA1, WRBA2, WYBA3, CLNB2, PTBB2.

Location: Topock Marsh (Reach 3, Havasu NWR, Arizona, 3 miles east of River Mile 243), Beal Lake (Reach 3, Havasu NWR, Arizona, 1 mile east of River mile 239), and Cibola Valley Conservation Area (Reach 4, Reclamation, Hopi Tribe, and Mohave County, Arizona, south of River Mile 103).

Purpose: The purpose of this study is to determine presence of insect and arachnid species at LCR MSCP habitat creation sites and the Bill Williams River NWR, and estimate abundances by species. Few restoration programs address insects and arachnids as part of habitat development and restoration projects. Wildlife species key in on riparian habitat because of the microclimate conditions, canopy cover, and prey abundance that riparian habitats provide. Additionally, healthy riparian habitats are linked to the vital roles arthropods play as pollinators, decomposers, herbivores, seed dispersers, and food sources.

Several LCR MSCP covered species are insectivores and may be selecting breeding habitat based on prey availability. According to the LCR MSCP HCP, created habitat will be specifically managed to ensure production of LCR MSCP covered species insect prey base.

The LCR MSCP now has several habitat creation sites that are of the right structure for several covered species. Most of these habitat creation sites include using mass planting techniques to establish target tree densities similar to known densities of covered species habitat. This technique has been effective and successful for the development of habitat for the LCR MSCP, but it circumvents the “typical” and gradual stages of plant succession (i.e. changes in species composition over time) that takes place as habitats develop slowly over time; a process that allows for a simultaneous succession of arthropod species. The LCR MSCP needs data to show which arthropod species are currently present or absent at LCR MSCP sites.

LCR MSCP habitat creation sites, in time, are expected to support an abundance and diversity of insects associated with more natural habitats, thus contributing to the availability of prey for LCR MSCP covered insectivorous species (LCR MSCP HCP).

Connections with Other Work Tasks (past and future): This is a re-initiation of Work Task C6 that was in place during FY 06-07. This work task initially developed from Southwestern Willow Flycatcher Prey Base Study (C20). Work task C20, completed in July 2006, identifies insects and spiders eaten by the southwestern willow flycatcher. This work task, C6, parallels work task Effects of Abiotic Factors on Insect Populations in Riparian Restoration Sites (C5).

Project Description: The presence/absence and abundance of arthropods at LCR MSCP sites will be further studied in order to fill in the gaps in our knowledge of arthropod species, thereby, contributing to management's routine evaluation of habitat health and habitat use by LCR MSCP covered species. The surveys will be conducted at existing vegetation monitoring plot locations. Insect species richness and estimates of abundance will be determined at LCR MSCP vegetation monitoring plots. In order to develop a more complete picture of the diversity of insects and arachnids that are using LCR MSCP habitat plus a natural area in the same region, all crawling, leaf dwelling, and flying insects and arachnids found during the surveys will be identified to species or logged with a unique identifier if ID is not possible.

Previous Activities: We identified insects collected from tamarisk (*Tamarix ramosissima*) flowers during FY06 at Topock Marsh, Arizona, where earlier work identified insects eaten by Southwestern Willow Flycatchers. We also estimated specificities of insects to tamarisk flowers by determining proportions of pollen carried comprised of tamarisk pollen. All insects collected were specific to tamarisk flowers, with pollen loads comprising greater than 86% tamarisk pollen on leaf-cutting bees and *M. tepida,* and greater than 95% on other insects.

FY11 Activities: N/A

FY12 Activities: N/A

Proposed FY13 Activities: This study will determine arthropod species richness associated with vegetation monitoring plots at four LCR MSCP habitat creation sites. This study will also estimate abundances of insect species found at LCR MSCP habitat creation sites.

Insect species richness and estimates of abundance will be determined at LCR MSCP vegetation monitoring plots utilizing several collection methods which may include sweeps, traps, and stem counts. Arthropods will be collected, counted and, at a minimum, be identified to the family, if not genus level.

Pertinent Reports: The study plan is available upon request.