

Work Task C7: Survey and Habitat Characterization for MacNeill's Sootywing

FY06 Estimates	FY06 Actual	Cumulative Accomplishment Through FY06	FY07 Approved Estimate	FY08 Proposed Estimate	FY09 Proposed Estimate	FY10 Proposed Estimate
\$150,000	\$189,789	\$189,789	\$160,000	\$160,000	\$80,000	\$0

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Start Date: FY06

Expected Duration: FY09

Long-term Goal: Species research

Conservation Measures: MNSW1 and MNSW2

Location: Floodplain of entire lower Colorado River, dependent on permission by landowners

Purpose: The purpose of this work task is to survey the MacNeill's sootywing distribution along the lower Colorado River and determine its habitat requirements. Results from MNSW1 will be used to accomplish MNSW2, which creates habitat for the species.

Connections with Other Work Tasks (past and future): Results of this study will be used in future work tasks to create habitat for MacNeill's sootywing under work tasks in Section E.

Project Description: The butterfly and its host plant, quailbush, will be surveyed within the LCR MSCP boundaries. Annual surveys will cover one third of the flood plain. In 2006, Parker Dam to Imperial Dam will be surveyed, in 2007 Imperial Dam to SIB will be surveyed, and in 2008 Lake Mead to Parker Dam will be surveyed. Surveys will record GPS coordinates of stands of quailbush and estimate the plant's area of coverage. Species will be detected as eggs, larvae, pupae, or adults on host plants and as adults on nearby nectar sources. Surveys will be conducted during April to October when adults are intermittently present (2-3 generations occur per season). Sootywings will be digitally photographed and their GPS coordinates will be recorded. Densities, recorded as individuals of each life stage per plant or plant area, will be estimated.

The species habitat requirements will be determined concurrent with surveys by measuring site factors affecting sootywing presence or absence and density. Possible site factors are:

- a. plant water and nitrogen content
- b. plant species used as nectar sources
- c. availability of nearby nectar sources (distances, amounts)
- d. area of *A. lentiformis* stands
- e. elevation and latitude

Previous Activities: This was a new start in FY06.

FY06 Accomplishments: Surveys were conducted for host plants and sootywing eggs, larvae, or adults from Parker Dam to the northern boundary of Imperial National Wildlife Refuge, excluding the Colorado River Indian Reservation. Stands of host plants were found at 29 localities and GPS coordinates were entered into a Geographic Information System. Sootywings were found on host plants at 13 of the host plant localities. Numbers of adults and their behaviors (nectaring, oviposition, etc.) were counted on eight dates monthly from April to October at Cibola NWR. One flight of adults was observed, peaking at the end of June. The most common behavior observed was flying within quailbush plants. Adults were found feeding at flowers of six plant species: heliotrope, sea purslane, tamarisk, honey mesquite, alkali-mallow, and arrowweed. Heliotrope was the most frequent nectar source during spring, and tamarisk was the most frequent nectar source during summer. Females were more likely to oviposit on hostplants with higher water content. However, oviposition did not increase on acceptable plants as water content increased (i.e., plants were either acceptable or unacceptable to ovipositing female sootywings).

Information gathered during this work task will be used in accomplishing habitat creation goals targeted in conservation measure MNSW2.

FY07 Activities: Surveys will be conducted from the northern boundary of Imperial NWR to the Southerly International Boundary with Mexico. Additional plant species used as nectar sources will be identified. Additional data will be collected at Cibola Island examining the influence of plant water and nitrogen content on oviposition. Dispersal of adults will be examined by placing potted quailbush plants at various distances from an established sootywing population. Utilization of nectar (nectar abundance by plant species) will be examined in more detail.

Proposed FY08 Activities: Surveys will be conducted from the upstream end of Lake Mead NRA to Parker Dam. Additional plant species used as nectar sources will be identified. Sootywing habitat requirements, including requirements for nectar and shade, will be further defined. Adult dispersion (i.e., how readily sootywings move among clumps of quailbush shrubs) will be examined. Effects of predation and parasitism (by other insects) on populations of the butterfly may also be examined.

Pertinent Reports: The study plan is available upon request from the LCR MSCP.