

Work Task F6: Monitoring MacNeill's Sootywing in Habitat Creation Sites

FY11 Estimate	FY11 Actual Obligations	Cumulative Expenditures Through FY11	FY12 Approved Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate
\$70,000	\$88,758.78	\$147,042.69	\$70,000	\$80,000	\$80,000	\$80,000

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Start Date: FY09

Expected Duration: FY55

Long-term Goal: Pre- and post-development monitoring for MacNeill's sootywing.

Conservation Measures: MNSW2

Location: Habitat-creation sites: Palo Verde Ecological Restoration Site, Cibola Valley Wildlife Conservation Area, Laguna Division Conservation Area, and Hart Mine Marsh.

Purpose: The purpose of this work task is to monitor vegetation, plant-quality, and populations of MacNeill's sootywing in habitat created for the species.

Connections with Other Work Tasks (past and future): Habitat requirements were determined in Work Task C7, Survey and Habitat Characterization for MacNeill's Sootywing.

Project Description: Results from Work Task C7 determined that sootywings require quailbush host plants that are larger than 1.6 m in height, greater than 64% in plant water content, and greater than 3.2% in leaf nitrogen content. Sootywings also require plants for nectar such as heliotrope and western sea-purslane. Both host and nectaring plants will be monitored in created habitat. Monitoring host-plant water content is especially critical, as it will be driven by the timing and amounts of irrigation. Utilization of new habitat by sootywings also will be surveyed.

Previous Activities: Habitat created for MacNeill's sootywing at CVCA and PVER was surveyed for adult sootywings during April-September 2009-2010. In 2009, four plots were surveyed at CVCA, and one plot was surveyed at PVER. Five plots were surveyed at CVCA, and three plots were surveyed at PVER, during 2010. Sootywings were most abundant during both years at CVCA Phase 4, with > 200 adults counted during September along a dirt road bisecting the plot. Sootywings also were abundant at a detached CVCA Phase 4 plot. Sootywings were rare (< 5 adults per date) or absent at the other CVCA plots and at all of the PVER plots.

FY11 Activities: We monitored populations of sootywings at five restoration plots at CVCA and three restoration plots at PVER. Plots were monitored monthly during April-September. The large population of sootywings at CVCA Phase 4-west during 2009-2010 disappeared during

2011. The decrease in abundance was most-likely due to low leaf-water contents that were exasperated by the large sizes of *A. lentiformis* shrubs (requiring more water). Removal of plants providing nectar, primarily *Heliotropium*, for fire control may also have been a factor. The most-successful sootywing plot at PVER is Phase 4. Sootywing populations were low (< 5 adults per date) but increasing late in the season. Sootywing populations at the other CVCA and PVER plots were low or absent.

FY12 Activities: The following nine restoration plots, totaling 280 acres, will be monitored for sootywings every two to three weeks during April to September: CVCA Phases 2, 3, 4 (west), 4(east), and 5 for a total of 233 acres; and portions of PVER phases 3-6 for a total of 47 acres.

Activities during this fiscal year also will begin examining causes of different sootywing abundances among restorations sites. Potential causes include: 1) host-plant water content, 2) availabilities of nectar sources, and 3) plot size and isolation in relation to sootywing dispersal. Other factors such as predation or parasitization may need to be examined if created habitat fails to become sufficiently colonized.

Proposed FY13 Activities: The plots listed above will continue to be monitored. Additional plots will be monitored as they are planted during FY10-12. This may include Hart Mine Marsh and possibly Laguna Division Conservation Area. Activities during this fiscal year also will continue examining causes of different sootywing abundances among restorations sites as delineated in FY11.

Pertinent Reports:

2009-2010 Annual Reports for MSCP Work Task F6: Monitoring MacNeill's Sootywing in Habitat Creation Sites.

Pratt, G.F. and W.D. Wiesenborn. 2011. Geographic distribution of MacNeill's sootywing (Hesperopsis graciellae) (Lepidoptera: Hesperidae) along the lower Colorado River floodplain. Proceedings of the Entomological Society of Washington 113:31-41.