

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

FY10 Estimates	FY10 Actual	Cumulative Accomplishment Through FY10	FY11 Approved Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate
\$50,000	\$41,207.42	\$58,283.91	\$70,000	\$70,000	\$70,000	\$70,000

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Start Date: FY09

Expected Duration: FY55

Long-term Goal: 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, 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 Survey and Habitat Characterization for MacNeill's Sootywing (C7). Work task F6 was phased-in after C7 was completed during FY09-10.

Project Description: Preliminary results obtained from work accomplished under work task C7 have determined that sootywings require host plants (*Atriplex lentiformis*) 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 other than *A. lentiformis* for nectar (e.g., *Heliotropium curassavicum* [Boraginaceae] and *Sesuvium verrucosum* [Aizoaceae]). These attributes 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 need to be surveyed. This work task will need to allow for additional determinations (i.e., adaptive management) of habitat needs if created habitat fails to become colonized.

Previous Activities: In spring 2009, we began monitoring populations of sootywings at one restoration plot at CVCA and at one restoration plot at PVER. Rapid growth of vegetation planted during March 2009 required monitoring three additional plots at CVCA and one additional plot at PVER beginning in summer. Restoration plots were monitored every two to three weeks during April-September. Sootywings were well established at Phase 4-west (58 acres), weakly established at Phase 2 (8 acres) and Phase

4-east (90 acres), and not detected at Phase 3 (6 acres). Sootywings were not detected at both plots at PVER.

FY10 Activities: We monitored populations of sootywings at five restoration plots at CVCA and three restoration plots at PVER. Restoration plots were monitored every two to three weeks during April-September. At CVCA, sootywings were well established at Phase 4-west (58 acres), and weakly established at Phase 4-east (90 acres) and Phase 5 (71 acres). They were absent or near-absent at the remaining two plots. Sootywings were near absent or absent at the three plots at PVER.

FY11 Activities: The following nine restoration plots, totaling 280 acres, will be monitored for sootywings every two to three weeks during April to September:

Activities during this fiscal year also will begin examining causes of different sootywing abundances among restorations sites. Potential causes include: 1) host-plant size and water content, 2) availabilities of nectar sources, and 3) plot size and isolation in relation to sootywing dispersal.

Proposed FY12 Activities: The plots listed above will continue to be monitored. Additional plots will be monitored as they are planted during FY10-12. This should include Hart Mine Marsh. Activities during this fiscal year also will continue examining causes of different sootywing abundances among restorations sites as delineated in FY11.

Pertinent Reports: The 2010 Annual Report for Monitoring MacNeill's Sootywing in Habitat Creation Sites will be posted to the LCR MSCP website.

Wiesenborn, W.D. 2010. Attraction of *Hesperopsis graciellae* (Lepidoptera: Hesperidae) skippers to *Heliotropium curassavicum* inflorescence models. Journal of the Kansas Entomological Society. *In Print*.

Wiesenborn, W.D., and G.F. Pratt. 2010. Visitation of heliotrope and western purslane flowers by *Hesperopsis graciellae* (Lepidoptera: Hesperidae). Florida Entomologist 93: 260-264. *In Print*.

Pratt, G.F. and W.D. Wiesenborn. 2009. MacNeill's sootywing (*Hesperopsis graciellae*) behaviors observed along transects. Proceedings of the Entomological Society of Washington 111: 698-707. *In Print*.