

2008 Funded Section 6 Plant Proposals - AZ

The following proposals were funded in 2008 (Segment 11). Award amount does not include administration costs.

1) Develop a draft recovery plan for the Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*)

Principal Investigator(s): **Dr. Jon and Priscilla Titus, SUNY-Fredonia**

Award: \$19,991

Objective(s): The primary objective is the development of a draft recovery plan for Huachuca Water Umbel that will detail how the Endangered Species Act should be implemented to enable recovery of the species. The draft Recovery Plan will include current knowledge regarding the range and population status for the species and will summarize currently understood conservation requirements and research needs. Recovery objectives under the draft plan will establish target population numbers and criteria for evaluating that the objectives have been achieved.

Final Report Abstract: A draft recovery plan was written which will be utilized in the writing of a draft recovery plan that is sent for public comment and ultimately finalized.

2) Grand Canyon National Park recovery plan actions (pollination, ecology, and seed bank study) for Sentry Milkvetch (*Astragalus cremnophylax* var. *cremophylax*)

Principal Investigator(s): **Jan Busco, Grand Canyon National Park**

Award: \$19,930

Objective(s): Project objective is to decrease the extinction vulnerability of endangered sentry milk-vetch (ASCRCR) and improve its current population trend in the park from declining-to-improving by conducting actions outlined in the 2006 USFWS Recovery Plan for this species. Objectives will be accomplished by 1) Studying and documenting sentry ASCRCR ecology, phenology, pollinators, threats, seed germination and seed dispersal; 2) Applying this information in a pilot project of seeding and planting trials at Maricopa Point; 3) Protecting and enhancing the reproduction, recruitment and survival of the existing populations from drought, herbivory and disturbance; 4) Producing plants and seeds of ASCRCR for population augmentation and creation of a pilot introduction population; 5) Developing of techniques and performing planting and seeding trials to establish a pilot project for ASCRCR reintroduction increasing the number of individuals and amount of occupied habitat at Maricopa Point; 6) refining techniques and developing information that will be needed in future recovery plan actions including population augmentation and creation of additional ASCRCR populations.

Final Report Abstract: This Section 6 project allowed Grand Canyon National Park staff to make significant progress towards meeting the objectives of the Recovery Plan. While we were unable to conduct any large scale ASCRCR planting trials in the ground, due to the limited number of seedlings available and slowness of plant production, the groundwork is in

place for a summer 2011 pilot planting at Maricopa Point. Use of reclaimed water to grow seedlings will speed production of the ASCRCR plugs needed for the pilot study and other recovery plan actions. The *ex situ* greenhouse population is growing and seed production is increasing exponentially; by summer 2011, enough seed for the seeding portion of the pilot planting will be available. For the first time, three major pollinators of this species have been identified and their behavior has been documented. The discovery of a soil seed bank, and the discovery of ASCRCR populations growing on lower levels of limestone than those previously surveyed, open the way to new avenues of increasing plant populations and a new direction in surveying to discover additional populations of the species.

3) Population genetics of Welsh's milkweed (*Asclepias welshii*: Apocynaceae)

Principal Investigator(s): **James Riser**, private

Award: \$3,990

Objective(S): This research will provide valuable information on the population genetics of the threatened *Asclepias welshii*. The fragmented nature of the *A. welshii* populations and their dependence on active sand dunes make them highly susceptible to local extirpation. This information will be directly applicable to the goals of the recovery plan (U. S. Fish and Wildlife Service 1992) and will provide insight into the genetic structure of *A. welshii* populations across their range.

Final Report Abstract: During the summer of 2008 we collected non-destructive leaf tissue samples from all 12 known populations of the federally threatened Welsh's milkweed (*Asclepias welshii*) in Arizona and Utah. Total genomic DNA was extracted from all 279 samples during the winter of 2008-2009. In general, each sample yielded large amounts of DNA. Microsatellite primers developed by O'Quinn and Fishbein (2009) were used to assess genetic variation among and within populations. Ten microsatellite markers were tested and then run against all 279 samples. These ten microsatellite markers were developed using the common milkweed species *A. syriaca* and showed variation in this species. However, we were unable to detect any variation at these ten markers in *A. welshii*. We are looking at trying other micro satellite markers and are also going to explore using ISSR markers in the future.