

2010 Funded Section 6 Plant Proposals - AZ

The following proposals were funded in 2010 (Segment 14). Federal shares include Arizona Department of Agriculture administration costs.

1) **Sentry milk-vetch interactions with rock mat: Costs or benefits for reintroduction?**

Principal Investigator(s): **Dr. Kristin Haskins, Arboretum at Flagstaff**

Federal Share: \$16,998

Objective(s): This project has three main objectives. First, we want to better coordinate research efforts between Grand Canyon National Park (GCNP) and The Arboretum. Second, we want to further the progress on reintroduction efforts for ASCRCCR by examining an unknown aspect of Sentry milk-vetch habitat; interactions with a common co-occurring species, *Petrophytum caespitosum* (rock mat). At this point we do not know if rock mat offers any nurse plant benefits to establishing ASCRCCR seedlings, nor do we know to what level competition may affect the ability of ASCRCCR to germinate and thrive. Third, we want to further develop and expand information exchange regarding the reintroduction of this species.

Final Report Abstract: This project has led to important communication advances for sentry milk-vetch conservation and management. Meeting monthly has proven to be an efficient and popular way to keep projects on track, receive important advice and feedback, and discuss developing issues. The clipping experiment and the measurement of some microclimate variables (temperature, light exposure) will only prove more valuable with time. For now, we can say that removing associate plants, even though they may not appear to be causing any effects, makes a difference for temperature and light exposure. Determining whether or not these factors are important in the long run will be revealed in time. The failure of the greenhouse experiment has shown us that we may need to revise and officially prepare some greenhouse propagation protocols. We feel that timing of germination is an important factor and age of seed might be as well.

2) **Arizona-Sonora Desert Museum Exhibit and Public Education Programs on Federally Listed and Other Rare Plants of the Sonoran Desert Region**

Principal Investigator(s): **Drs. Christine Conte and Mark Dimmit, Arizona Sonora Desert Museum**

Federal Share: \$29,093

Objective(s): The primary objective of the proposed exhibit and public outreach project is to develop broad public awareness, appreciation and support for the recovery of federally listed Threatened and Endangered plant species. A secondary objective is to develop broad public awareness, appreciation and support for the recovery of other rare plant species in Arizona and Sonora, Mexico. Specific learning objectives for all audiences include: (1) awareness that plants, as well as animals, are endangered; (2) knowing the main reasons why plants are

endangered; (3) understanding why people should care if plants disappear; (4) motivating at least one action to support species recovery and help prevent plant extinctions.

Final Report Abstract: Identification labels for threatened and endangered plants and other rare plants have been produced and installed throughout the Desert Museum public grounds. These labels present common names in English and Spanish, scientific names, plant family names (common and scientific), status - Endangered or Threatened (and translated into Spanish), and general locale of nativity. Educational presentations were given to Advanced Docent classes in September, 2011 and March, 2012; the class reviewed the exhibits of threatened, endangered, and rare plants. A special exhibit table was custom designed and accommodated threatened and endangered or other rare plants along with seasonally flowering common species. A poster of regional threatened and endangered plants was created and presented at the 2012 Arizona Botany Meeting where nearly 100 interested individuals were in attendance.

3) Preparation of a Draft Recovery Plan for *Coryphantha robustispina* var. *robustispina* (Pima pineapple cactus)

Principal Investigator(s): **Dr. Marc Baker**, private
Federal Share: \$20,889

Objective(s): Prepare a draft recovery plan for *Coryphantha robustispina* ssp. *robustispina*, including all sections: biology, recovery strategy, and recovery actions. The plan will provide the groundwork for formal conservation efforts regarding *C. robustispina* ssp. *robustispina* and facilitate the focusing of future funding.

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.

4) Geographic survey for populations of *Amoreuxia gonzalezii* in Arizona

Principal Investigator(s): **Dr. Marc Baker**, private
Federal Share: \$20,879

Objective(s): Attempt to accumulate all of the known herbarium and literature data for *Amoreuxia gonzalezii* and ascertain its geographical distribution, abundance, and threats to its populations. The research presented will provide data of interest to the scientific community and that will be critical for the assessment of the formal federal and state status of the species.

Final Report Abstract: An attempt was made to define the geographic distribution of *Amoreuxia gonzalezii* within the state of Arizona. Following a review of herbarium specimens for the species and a habitat assessment of historic localities, sites of possible occurrence were mapped and visited. After 30 person-days of fieldwork, no new populations of *Amoreuxia gonzalezii* were documented during the 2011 field season. Populations appear to be stable within the two historic Arizona locations, Thomas Canyon in the Baboquivari Mountains and Devils Cash Box within the Santa Rita Mountains. Within these two sites,

there are an estimated 105 known *A. gonzalezii* individuals. Because most of the 2011 surveys and prior surveys for *A. gonzalezii* were conducted on limestone substrates and no additional populations were recorded, it was surmised that the species is rare in this habitat in Arizona.

5) Is *Packera franciscana* producing hybrids with a lower elevation congener, *P. werneriiifolia*, in the San Francisco Peaks?

Principal Investigator(s): **Dr. Tina Ayers, Northern Arizona University**
Federal Share: \$5,802

Objective(s): The purpose of this project is to gather evidence from morphological and molecular data to test the hypothesis that *Packera franciscana* and *P. werneriiifolia* are hybridizing in the Inner Basin of the San Francisco Peaks. Two separate data sets will be completed to detect hybridization between *Packera franciscana* and *P. werneriiifolia*. Herbarium specimens and plants (in the field) will be used to complete a morphometric analysis of vegetative and floral quantitative characters.

Final Report Abstract: Morphometric and genetic data are presented that support the hypothesis that the high elevation rare plant *Packera franciscana* is hybridizing with another *Packera* species, *P. werneriiifolia*, which occurs at lower elevation on the San Francisco Peaks. The morphological data shows that most putative hybrids have an intermediate appearance or look more like *Packera franciscana*. The genetic data shows the putative hybrids share alleles with both parental species and suggests that hybridization may be more widespread than at the single population at Snowslide Springs.

6) Range expansion of *Eriogonum jonesii*

Principal Investigator(s): **Dr. Scott Abella and Teague Embrey**, private
Federal Share: \$19,664

Objective(s): Expand the known range of *Eriogonum jonesii*, and assess abundance within located populations, and revisit historical localities for the species. We also will describe possible threats to the species, record habitat characteristics, and collect digital photos at each site. These activities follow recommendations in the Arizona Game and Fish Department, Heritage Data Management System report for the species.

Final Report Abstract: A survey for *Eriogonum jonesii*, a fall-flowering sub-shrubby buckwheat, was carried out during the months of September and October 2010, at two distinct sites within the Grand Wash Cliffs, and in the Hidden Canyon corridor in Grand Canyon-Parashant National Monument, in Mohave County, northwestern Arizona. Additionally, although suitable habitats within the neighboring Nevada portion of Lake Mead National Recreation Area were surveyed, *Eriogonum jonesii* was not encountered. The general locality of a historical site where *Eriogonum jonesii* had been collected in the 1970's was revisited, and we successfully identified 9 additional sites within the nearby Hidden Canyon corridor of the Grand Canyon-Parashant National Monument. The plants

encountered along the Diamond Bar Road (the entryway for the Grand Canyon Skywalk located on the Hualapai Indian Reservation) in Grapevine Canyon should be monitored, as they are within a high-traffic zone. The localities within Grapevine Canyon corridor, along with the sites found in the lower Grand Wash Cliffs, were previously unknown and expanded the westward range of this species. We tripled the known sites for *E. jonesii* in Mohave County as a result of this survey.

7) Facilitation of Research on Arizona Rare and Endangered Plants

Principal Investigator(s): **Dr. Michelle McMahon, University of Arizona**

Federal Share: \$6,700

Objective(s): The objective of this project is to facilitate research on threatened and endangered Arizona plants. As the Land Grant institution for the State of Arizona, the University of Arizona has particular responsibility to participate in such research, because the health and welfare of the native flora affect the future of the State's environment in countless direct and indirect ways. The University of Arizona Herbarium (ARIZ) serves as the State's largest and most active natural history collection for plants. Central to our mission is the enablement of basic research on all plants in the state, particularly species for which there is insufficient information and/or for which the future is uncertain. We propose to continue participation in this program by advertising the program to a broad audience, provide scientific review of proposals, interim reports, and final reports, and to facilitate researcher's access to herbarium specimens in our facility or through loans with other herbaria.

Final Report Abstract: Participation in the section 6 program continued through the advertisement, solicitation, and processing of section 6 proposals and scientific review of interim and final section 6 reports.