

Funded Section 6 Plant Proposals – AZ 2021 - Segment 27

Note: Summaries of all section 6 plant proposals funded since 2004 are available on-line at <https://cals.arizona.edu/herbarium/content/previous-awards>

This year we received 24 section 6 grant proposals totaling \$ 463,734.85. We were able to fund 4 proposals in full and 4 proposals in part with the \$122,971.92 available to distribute. Should any additional funding be made available, we request funding the next highest ranked proposals in order of ranking (see >10k and <10k proposals below). Please contact Julie Crawford, Plant Ecologist, to discuss details.

The Section 6 Committee (Fish and Wildlife Service and the University of Arizona members) ranked the 24 proposals based on merit (e.g. the priority of the species for FWS work, the track record of the PI(s), clarity of the proposal, if the proposed work aids in species recovery, appropriateness of the budget, if the species is a listed entity, etc.) and incorporated feedback from species leads and other relevant species experts, who were given the opportunity to review all proposals associated with their species. The proposals are listed below in order of ranking.

1) Updated Monitoring and Surveying of the Acuña cactus (*Echinomastus erectocentrus* var. *acuenensis*) in the Saucedo and Mineral Mountain Vicinities, AZ

Principal Investigators: **Harpo Faust** and **Saff Killingsworth**, private botanists

Federal Share: \$23,473.88

Project Description: The objectives of this work are to provide updated surveys and monitoring data and analysis, as well as, to continue to track the success or decline of the cactus. These would be accomplished by: 1) censusing known populations in the Saucedo Mountain and Mineral Mountain vicinity to describe stand structure, health, and potential threats, 2) surveying for additional populations in the Saucedo Mountain region using a 2020 USFWS developed model of predicted suitable habitat, and 3) using game cameras to observe cacti mortality events caused by uprooting, which has had several mechanisms suggested but none directly observed. Monitoring populations and habitat is essential to prevent the extinction of this species. Specifically, results from this study objective will provide a baseline population census for the species in the study areas, as well as provide a framework for re-survey efforts to be used by BLM or other land managers.

2) Augmented reintroduction of the Arizona hedgehog cactus into the Pinto Creek Bridge area, Gila County, Arizona, in support of multiple recovery plan objectives

Principal Investigators: **Lane Butler**, **Raul Puente Martinez**, and **Steve Blackwell**, Desert Botanical Garden

Federal Share: \$21,357.65

Project Description: The objective of this work is to contribute directly to the primary species recovery goal of 10,000 plants in the wild by augmenting the Desert Botanical Garden's *E. arizonicus* reintroduction at the Pinto Creek bridge site with 300 more propagated transplants. There has been a continuing decline in *E. arizonicus* abundance (estimated at 3,382 individual cacti lost to date) as well as in *E. arizonicus* occupied and/or suitable habitat

(approximately 948 acres adversely affected to date) due to authorized effects of federal projects. In light of downlisting population requirements and the historic and looming losses of individuals and habitat from the species and its range, there is a need to augment the declining population on the ground.

3) Using trained dogs to detect endangered *Spiranthes delitescens* and related orchid taxa

Principal Investigators: **Steve Blackwell, Lauralea Oliver, and Andrew Salywon**, Desert Botanical Garden and k9inSCENTive, LLC

Federal Share: \$23,527.91

Project Description: The objective of this work is to determine the ability of detection dogs to identify the presence of *Spiranthes delitescens*. If successful, the use of detection dogs would be a powerful tool to aid future surveys to relocate historical populations or discover previously undocumented populations of Canelo Hills ladies' tresses. Utilizing trained dogs and their powerful sense of smell can greatly aid conservationists by making plant surveying much more efficient thus requiring less human effort and resources. *Spiranthes delitescens* have recently been observed in small numbers at only one of four historically documented sites.

4) Establishing greenhouse protocols for an *ex situ* conservation collection of *Packera franciscana*

Principal Investigators: **Sheila Murray and Kris Haskins**, The Arboretum at Flagstaff

Federal Share: \$15,632.19

Project Description: The objectives of this work are to enhance the *ex situ* seed collection of *Packera franciscana*, develop protocols for seed germination and rooting of vegetative cuttings of *Packera franciscana*, and utilize plants grown from germination trials for public education. The resulting data from these studies will help us understand the following important questions: 1) what is the viability and germination rates of freshly collected seed? 2) are vegetative cuttings of *Packera franciscana* best propagated utilizing newly grown tissue or hardened tissue? 3) what are the greenhouse protocols needed to best propagate *Packera franciscana*? From this proposed work, adaptive management strategies can be developed.

5) Fine-scale habitat and genetic analysis of *Pectis imberbis* A. Gray

Principal Investigators: **Sara Souther, Martha Sample, and Clare Aslan**, Northern Arizona University

Federal Share: \$23,529 requested; \$10,588.75 awarded (additional \$11,000 funded by USGS).

Project Description: The objectives of this work are to conduct a structured survey for and assess habitat of *Pectis imberbis* across the Coronado National Memorial, AZ. Genetic samples from groups of plants across the Memorial will also be collected for a genetic repository for later analysis once molecular primers are created (separate proposal for NPS funding). By conducting a systematic survey for *P. imberbis* at the Memorial, additional individuals and/or sub-populations and/or populations of *P. imberbis* will be identified. Fine-scale habitat descriptions may be used to locate new survey areas for *P. imberbis* and support the identification of potential restoration sites to contribute to species recovery.

6) Life history characteristics of *Oreocarya semiglabra* (Boraginaceae) and general habitat quality assessment of its known occurrences

Principal Investigator: **Wendy McBride**, McBride BioTracking LLC

Federal Share: \$24,690.12 requested over 4 years; \$11,070.11 awarded for two years of funding; additional funding will be applied for in later years.

Project Description: The objectives of this work are to collect data that explores the life history characteristics of *Cryptantha semiglabra* and identify existing threats to the species. The results would also inform management decisions regarding the federal protection status of this rare plant. Understanding population dynamics and general life history characteristics is vital to rare species conservation efforts. Developing guidelines for management and protection that foster viable populations requires familiarity with the biology of a species and factors that influence population dynamics. *Cryptantha semiglabra* is under review for federal listing status under the Endangered Species Act and the work would help inform the Species Status Assessment and listing decision.

7) Distribution study and Rare Species Community Monitoring Network establishment for *Eryngium sparganophyllum*, *Castilleja ornata*, *Cirsium wrightii*, and *Pediomelum pentaphyllum* as a citizen science strategy for habitat conservation

Principal Investigators: **Francesca Claverie, Lea Ibarra Wenglas, Valeria Canedo Montano, and David Gastelum Gurrola**, Borderlands Restoration Network and the Colectivo Sonora Silvestre

Federal Share: \$23,462 requested, 11,440.49 awarded.

Project Description: The objectives of this work are to establish and develop a citizen science driven Rare Species Community Monitoring Network to facilitate outreach and education about, and then inventory, monitoring, conservation germplasm collection, and seed ecology of this binational imperiled species. The work will occur in three phases including: Phase 1: Engaging citizens and land stewards in rare species awareness, recognition, and reporting is expected to result in revisitation of, and status updates for, historic occurrences; potential discovery of additional occurrences; and landowner awareness of sensitive biological resources in their management. Phase 2: Inventory and consultation is expected to characterize populations, prioritize populations and conservation actions, and inform design

for effective conservation actions. Phase 3: Demographic and habitat data, seed collection, and seed propagation trials are expected to increase species resiliency and/or redundancy and to enhance our capacity to plan and develop protocols for successful restoration of these species and their habitats.

8) Continuation of a citizen science-based rare plant monitoring program for northern Arizona

Principal Investigators: **Kristin Phillips and Sheila Murray**, Museum of Northern Arizona and The Arboretum at Flagstaff

Federal Share: \$23,349 requested; \$5,880.94 awarded (additional \$5,000 funded by USFS)

Project Description: The objective of this work is to continue the development of and expand a long-term, permanent citizen science rare plant monitoring program for northern Arizona focusing on 10 rare plant species in Arizona that are threatened by the J.W. Powell Boulevard extension or because they occur in sensitive riparian habitats. The goals of this expanded project are to: gather current knowledge on 10 additional rare plant species, encourage participation from 26 citizen scientists already trained and conduct new trainings to draw in more volunteers, collaborate with Tonto National Forest Rare Plant Finders to consolidate training materials and procedures, and use citizen scientists to gather data on the threats to these rare species, how many populations there are, and whether or not the plants are reproducing and report this data to the U.S. Forest Service and Arizona Natural Heritage program.