

Funded Section 6 Plant Proposals – AZ 2022 - Segment 28

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

The funding provided through Notice of Funding Opportunity Number **F22AS00144** will enable the Arizona Department of Agriculture to fund subcontractors to conduct research, surveys, monitoring and restoration of Arizona's federally-listed and other rare plants of concern. Subcontractors are given awards based on the merit of their proposals and the current listing and recovery needs of the Fish and Wildlife Service in Arizona. This work will enable recovery actions to commence and increase our knowledge about species current conditions, vulnerabilities, and management and recovery needs. The resulting reports will enable the Fish and Wildlife Service to better make informed decisions on listing, designating critical habitat, recovery actions, and down and de-listing criteria, as well as inform Species Status Assessments and 5-year Reviews.

This year we received 11 section 6 grant proposals totaling \$157,482. We were able to fund nine proposals in full with the \$143,764.40 available to distribute. 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 Fish and Wildlife Service 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) Participation in the section 6 program

Principal Investigator: **Shelley McMahon**, University of Arizona

Federal Share: \$17,116.99

Project Description: The primary objective of this project is to facilitate research on threatened and endangered Arizona plants. This work will continue the University of Arizona Herbarium staff's participation in the Section 6 program by coordinating the program. Program coordination includes the following specific duties: advertise the program to a broad audience via our website, distribute proposals to the panel and ad hoc reviewers as needed, conduct correspondence with applicants and grant recipients regarding the projects (i.e., excluding correspondence regarding the ADA contracts), provide consultation in the form of scientific review of proposals, interim, and final reports completed by Section 6 grant awardees, coordinate reviews and edits of final reports, and facilitate researcher's access to herbarium specimens in our facility or through loans with other herbaria. The funds also support a student employee to spend approximately 1 hour per week during the academic year assisting the Program Coordinator with daily operations in the University of Arizona Herbarium, including maintaining the Section 6 project website, and processing specimens and loans associated with contracts awarded through this program.

2) Digitizing and sharing USFWS rare plant files

Principal Investigators: **Kirstin Phillips**, private botanist

Federal Share: \$16,176.92

Project Description: The objective of this project is to organize, digitize, and make accessible the rare plant files currently housed in the U.S. Fish and Wildlife Service Flagstaff Arizona office overseen by the Plant Ecologist. The paper documents will be organized into subfolders and the folders labeled with a label maker. The paper documents will be scanned and saved as a searchable PDF. The electronic files will be backed up onto an external drive and also transferred to the Plant Ecologist's office computer. The electronic files will be shared with the Arizona Game and Fish Department's Arizona's Natural Heritage Program and other federal agencies responsible for the management of these species. This effort will help the U.S. Fish and Wildlife Service Plant Ecologist meet the transition to electronic records request of the Office of Management and Budget and the National Archives and Records Administration regarding the paper files in her care.

3) The age and source of the surface and groundwater supporting the critical wetland habitat of the endangered orchid *Spiranthes delitescens* (Canelo Hills ladies' tresses) at Babocomari Cienega

Principal Investigators: **Andrew Salywon** and **Ronald Tiller**, Desert Botanical Garden, **Jennifer McIntosh**, University of Arizona.

Federal Share: \$18,097.65

Project Description: The objective of this work is to determine the source and age of both surface and groundwater at Babocomari Cienega, a location known to support the endangered cienega plant *Spiranthes delitescens*. A total of 68 water samples will be collected and the samples will be separated in containers specific for their type of testing and run for chemical analysis. The samples will be collected four times, in the spring, summer, fall and winter, for one year. The data provided by this study will improve modeling and forecasting of the hydrologic inflows and outflows the Babocomari watershed. With increasing population growth and agricultural development in the Sonoita/Elgin and Fort Huachuca regions along with unprecedented environmental change, there is an urgent need to document baseline information for the water resources in the area to prevent excessive water drawdown.

4) *Arctomecon californica* (Las Vegas bearpoppy) ecological surveys and tissue sampling for future genetic analysis

Principal Investigators: **Lonnie Pilkington**, Grand Canyon National Park and **Scott Abella**, University of Nevada, Las Vegas

Federal Share: \$14,989.74

Project Description: The objectives of this project a) are to survey known *Arctomecon californica* populations and suitable habitat within the Mohave Desert Scrub community, collect tissue samples for future genetics analysis to determine uniqueness of these populations, evaluate insect damage on plants to assess the current level of this potential threat, and meet bi-annually with rare plant conservation subject matter experts to strategize *Arctomecon californica* recovery efforts, explore potential fund sources, and report findings.

5) Enhanced monitoring of *Pediocactus peeblesianus* subsp. *peeblesianus* (Peebles Navajo Cactus) using PIT tags

Principal Investigators: **Kirstin Olmon Phillips, Barbara G. Phillips, and Janice Busco,**
Museum of Northern Arizona

Federal Share: \$23,517.16

Project Description: The objectives of this project are to continue *Pediocactus peeblesianus* subsp. *peeblesianus* long-term monitoring in permanent plots near Joseph City established in 1985 and 1986 and experiment with a possible way to simplify and expedite monitoring using Passive Integrated Transponder (PIT) tags. Using PIT tags placed adjacent to the Peebles Navajo Cactus plants may be a way to easily identify an individual plant that does not disturb the plant or its immediate ecosystem and could have implications for other rare plant monitoring of small individuals.

6) Survey for an Arizona edaphic endemic *Coryphantha robbinsorum* (Cochise pincushion cactus) in Hidalgo County, New Mexico.

Principal Investigator: **Glenn Rink,** Far Out Botany

Federal Share: \$22,345.29

Project Description: The primary objective of this research is to find and document previously undocumented populations of *Coryphantha robbinsorum* in accessible areas of Permian age limestone in Hidalgo County, NM. Currently, *Coryphantha robbinsorum* is only known to occur on one set of Permian age limestone hills in Cochise County, Arizona. It is important to make additional survey efforts to understand the range and prevalence of this cryptic species more clearly. The research will also identify possible introduction sites for future recovery efforts.

7) Conservation status and update monitoring for *Astragalus cremnophylax* var. *myriorrhaphis* Barneby (cliff milk-vetch)

Principal Investigator: **Frank Reichenbacher,** private botanist

Federal Share: \$5,477.94

Project Description: The objective of this work is to update and present sufficient information for reviewers to determine whether *Astragalus cremnophylax* var. *myriorrhaphis* might be re-examined for inclusion on the list of endangered and threatened species. The work will attempt to revisit all the locations identified in HDMS and SEINet database and attempt to delineate these populations with large-scale mapping and photography. The species faces multiple threats including drought and wildfire. Population monitoring of certain selected sites was initiated by Ralph Gierisch beginning in 1980, then by Art and Barb Phillips in the early 1990s, and in the early 2000s by Lee Hughes. Records suggest no monitoring at all since 2007.

8) Revisiting *Astragalus hypoxylus* (Huachuca milkvetch): monitoring plots and surveys in southeastern Arizona

Principal Investigators: **Teague Embrey**, private botanist

Federal Share: \$15,123.76

Project Description: The objectives of this work are to revisit monitoring plots established in the late 1980's and early 1990's and which have mostly not been revisited since the mid-1990s, assess current population numbers at these plots and at all known sites, and hopefully expand *Astragalus hypoxylus* range with targeted surveys. The limited historical data suggests that population dynamics are correlated with precipitation and rainfall events. As southeastern Arizona enters its 27th year under drought conditions, it would be expected that plant numbers would be correspondingly lower at all sites and it is prudent to monitor known populations to assess their status.

9) Survey for *Astragalus endopterus* (Barneby) Barneby (Fabaceae) Coconino County, Arizona.

Principal Investigators: **Glenn Rink**, Far Out Botany

Federal Share: \$10,291.18

Project Description: The objective of this work is to reevaluate the extinct determination for *Astragalus endopterus*. Surveys to ascertain whether an annual desert plant is extinct may need to be conducted over multiple years, and the previous determination may have been hasty. The work focuses on locating documenting *Astragalus endopterus* between Cameron and Lees Ferry, Coconino County, Arizona.