

**Agency/Organization:** US Geological Survey

**Project Name:** Clark County Rare Plant Propagation Research Phase II

**Project Number:** 2021-USGS-2075A

**Reporting Period:** April 1, 2024 – June 30, 2024

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**QUESTION 1: What did you accomplish during this reporting period? How did these accomplishments help you reach the goal of your project? If relevant, what indicators or benchmarks were used to determine your progress?**

We completed the third and fourth greenhouse watering phases on *Eriogonum viscidulum* (ERVI) seedbank soils originally collected from the Middle Muddy River population in late September 2023. Samples were dried down a third time between these watering phases, which included potassium nitrate and gibberellic acid treatments, respectively. One definite and two potential ERVI germinants emerged during the grow-out of these seedbank samples but failed to thrive before transplanting. Although seedbank samples were collected near existing plants in fall 2023, the low density of ERVI seeds in the soil seedbank was consistent with our findings during Phase I of this project. We are currently entering data to complete the seedbank grow-out for year 1 (M15).

We scouted three populations of ERVI in late May 2024. At the Upper Muddy River and Toquop Wash populations, we did not locate any live ERVI, but we were able to bag inflorescences at the Middle Muddy River population for conservation seed collection (mesh bag tied above basal rosette and secured to ground). In late June 2024, we returned to the Middle Muddy River population to collect matured inflorescences and are waiting for all plants to senesce before collecting the remaining inflorescences (M14). Collected seeds are currently after-ripening in the USGS shade house under prevailing summer temperatures in preparation for cleaning and germination trials prior to delivery to the County in August (D13).

We completed watering plots within the Mud Lake and Mormon Mesa populations of *Astragalus geyeri* var. *triquetrus* (ASGET) in mid-April 2024 and subsequently surveyed for plants for seed conservation collections. After flowering was complete and plants began to senesce in early May, we bagged ASGET plants for fruit collection within these two populations and collected bagged plants in late May 2024. We also collected fruits from ASGET at an additional population, Sandy Cove. This Sandy Cove collection was of naturally formed fruits and not part of our watering plots at Mud Lake and Mormon Mesa populations. Fruits are currently being cleaned from the populations and seeds sorted in the USGS laboratory to fulfill conservation collections for the County (D12).

We are continuing with propagation efforts for seeds of *Arctomecon californica* we received from Kelsey Graham (USDA), with embryo growth measurements and germination associated with ongoing temperature trials and gibberellic acid treatment, which is our first step in the propagation effort for this species.

We concluded seasonal watering treatments for *Penstemon albomarginatus* (PEAL) cuttings that were collected in 2023 and planted in our USGS common garden near Searchlight, Nevada in

mid-February 2024. Before plants naturally senesced for the year, the final status was recorded for each plant.

In the USGS greenhouse, the PEAL cuttings collected by our subcontractor (Utah State University graduate student) in late March 2024 at three of the four populations in Clark County (Ivanpah, Hidden Valley, and Jean) were potted in May and June as they developed roots. All cuttings continue to be cared for at the USGS greenhouse.

These Milestones are instrumental in field and greenhouse work and developing our final deliverables for this project.

**QUESTION 2: What, if any, problems were encountered? Briefly describe those problems and the manner in which they were dealt.**

No problems during the reporting period.

**QUESTION 3: What, if any, proposed activities were not completed? Briefly describe those activities, the reasons they were not completed and your plans for carrying them out.**

None.

**QUESTION 4: What is the calculated percent of work completed?**

We are approximately 15% toward project completion.

**QUESTION 5: Do you foresee any upcoming problems with future project activities? If so, how do you propose to overcome those problems?**

Because no ERVI seedlings were successfully transplanted and grown out from surface soils we collected during fall 2023, we are unable to directly harvest seeds from plants emerging from seedbank grown in the greenhouse (D14). We are currently sieving the surface soils to indirectly propagate plants from viable (dormant) seeds that did not respond to our emergence treatments. If successful in finding seeds, we will germinate and grow plants in the greenhouse and harvest seeds once they reach maturity.

**QUESTION 6: Is there anything else you want to tell the DCP about this project?**

We have nothing additional to note concerning this project.

**QUESTION 7: What was produced during the reporting period?**

During the reporting period, we produced this Quarterly Progress Report (D11).