

Agency/Organization: US Geological Survey

Project Name: Seed Ecology of Threecorner Milkvetch

Project Number: 2023-USGS-2385A

Reporting Period: October 1, 2024 – December 31, 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?

For our Seed Longevity Study, we collected the 3-mo buried bags of *Astragalus geyeri* var. *triquetrus* (ASGET) seed from habitat at Mud Lake and Mormon Mesa populations and from our Boulder City facility for the Sandy Cove site in mid-October and began seed viability testing (M14). By mid-November, we completed seed testing (M16) and found similarly high seed viability for all populations when compared with the initial non-buried seed (M11). Seed germination and viability data are currently being entered and QA/QC'd in preparation for analysis of burial effects. We will continue to retrieve these bags at three-month intervals during the first year, and annually after that up to 4 years of burial.

In mid-December 2024, we began surveys (M15) for ASGET within and near plots we established in fall 2024 as part of Project 2021-USGS-2075A. We have not yet seen emergence of any annual plant species, including ASGET.

These Milestones are instrumental towards Field Experiments 1 (Herbivory, Invasive Plant Competition, and Pollination Limitation) and 2 (Seed Longevity) 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 encountered.

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 12% 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?

Based on the La Niña weather pattern forecasting by NOAA, we anticipate probability of rainfall will continue to decline across the Mojave Desert over the winter of 2024/25. As of this reporting, Las Vegas has not received measurable rain in 159 days, the second-longest such streak on record for the region. As prolonged soil drying continues and soil water storage declines, our planned supplemental irrigation will become less effective at offsetting drought effects. As a winter annual

species, ASGET relies on winter and/or early spring precipitation for germination, and we may not see emergence and survival of ASGET seedlings, despite our planned supplemental watering of habitat plots. Lack of seedlings would preclude herbivore (M18), competition (M19), and pollen limitation (M22) treatment implementation as well as eventual seed collections at the California Wash and Muddy River populations (M25). If dry conditions persisting into January fail to promote establishment of native annuals in general, we would propose shifting field work on this species to winter/spring of 2025/26 so that our supplemental watering is more effective when La Niña conditions dissipate.

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 (D07).