

The right seed in the right place at the right time: how a seed bank perspective can inform management options



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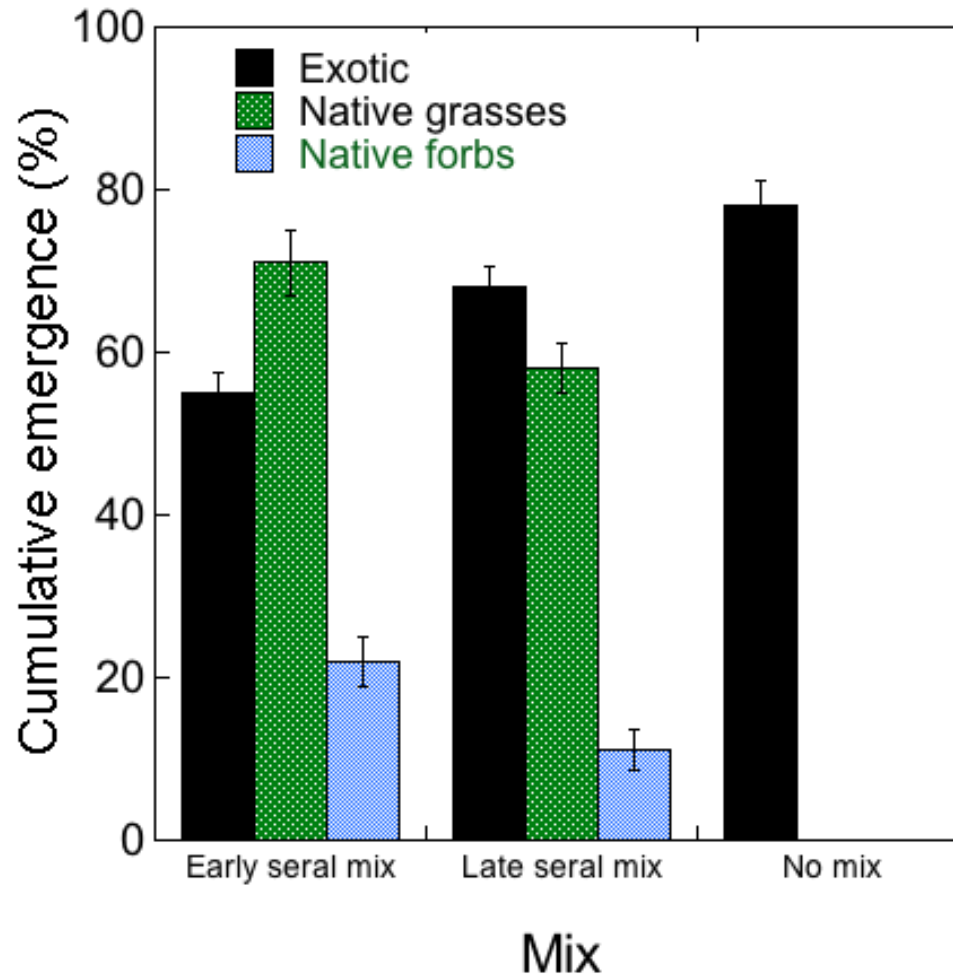
Seed banks are plant communities in waiting



Seed banks affect the success of active seeding efforts



Seed banks affect the success of active seeding efforts



Uselman et al. (2015) *Applied Vegetation Science*

And lend insight into what seeds might best compete/facilitate/avoid duplicating existing seeds



Overarching questions

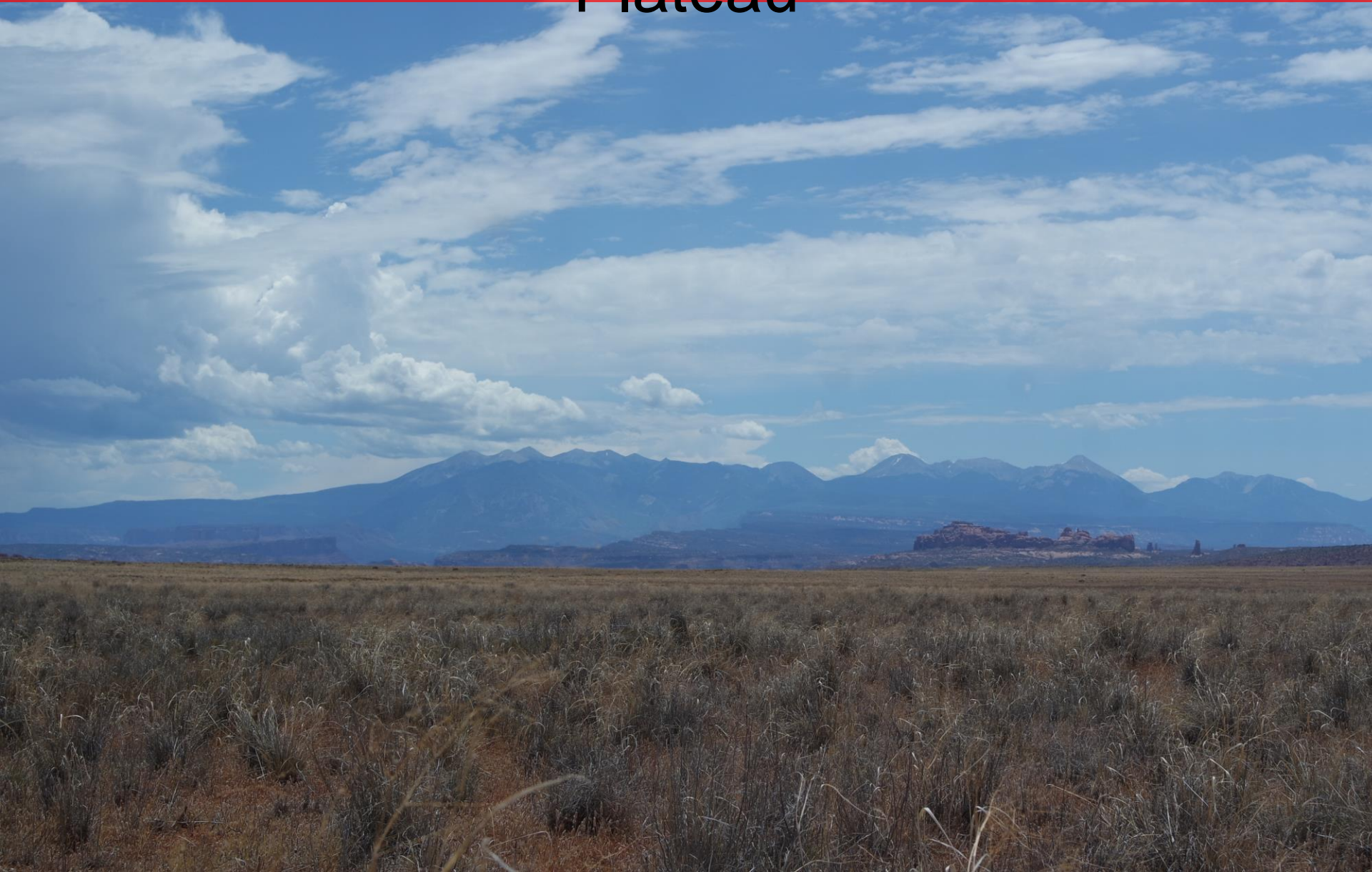
1. How do seed bank communities affect the success of active seeding?
1. How does knowledge of the seed bank inform what seeds to select for management?
1. Can we create a predictive framework for identifying seed bank communities based on ecosystem attributes (e.g., soil type, disturbance history)?

Link to DOI and BLM Priorities

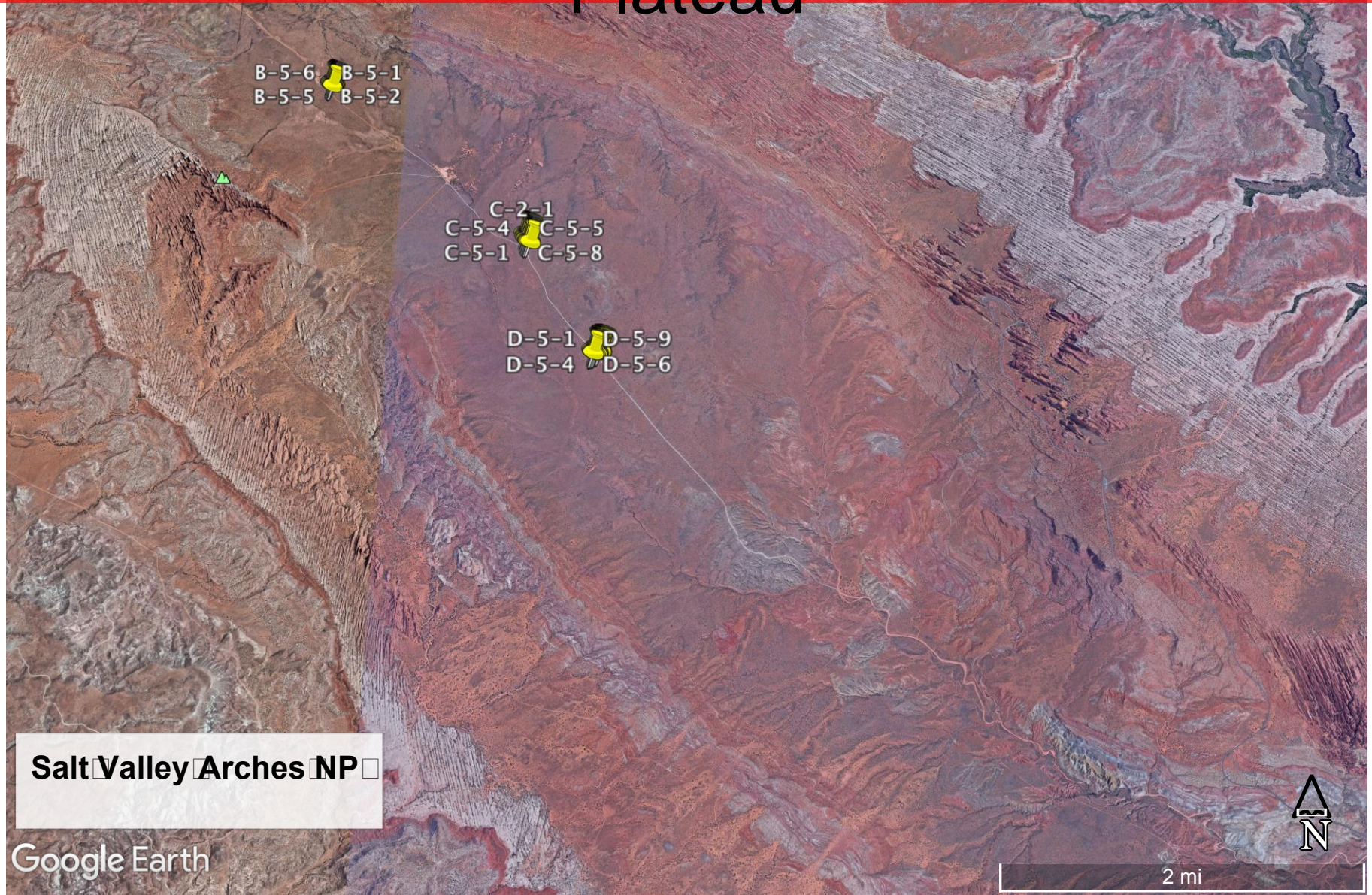
Improving our capacity to restore ecosystems following disturbance is central to multiple DOI priorities, including those focused on **Stewardship, American Energy, and Climate Change**.

Improving our capacity to restore ecosystems following disturbance is central to multiple BLM priorities, including those focused on **supporting multiple uses, implementing priority habitat monitoring and improvement projects, and improving habitat conditions through fuels management, rangeland improvements, and other conservation efforts**.

Our first seed bank study on the Colorado Plateau



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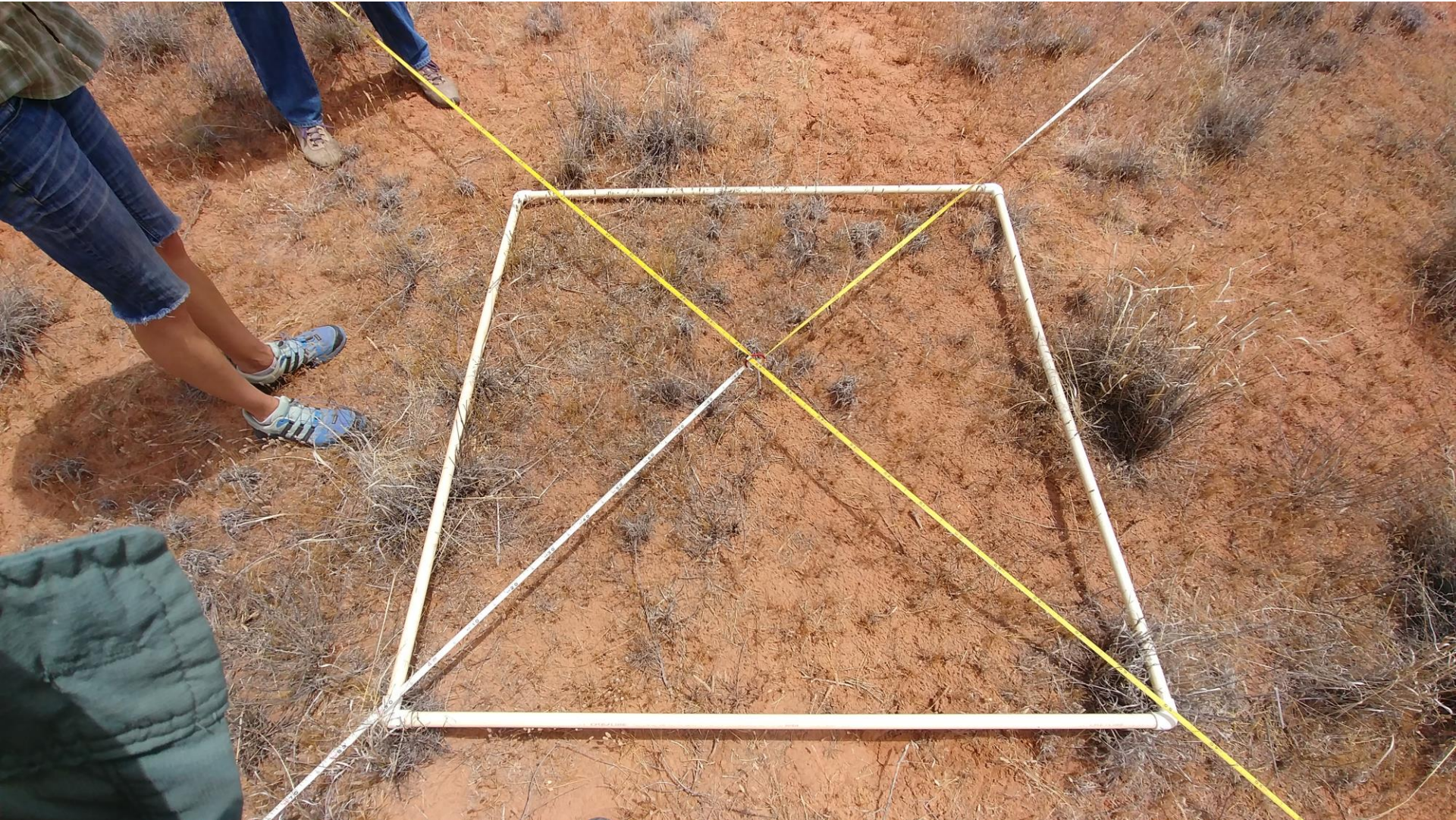
Our first seed bank study on the Colorado Plateau

1. Assess Colorado Plateau seed banks for grasslands where data are exceedingly few.
1. Determine how soil texture influences seed bank communities when climate and disturbance history are held relatively constant.

Assess aboveground community composition



Collect seed bank samples



And grow them in the greenhouse



Take home points

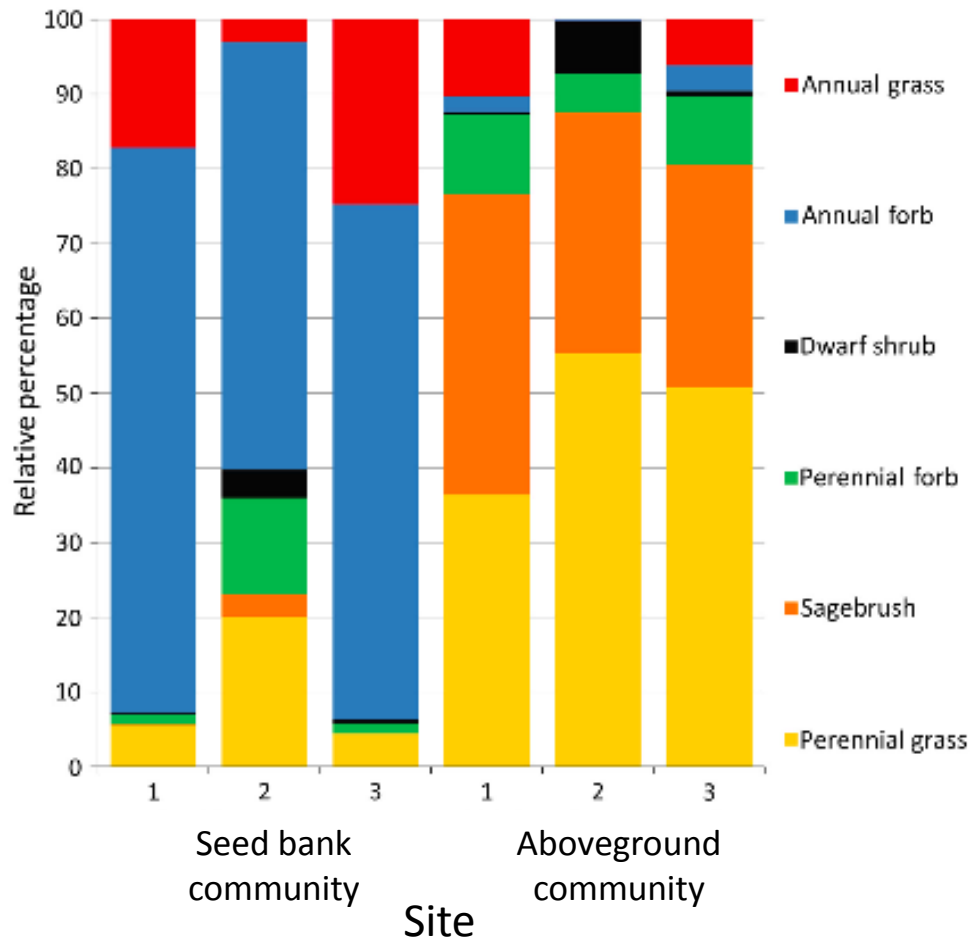
1. Seed banks may offer important insight into the right seed in the right place at the right time.
1. A predictive seed bank framework could make the information accessible to multiple stakeholders.
1. Now is an exciting time for seed bank science – and you can get involved!
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Erika Geiger
Utah State University Climate Adaptation Science
Program



Disconnects between above- and belowground communities



Martyn et al. (2016) *Ecosphere*

Seed bank spp. respond differently to altered climate

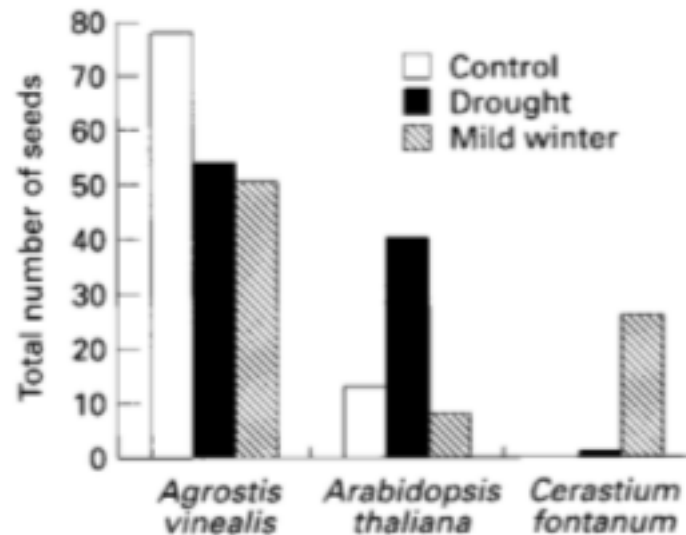


Fig. 1. Total numbers of seeds recovered from three climate treatments. Significance of climate effect: *Agrostis* ($P = 0.086$), *Arabidopsis* ($P = 0.054$), *Cerastium* ($P = 0.002$).