Effects of genetic diversity and pollination on plant population establishment in prairie restorations

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URA Project Description

Project Overview

The restoration of degraded landscapes can play a critical role in biodiversity conservation and the provisioning of ecosystem services. Yet species sown into restorations often fail to establish. My research explores factors that influence plant population establishment in prairie restorations. Particularly, I focus on the ways that genetic diversity and rapid adaptation can affect establishment success. It is my hope that the results from this research can be used by restoration practitioners to make future ecological restorations more successful.

A student working with me this summer would assist in conducting field experiments exploring the effects of genetic diversity and rapid adaptation on plant population establishment, and could potentially take the lead on a small project investigating the role that pollinators play in plant population success. During the summer, the student will gain experience in setting up experiments, collecting and analyzing data, measuring plant traits, and quantifying fitness.

Project details

The student will assist in conducting two field experiments, one focused on the effects of genetic diversity on population establishment of the native prairie plant *Chamaecrista fasciculata* (partridge pea), and the other looking for evidence of rapid adaptation in recently restored populations of the same species. In addition, the student can help develop a project examining the effects of *Chamaecrista* density and surrounding species richness on *Chamaecrista* pollination success. *Chamaecrista* must be pollinated by bumblebees to produce seeds, which means bumblebees are integral to *Chamaecrista* establishment in restorations. By conducting pollinator observations, manipulating pollen dispersal, and tracking seed production, the student will help determine what factors influence establishment of *Chamaecrista* in restored prairies.