

Are rare plants more susceptible to insect herbivory?

Introduction

Plants are rare for numerous reasons. I am investigating the importance of insects consuming seeds as a factor causing plant rarity. Some researchers suggest that rare plants may be more vulnerable to insect herbivores. In contrast, rare plants may escape insect herbivory because they are rare i.e., sparse in time and space.



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Objectives

- Determine if seeds of rare plants are more susceptible to insect herbivory compared to common plants
- Increase our understanding of the factors that lead to plant rarity in order to conserve and protect rare plant species

Methods

- Study pairs of rare and common plants in the genus *Astragalus* in five sites located in eastern Washington and Oregon
- Quantify the number of seeds produced and the number of seeds eaten by insects
- Identify the type of insects eating seeds
- Compare the number of seeds produced and eaten on rare plants to the number of seeds produced and eaten on common plants

Results

In two of the five sites insects ate more seeds of the rare species. However, in two other sites insects ate more seeds of the common species. In the fifth site, there was no statistical difference between the number of seeds eaten in rare and common plants. Overall, this suggests for some rare species herbivory limits reproductive fitness compared to common species but not as a general rule.



Conclusions

In general, my study found that rare plants are not more vulnerable to insect herbivory and rare plants may not escape damage because they are sparse in time and space. However, results suggests that insects are selecting one *Astragalus* species over another *Astragalus* species, but why? Since patterns of herbivory are often complex and interrelated, my research approach will address additional contributing factors such as plant morphology (e.g., pod thickness), chemical content (e.g., alkaloid profiles) and genetic analysis (e.g., plant phylogeny) .



Columbia River field site

Julie is currently working on her PhD in Conservation Biology with Dr. Sarah Reichard. These are results from part of her dissertation work. You can contact her at jcombs@u.washington.edu