Effects of Precipitation on Bee Species Richness

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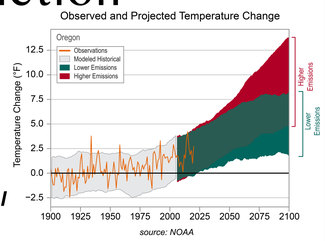
Introduction

- **Changing weather patterns:** Bee conservation has become a major concern as variations in yearly precipitation, temperature patterns, and floral phenology continue to increase (Kerr, Jeremy T., et al. 2015).
- ***Gap: No assessment of ecological conditions in Oregon Bee Atlas.***
- Previous studies have shown that bee richness in a particular area can be attributed to local conditions where floral resources are abundant and not limited by drought or excessive moisture (Classen et al. 2015)
- Oregon's diverse habitats from the wet Coast Range to the arid high desert, create natural gradients to compare how climate (and in particular precipation), affect bee communities.

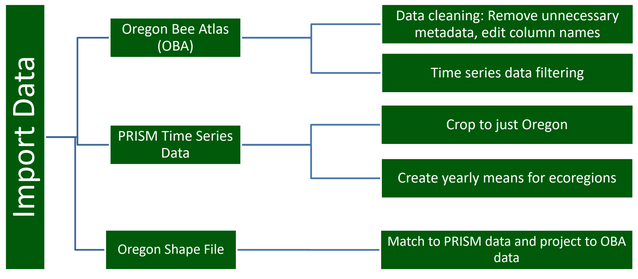


Research Questions

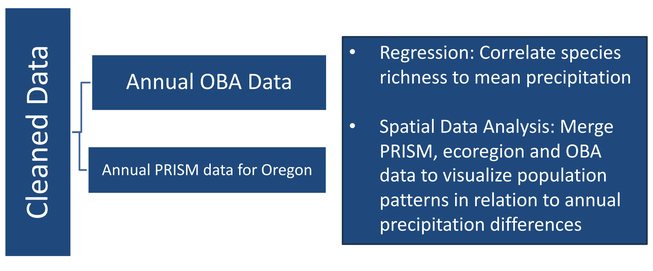
- How does bee species richness vary across ecoregions? Furthermore, has this changed over time?
- Do yearly precipitation patterns influence species richness and which regions are most affected?
- How does variability changes between ecoregions when precipitation patterns change?

Methods

Data Wrangling

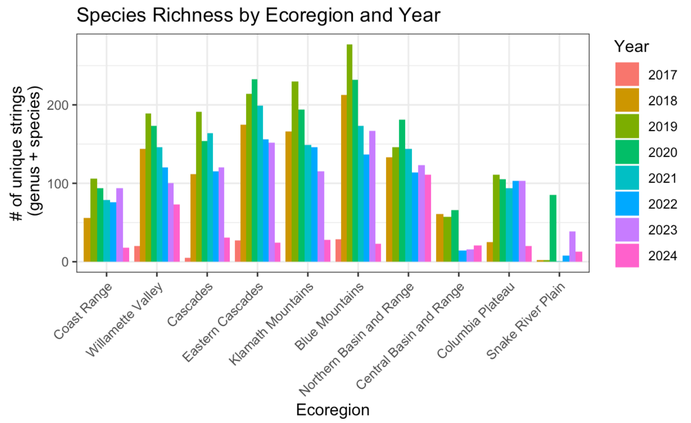


Data Analysis

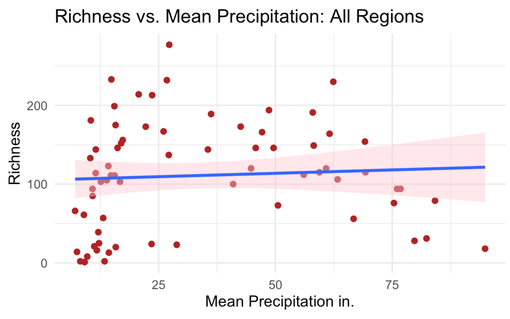


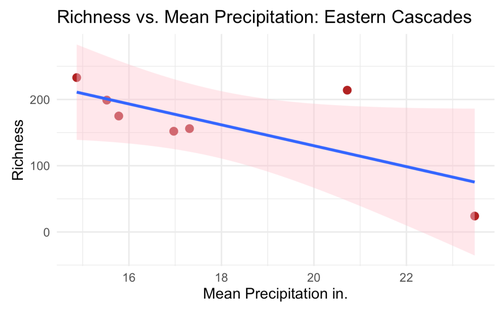
Results: Regions Compared

- Interestingly across all regions, species richness is dropping
- "Richness" was calculated by pasting genus and species name. The number of unique strings is the "richness," or simply the number of different species in a given ecoregion

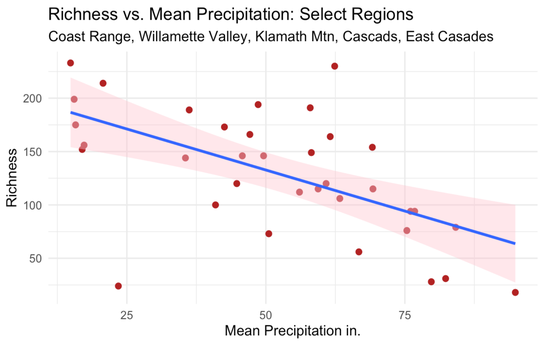


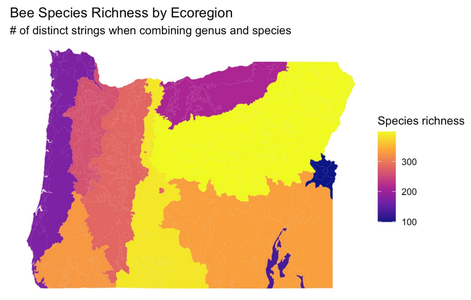
Result: Precipitation



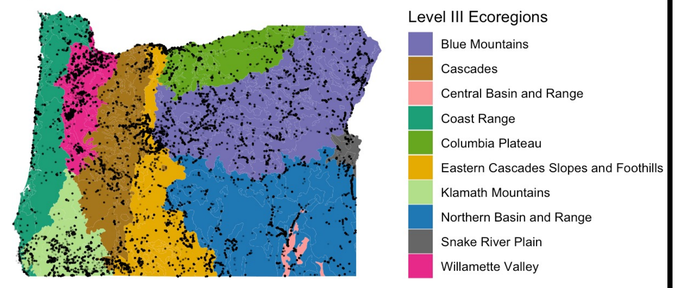


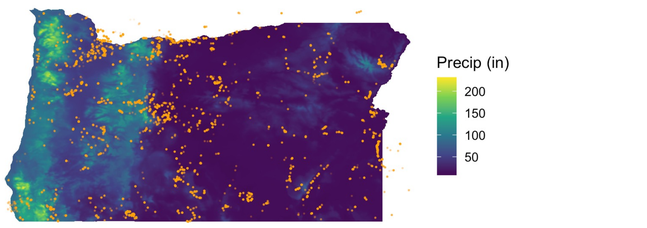
Although some regions such as the Eastern Cascades showed some correlation, overall species richness and precipitation don't seem to be correlated





Conclusions





Variability of Species Richness across Ecoregions

- Richness peaks in less developed areas (Blue Mtn, Eastern Cascades, Klamath Mtn.) which also correlates with cooler regions
- Across Oregon, "richness" is dropping at a rate that could be significant if continued

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Overall results were inconclusive

- All regions, with the exception of the Snake River Plain, have negative correlations
- The Eastern Cascades show the strongest correlation (r = -0.72)

References

- Oregon Bee Atlas
- PRISM Time Series Data
- Oregon Ecoregions

Acknowledgments

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