

Cutting through “concrete”: the fatclaw crayfish as an ecosystem engineer of prairies.

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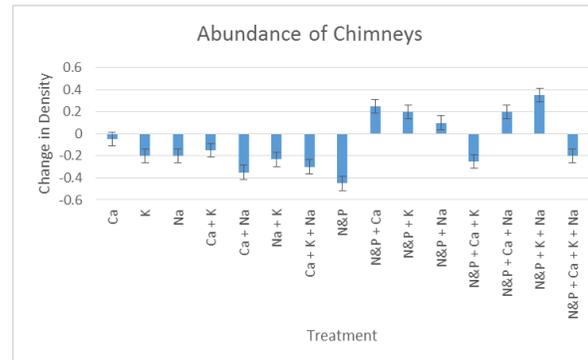
Introduction

- Fatclaw crayfish (*Cambarus diogenes*) dig tunnels and chambers in the soil all the way up from the groundwater. This digging brings up soil that would not normally reach the surface, that may be very different from “normal” prairie soil.
- Little is known how these potential changes in soil characteristics stemming from crayfish digging affect prairies and their functioning.
- A study on a similar species *Distocambarus (Fitzcambarus) huneri* showed that many juveniles and females can be found in the burrows beneath the chimneys (Fitzpatrick and Eversole, 1997). The burrows function as a home for many organisms, but little is known on their ecological impact.
- The questions we are trying to answer are: What is limiting the abundance of crayfish chimneys in prairies? And how are these chimneys affecting the plant life in the prairie?

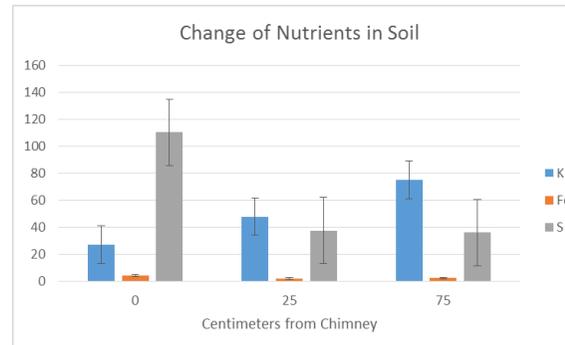
Methods

- We used an existing experiment to determine the average abundance of chimneys, and what factors influenced their abundance.
- We took soil core samples to measure soil moisture, pH, and conductivity.
- Plant root simulating probes were used to determine how crayfish affect nutrients available to plants.

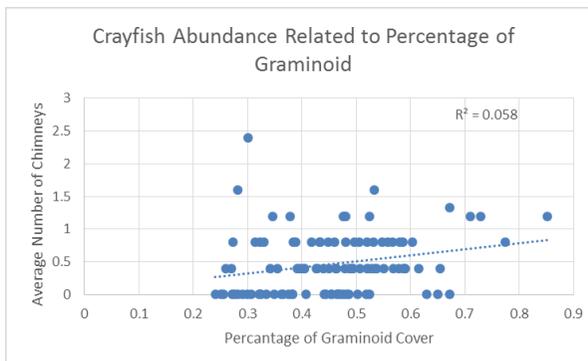
Summary



On their own, the macro- and micronutrients had a negative impact on the abundance of chimneys. Na, Na +Ca, and N&P all had a significant negative impact.



Iron, and Sulfur were brought up to the surface. The closer to the chimney, the higher the concentration. Potassium had the opposite effect, the farther from the chimney it would become more abundant.



Conclusions

- Crayfish are moving on average 388.125 grams of soil m².
- The soil crayfish bring up is very different quality to plants than “normal” prairie soil, and thus could change plant community composition.
- These data provide evidence that crayfish are co-limited by macronutrients and certain combinations of micronutrients. These effects are likely driven by changes to plant communities.

Future Directions

- Further areas of study could be seeing if these crayfish are in other prairies and if they are having a similar impact on the soil.
- Looking at the change in soil properties and how it is affecting the plant growth .

Acknowledgements



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