

THE INFLUENCE OF PRAIRIE RESTORATION ON HEMIPTERA COMPOSITION

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BACKGROUND

While prairie restorations can potentially mitigate some of the negative effects humans have had on the environment, it is imperative to quantify their success at restoring an ecosystem's community. The Hemiptera (the true bugs) are a less well-known insect order in terms of their response to ecosystem restoration, but their abundance, diversity, and importance in grassland ecosystems make them ideal candidates for study. I seek to answer four questions in this study:

1. Do older constructed prairies resemble remnant prairies in Hemiptera abundance, diversity, and composition more than they resemble newer constructed prairies?
2. Does the size of a prairie fragment affect the abundance, diversity, and composition of Hemiptera?
3. Does the distance of a prairie to an agricultural field affect the abundance, diversity, and composition of Hemiptera?
4. Are there particular morphospecies that indicate particular prairie types?

METHODS

1. Collected insect samples from 13 local prairies (7 restored and 6 remnant) in 2019
2. Sorted Hemiptera to Family/morphospecies
3. Analyzed Simpson's Diversity using ANOVA and Hemiptera morphospecies composition using NMDS
4. Will continue to analyze Hemiptera abundance, diversity, and composition related to prairie age, size, and distance to agriculture, and perform Indicator Species analysis.

RESULTS

ANOVA on Simpson's Diversity for 3 prairie types in July 2019: Simpson's Diversity Index was significantly lower in remnant prairies compared to old and new constructed prairies.

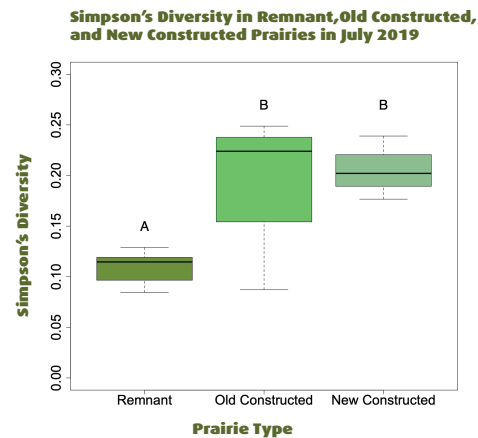


Figure 1: Simpson's Diversity Index was lower in remnant prairies than at old constructed and new constructed prairies in July 2019 (ANOVA $p=0.025$). Lower Simpson's Diversity Index indicates greater diversity (Lower chance of any two individuals sampled being the same morphospecies)

HEMIPTERA (TRUE BUGS) CAN BE USED TO EVALUATE PRAIRIE RESTORATION PROJECTS BECAUSE THEY DIFFER IN DIVERSITY AND COMPOSITION BETWEEN REMNANT, OLD CONSTRUCTED, AND NEW CONSTRUCTED PRAIRIES.

NMDS on Hemiptera morphospecies distribution in August 2019: Remnant and old constructed prairies showed strong overlap in composition of morphospecies.

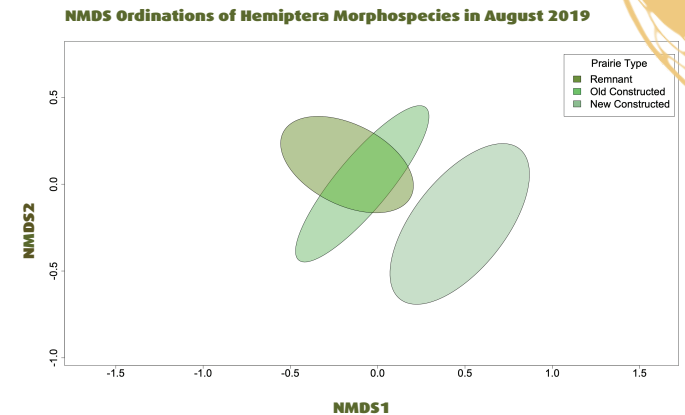


Figure 2: NMDS showing Hemiptera morphospecies composition sampled in August 2019 (stress=0.22). Remnant and old constructed prairies were more similar to each other than to new constructed prairies.