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Comparison of Plant Richness and Density in CRP-42 Fields Between 2018 and 2022

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Comparison of Plant Richness and Density in CRP-42 Fields Between 2018 and 2022

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Background

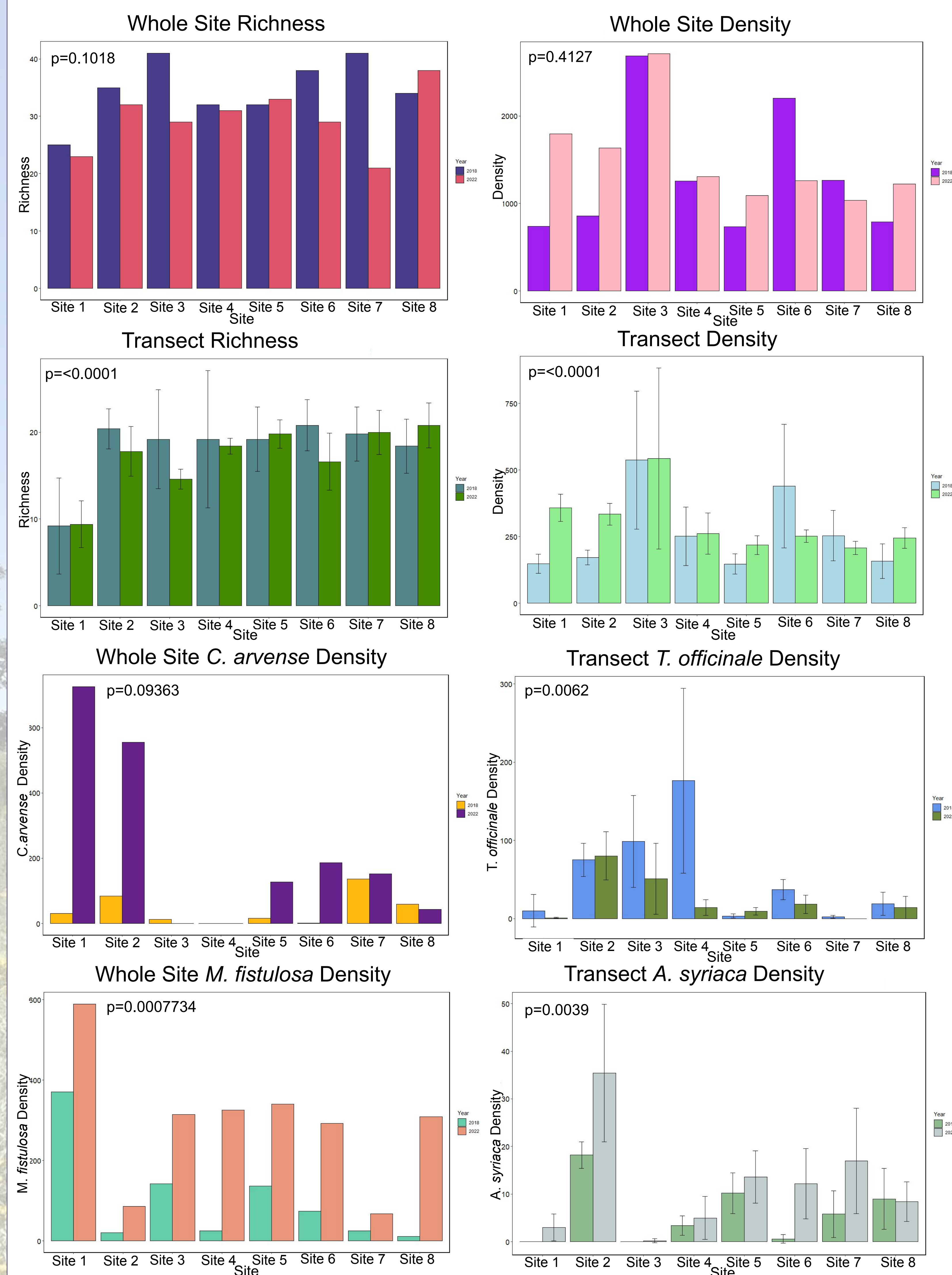
In the recent years, the number of pollinators has decreased while the number of plants dependent on pollinators has increased. This is thought to be occurring due to multiple stress factors in pollinators. Placing pollinators in a good-forage habitat can help combat these stressors^[1]. The Conservation Reserve Program provides farmers with annual payments to retire their land in hopes to help preserve important pollinator habitats^[2]. Both native and non-native plant species can attract different types of pollinators and alter foraging patterns^[3]. In this study, we look at two non-native species, *Cirsium arvense* and *Taraxacum officinale* along with two native species, *Monarda fistulosa* and *Asclepias syriaca*.

Methods

- We surveyed 8 sites within a 60-mile radius of University of Northern Iowa in June 2022 and 2018.
- Five points were randomly generated using ArcGIS to create a 100m transect for each site
- 15 quadrats measuring 0.5m x 2.0m were laid out every 7m ranging from 0m-98m in the transect
- Plant density and stem density were recorded for all plant species in the quadrat
- For plant density, individual plants were counted
- For stem density, individual stems of each plant were counted
- At 2 sites, *Cirsium arvense* plant density and stem density was estimated in clusters due to large numbers
- *Taraxacum officinale*, *Monarda fistulosa*, and *Asclepias syriaca* plant and stem density were calculated using standard methods for all sites



Results



- Plant richness generally decreased between the years in the whole site and within the transects
- Plant density generally increased between the years in the whole site and within the transects
- *Cirsium arvense* density generally increased between the years
- *Taraxacum officinale* generally decreased between the years within the transect
- *Monarda fistulosa* increased between the years
- *Asclepias syriaca* increased between the years

Conclusion

- There was no significant change in the plant richness and plant density in the whole site between 2018 and 2022
- There was a significant change in plant richness and plant density within the transects
- *Cirsium arvense* showed non-significant change in density throughout the whole site
- *Taraxacum officinale* had significant change in density within the transects
- There was a significant change in plant density of *Monarda fistulosa* within the whole site
- *Asclepias syriaca* showed significant change in plant density within the transects

Wild Bergamot (*Monarda fistulosa*)



Canada Thistle (*Cirsium arvense*)



Dandelion (*Taraxacum officinale*)



Common Milkweed (*Asclepias syriaca*)



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