

Introduction

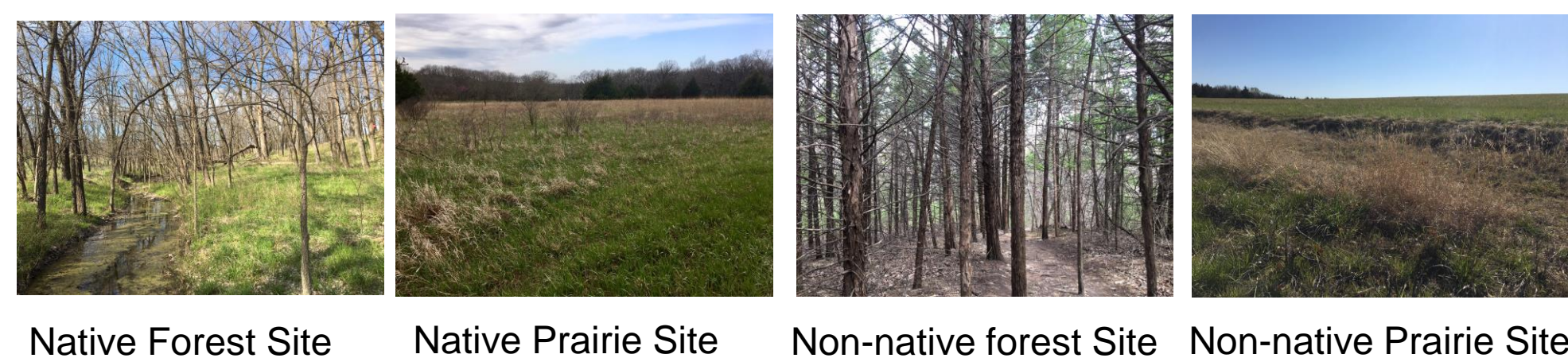
- Native plants and ecosystems are vital for persevering biodiversity.
- Prairies are an especially threatened ecosystem with only 4-13% of native tallgrass prairies remaining (Samson, 2004)
- Native oaks have been shown to support over 500 species of caterpillars whereas non-native ginkgo trees, host only 5 species of caterpillars. It can take over 6,000 caterpillars to raise one brood of chickadees. Therefore native trees can significantly impact birds and their food sources (Tallamy, 2017).
- I hypothesized that native prairies and forests would have a higher abundance and diversity of birds than non-native prairies and non-native forests.
- Additionally, I expect the forest ecosystems to have a higher abundance and diversity of birds than prairie ecosystems.



Materials and Methods

Study Sites

- Observations took place at four different ecosystem types present in Manhattan, Kansas; native forest, native prairie, non-native forest, and non-native prairie.
- Native forest and native prairie observations were conducted at different sections of the Konza Prairie Biological Station.
- The Konza prairie is an 8,600 acre native tallgrass prairie preserve. About 7% of the Konza is forested. These gallery forest are dominated by bur oak and chinquapin oak, elm, hackberry, walnut, and hickory (Konza Prairie Trail Guide).
- Non-native forest and non-native prairie observations were conducted at different sections of Warner Memorial Park (80 acres).

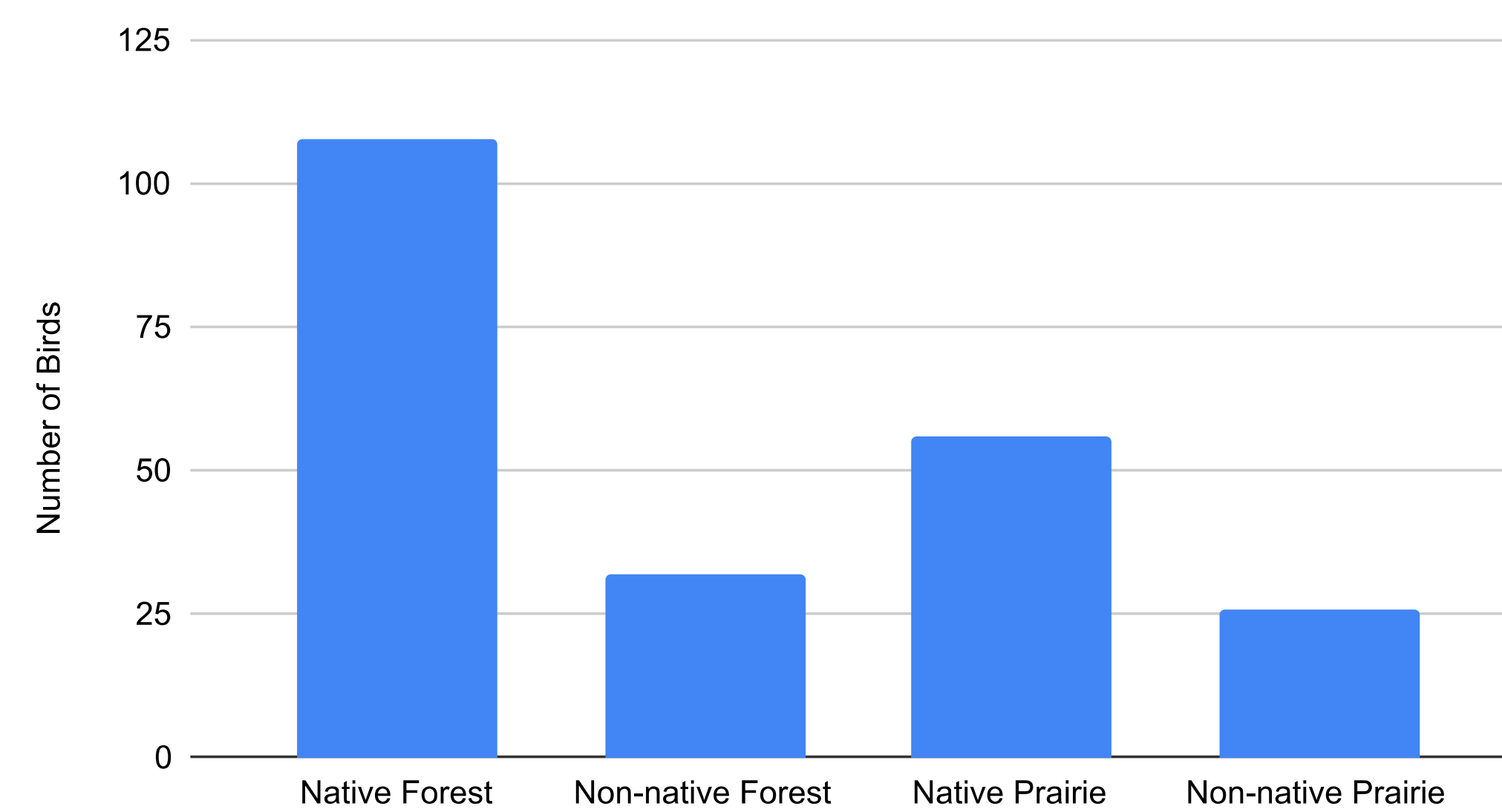


Sampling Method

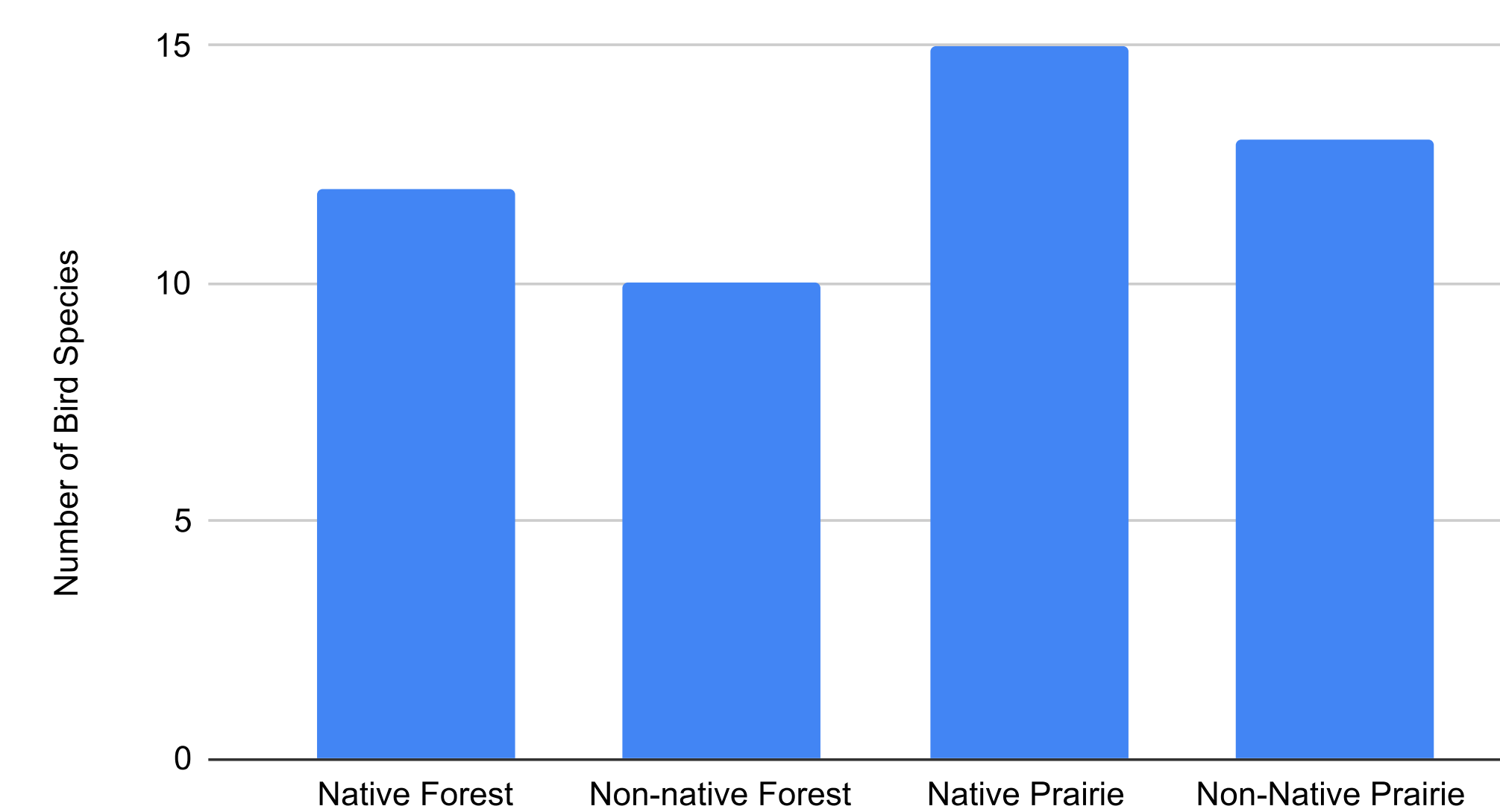
- A sampling session consisted of 30 minutes of bird watching along a predetermined path for each ecosystem type.
- Data collection took place on three separate days, for a total of 6 hours of observations.
- The order in which observations happened at each ecosystems was rotated each date to help mitigate the impact that the time of day has on bird abundance.
- Once a bird was visually spotted it was identified and recorded.

Bird Abundance and Species Richness by Ecosystem Types

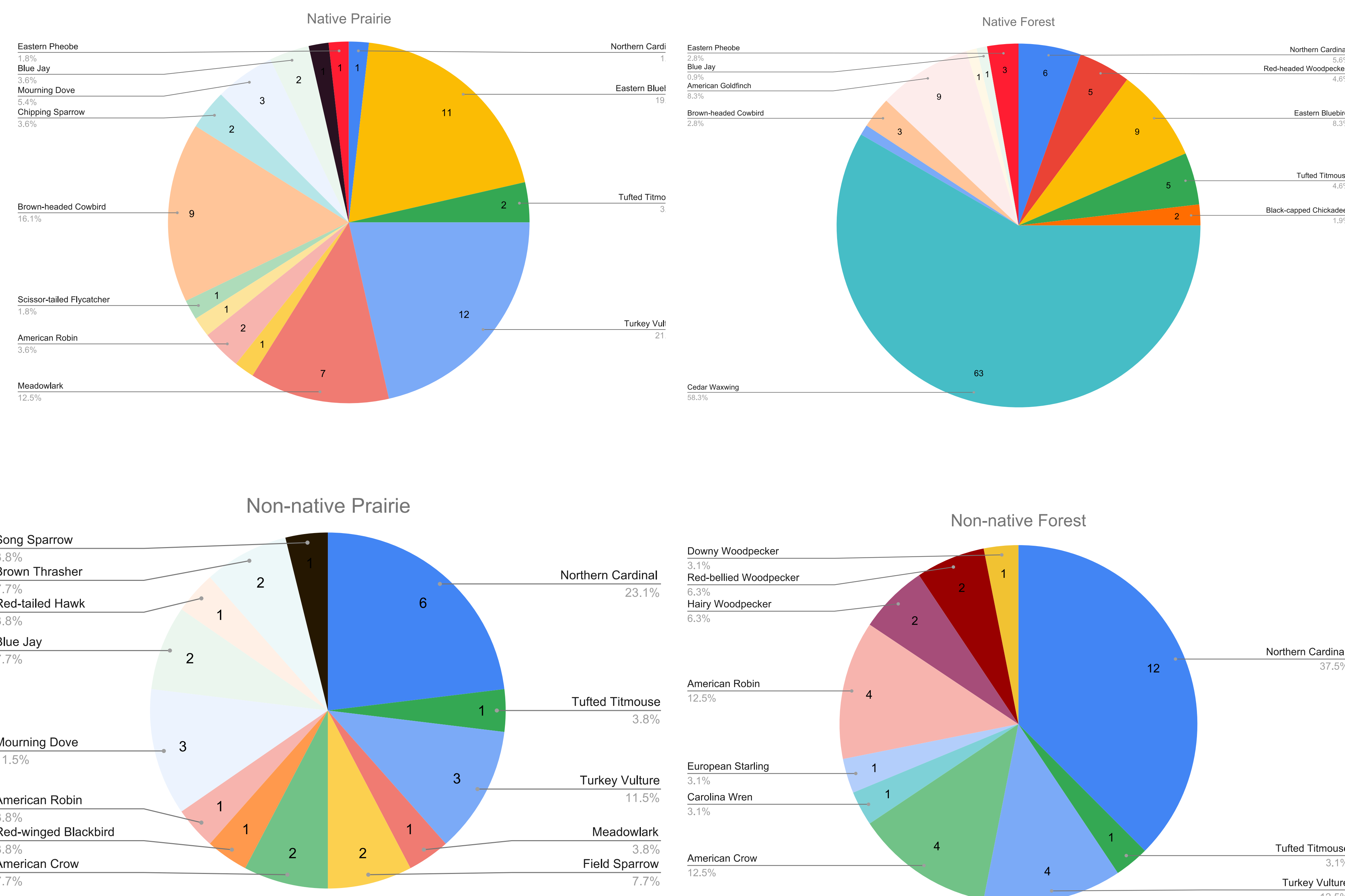
Total Bird Abundance at Different Ecosystem Types



Species Richness at Ecosystem Types



Community Composition by Ecosystem Type



Results

Bird Analysis

- In Total 222 total birds were recorded.
- 30 different bird species were observed.
- Cedar waxwings, northern cardinals, and eastern bluebirds were the most abundant species.
- The only bird species to be found in all four ecosystem types were the northern cardinal, tufted titmouse, and turkey vulture.

Ecosystem Analysis

- The native prairie site had the highest species richness with 15 different species.
- Species richness was higher in the prairie sites than the forest sites
- Native ecosystems had a higher species richness than their nonnative counterparts.
- Native Forests had the highest total abundance of birds.
- Birds were also more abundant in both of the native ecosystems compared to their non-native counterparts.



Discussion

- My hypothesis that native ecosystems would support a higher number and greater diversity of birds was supported.
- However, contrary to my hypothesis, prairies had a higher species richness than forests.
- These results suggest that native prairies and native forests are better at supporting bird biodiversity than non-native ecosystems.
- These results stress the importance of conserving native ecosystems.
- Future research could incorporate additional study sites. The limited amount of sampling sites might not give the full picture of bird diversity at the different ecosystem types.
- Additionally, future research could examine the different ecosystems over a longer period of time. Bird populations fluctuate drastically seasonally. The results of this study might change at different times of the year.

References

Samson, F. B., Knopf, F. L., & Ostlie, W. R. (2004). Great Plains ecosystems: past, present, and future. *Wildlife Society Bulletin*, 32(1), 6-15.

Tallamy, D. (2017). Why Native Plants Matter. Retrieved from <https://www.audubon.org/content/why-native-plants-matter>

<https://keep.konza.k-state.edu/visit/NTtrailguide.pdf>