

Fire effects on multiple ecosystem outcomes: A meta-analysis for the land managers of tallgrass prairie. Kathryn Bloodworth, Funding dates: 2021 – 2024

Research progress: The goal of my ongoing research project is to perform a meta-analysis that investigates how often land managers should prescribe fire to conserve ecosystem outcomes of interest (e.g., plants, arthropods, small mammals, soil nutrients, etc.). Prior to receiving funding from the Friends of Nachusa grant, I ran a literature search using Web of Science where I searched for peer-reviewed journal articles published between 1950 and 2019. Each article was required to meet location, ecosystem type, fire, and ecosystem outcome requirements. Following this search, I then read the title and abstract of each paper, removing papers that did not meet the

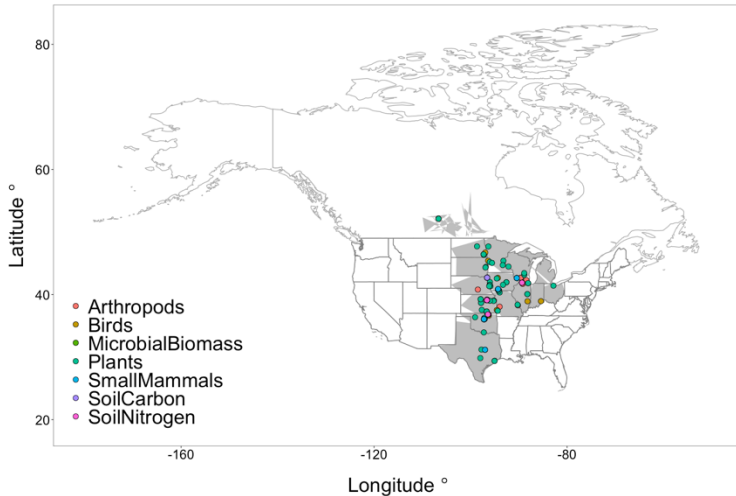


Figure 1. Map of Study sites broken down by response variable.

of interest down from 493 to 232 papers. Lastly, I have been assessing the basic data extraction. Figure 1 shows the geographical distribution of the 232 papers that will be used for the larger data extraction step, colored by the ecosystem outcomes (response variables) of interest. Figure 2 shows the breakdown of papers by ecosystem outcome (response variable).

Likelihood of research to be achieved and changes to original scope: Currently, I am on track to achieve the original scope of the research in the same time period. Though the timing of each step has been altered slightly. For example, in my original proposal, I stated that I would have a grey literature search done by August of 2021. However, this will now be accomplished following the data extraction of the published literature articles. Currently data extraction of published literature is on track to be completed in December of 2022 and the grey literature search will be completed in May 2023. Following that, the data analysis will occur concurrently from January 2023 through July 2023, after which I will write and submit the manuscript by May 2024. In addition to this change, I also had to postpone my trip the Nachusa (planned for the fall of 2021), but I am currently scheduled to travel to Nachusa to have a working group meeting with Elizabeth Bach in January 2022.

This task was completed after receiving the Friends of Nachusa grant and resulted in 493 papers of interest. I then extracted independent variables, such as fire and location data, from each paper. In addition, I extracted data regarding which ecosystem outcome (response variable) was measured in each paper and how those data were measured (via abundance, diversity, and/or rarity). Following this data extraction step, I assessed the data collected and decided whether each paper met our more specific guidelines for this meta-analysis. This step has just been completed in November 2021 and narrowed the papers created multiple figures to begin

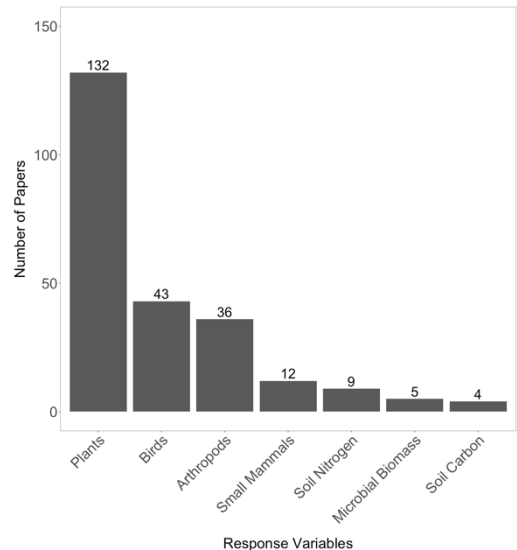


Figure 2. Number of papers in meta-analysis broken down by response variable.