

Prairie Vegetation and Insect Monitoring Workshop

Effects of grazing versus fire for prairie management

Project summary:

Minnesota's tallgrass prairies depend on disturbance (e.g., fire, grazing, drought), without which they would rapidly transition to woodland and forest. Land managers often use prescribed fire and "conservation grazing" (the use of grazing by domestic animals to achieve conservation goals) to preserve prairie plant communities and the many pollinators, birds, and mammals that depend on them. Although effects of fire on northern tallgrass prairies are well documented, there are no studies of the effects of conservation grazing on Minnesota prairies in the published literature. Yet, because prescribed fires are expensive, require significant personnel numbers and time, can only be completed during specific windows of time, and may have negative effects on some pollinators, managers have turned to conservation grazing, despite the lack of research. Our study addresses this knowledge gap.

Methods:

Plant communities were assessed at 75 remnant burned or grazed prairies in 2016 and 2017. Sites were chosen based on having been either only-grazed or only-burned between 2005-2015. Twenty of these sites were also surveyed three times each summer for bees and butterflies. See the provided vegetation monitoring and bee and butterfly sampling protocols for additional details, instructions, and required supplies. In addition to our field surveys, we also performed a landscape-level analysis to determine percent land cover type within a 1.5 km buffer surrounding our field sites using USDA CropScape, USFWS, MN DNR, and South Dakota State University coverages. This information will be used to assess potential influence of surrounding landscape-level differences on plant, bee and butterfly presence at each field site.

Landscape Analysis using CropScape Data Layers (USDA)

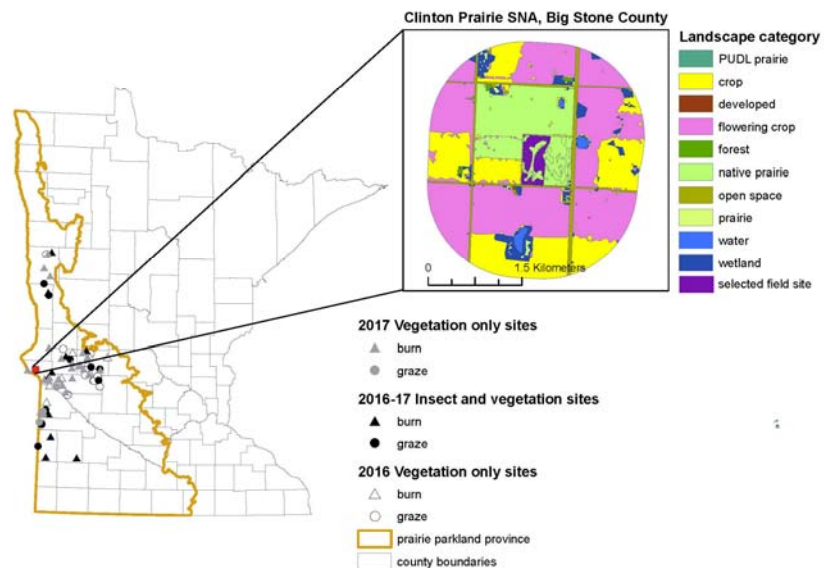


Figure 1. Locations of our field sites in the Prairie Parkland Province in western MN, and examples of landscape analyses of one field site. Map created with ESRI ArcGIS 10.5.1 with data from MNDNR, USDA, and SDSU by Jen Larson.

Conclusions: Vegetation on burned sites was generally less weedy than that on grazed sites. Nonetheless, burning and grazing favored different communities of bees, and butterflies, suggesting that each management type has a role in maintaining Minnesota's prairies.



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