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Effects of Fire on Vegetation of the Prairies and Black Oak Sand Savannas of Kankakee, Illinois

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Abstract : Tallgrass prairies and sand savannas, once covering northern to central Illinois, are ecosystems in need of restoration and conservation in the Midwestern United States. The Nature Conservancy manages five sites containing fragments of remaining tallgrass prairies and sand savannas within the Kankakee Sands using techniques such as prescribed burning and invasive species removal. The objective of this study was to conduct a ten-year resampling of transects established on these five sites during previous studies to assess whether the management tools applied there are helping maintain the tallgrass prairie and sand savannas. During the summer of 2020, permanent transect lines were sampled using a quadrat to determine the % Cover Class of each species rooted in the quadrat. Data gathered was analyzed using linear regression to illustrate the relationship between fire occurrence and species composition on the landscape. The fire frequency had a highly significant effect (P= 0.0025) on the species richness of all sites. The frequency of fire had a non-significant effect (P>0.05) on the Floristic Quality Index, percent C value 4-10, and bare-ground percentage of a site. These results suggest that fire on the landscape, both wild and prescribed, have increased biodiversity on all five sites but has not affected the Floristic Quality Index, percent C value 4-10, and the percentage of bare-ground on the sites.

Keywords : fire, floristic quality assessment, sand savanna, species richness, tallgrass prairie
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