

PLANT COMMUNITY TRENDS ACROSS A CHRONOSEQUENCE OF RECONSTRUCTED PRAIRIES WITH RESPECT TO REMNANT PRAIRIES IN WEST-CENTRAL IOWA

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Abstract: Reconstructed grasslands make up an ever-increasing proportion of grasslands in North America. However, several floristic studies of tallgrass prairie conclude that our ability to reconstruct prairie communities is limited. We sought to characterize plant communities across a chronosequence of six prairie reconstruction sites (ranging in age from four to eleven years) and three nearby remnant sites in West-Central Iowa. We sampled species richness and abundance to assess trends in Simpson's diversity and evenness, richness and abundance for selected plant guilds, and mean coefficient of conservatism (mean C). Simpson's diversity and evenness and perennial invasive species abundance declined with reconstruction site age. As a group, reconstruction sites had greater richness of C₃ species with late phenology than remnant sites, but lower richness and abundance of species with early phenology. Total native richness, total native abundance, mean C, C₄ abundance, and late phenology C₃ abundance were similar between reconstruction and remnant sites. Observed declines in diversity and evenness with reconstruction age may reflect increases in C₄ grass abundance rather than absolute decreases in the abundance of perennial C₃ species. In contrast to other studies, success of these reconstructions appears to be limited more by a relative paucity of early phenology species in the seeding mixture than by failure to establish sown species. While several floristic measures indicate convergence of reconstruction and remnant sites, biodiversity may be enhanced by including early phenology species in seeding mixes in proportion to their abundance on remnant prairies.