

Effects of Soil Heterogeneity on the Richness and Spatial Structure of an Assembling Prairie Plant Community

Olivia S. Schouten

Faculty: Gregory R. Houseman, PhD

Department of Biological Sciences, College of Liberal Arts and Sciences

In ecological communities, plant species are often non-randomly distributed, with individuals of species occurring in aggregated spatial arrangements. This non-random spatial structure can develop as plants interact with the environment or compete with other plants for space and resources. These interactions are hypothesized to contribute to species coexistence and maintenance of diversity, although their relative importance is not clear. To test the importance of soil heterogeneity on plant diversity and community structure, soil heterogeneity was manipulated using the variation in the vertical soil profile to create heterogeneous and homogeneous plots and then seeded with native prairie species. Spatial analysis was used to determine whether species show differences in spatial structure between soil treatments after five years. Results indicate that, at least for some species, plant spatial structure can be driven both by soil heterogeneity and by the plants themselves even in relatively homogeneous soils.