

## **Dynamics of Coupled Natural and Human Systems**

### *5. Monitoring the Success of a Tall-Grass Prairie Restoration: Spirit Mound Historic Prairie.*

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**ABSTRACT:** Spirit Mound, in southeastern South Dakota, is one of the few specific locations that Lewis and Clark were known to have visited on their journey west. Since that time, the area has been converted to agricultural fields, building sites, and a feedlot. In 2001, the 320-acre site was purchased by the state with funds from the U.S. Congress and is now managed by the South Dakota Department of Game, Fish, and Parks. A prairie restoration effort quickly began with site clean-up and seeding in fall, 2001. In summer 2003, we began a study to evaluate the success of the restoration effort and factors influencing the establishment and success of prairie and non-prairie species. Our results indicate that the biomass, species richness, and percent cover of prairie species have increased, but dramatic differences exist among different parts of the site. In an effort to evaluate these differences, we tested soil quality and examined previous-use histories. Different soil-nutrient levels were associated with the density and diversity of prairie and non-prairie plant species. Soils in an area that was formerly a feedlot and an adjacent site were infested by non-native forbs and had high levels of organics, nitrogen, phosphorus, potassium, and salts. In contrast, areas with more suitable soils but that were under cultivation as recently as summer 2001, showed generally good establishment of planted prairie species. Based on these results, we are developing a plan to mitigate poor soil quality and to monitor this significant prairie-restoration effort.