

## REGIONAL DYNAMICS OF GRASSLAND CHANGE IN THE WESTERN GREAT PLAINS

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**ABSTRACT**—This paper examines the contemporary land-cover changes in two western Great Plains ecoregions between 1973 and 2000. Agriculture and other land uses can have a substantial effect on grassland cover that varies regionally depending on the primary driving forces of change. In order to better understand change, the rates, types, and causes of land conversion were examined for 1973, 1980, 1986, 1992, and 2000 using Landsat satellite data and a statistical sampling strategy. The overall estimated rate of land-cover change between 1973 and 2000 was 7.4% in the Northwestern Great Plains and 11.5% in the Western High Plains. Trends in both ecoregions have similarities, although the dynamics of change differ temporally depending on driving forces. Between 1973 and 1986, grassland cover declined when economic opportunity drove an expansion of agriculture. Between 1986 and 2000, grassland expanded as public policy and a combination of socioeconomic factors drove a conversion from agriculture to grassland.

**Key Words:** grassland, agriculture, driving force, ecoregion, Great Plains, land-cover change

## THE SHOP-LOCALLY DISCOURSE IN JEFFERSON COUNTY, KANSAS

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**ABSTRACT**—Inhabitants in the villages of Jefferson County, Kansas, respond to socioeconomic changes in a variety of ways. Empirical research conducted in 2004 revealed multiple discourses that constituted such responses. The shop-locally discourse emerged in structured interviews, newspaper articles, and newspaper advertisements as an emblem of socioeconomic empowerment. Discourse was analyzed within its context and interpreted to provide some insight into residents' responses to change. The discourse revealed not only nostalgia for formerly vibrant commercial districts but also the importance of economic vitality to social life. Shopping locally today, however, will not restore yesteryear's social milieu. The proximity of midsize cities in adjacent counties pulls the economic lifeblood out of Jefferson County, transforming the villages into bedroom communities. If their economies are to be revitalized, inhabitants will need to become more thoughtful and creative agents of change within their own villages.

**Key Words:** discourse analysis, rural Kansas, socioeconomic change, villages

# NATIVE LAND ACQUISITION IN THE MINNESOTA RIVER VALLEY

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**ABSTRACT**—The economic issues that often arise from Native land acquisition and development can strain relationships between American Indian tribes and non-Indian local governments. As Indian tribes expand their landholdings, political and economic landscapes are transformed. This paper examines intergovernmental relationships and the characteristics and impacts of recent land acquisitions made by two Dakota Indian communities in the Minnesota River Valley of Minnesota. The Upper Sioux Community has enjoyed a level of cooperation from local communities in their rural land acquisitions, while the Shakopee Mdewakanton Dakota Community has experienced vigorous opposition to their urban land acquisitions. Geographic situation may help to explain the variation in level of opposition or support for Native land acquisition, as well as the possibilities for Native land “possession” vs. “ownership.”

**Key Words:** American Indians, land tenure, land use, regional development, political geography, economic geography

# UNDERSTANDING SACRED LANDS

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**ABSTRACT**—Recognition of the human right for indigenous peoples to freely express their spiritual beliefs is essential to expanding tolerance for the earth-based spirituality of many indigenous peoples. Awareness of such beliefs must be extended to support the spiritual significance of what indigenous peoples believe are their sacred lands. Physical landmarks such as mountains or rivers hold essential spiritual meaning for many tribes. Linkages to indigenous peoples’ knowledge systems can yield a greater understanding of their social values and cultural differences in public debates over human rights and their struggles to protect their sacred lands. This paper reviews the impact of the Garrison Dam on the Three Affiliated Tribes of the Fort Berthold Indian Reservation in North Dakota. A discussion on the Draft United Nations Declaration of Indigenous Human Rights demonstrates the ongoing global struggle of indigenous peoples to protect their sacred lands and cultures.

**Key Words:** Garrison Dam, human rights, Missouri River, sacred lands, Three Affiliated Tribes

# POTENTIAL ABORIGINAL-OCCUPATION-INDUCED DUNE ACTIVITY, ELBOW SAND HILLS, NORTHERN GREAT PLAINS, CANADA

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**ABSTRACT**—Geomorphological and archeological evidence indicates potential linkages between Plains aboriginal occupation and dune activity in the Elbow Sand Hills of southern Saskatchewan, Canada. Vegetation encroachment has rapidly outpaced migration of an active dune complex over the last 65 years. Optical ages of stabilized dune remnants indicate that dune activity predates Euro-Canadian settlement (ca. AD 1900). Early Euro-Canadian explorers observed local occupation and exploitation of the sand hills by aboriginal groups for herding and impounding bison. Mapping of archeological sites in relation to physiography reveals that sand dunes, in close proximity to permanent water resources, were preferred areas of occupation. Collectively, these results support the hypothesis that aboriginal occupation disturbance may have perpetuated dune activity in the Elbow Sand Hills until the late 19th century, and that Euro-Canadian settlement and land use emphasizing conservation may have encouraged recent stabilization. We propose that similar aboriginal occupation disturbances may have been responsible for perpetuating dune activity in other dune fields in the Great Plains. To this end, climatic variability should not be considered exclusive of other drivers of dune activity in semivegetated inland dune fields of the Great Plains.

**Key Words:** aboriginal occupation, bison, disturbance, optical dating, sand dunes

# PHYSIOLOGICAL RESPONSES OF FOUR HAZELNUT HYBRIDS TO WATER AVAILABILITY IN NEBRASKA

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**ABSTRACT**—Responses of hazelnut hybrids (88BS, BOX1, G17, and GEL502) to water availability (watered and nonwatered) were examined in the field. The study site received 35% of long-term average precipitation between July and September. Photosynthesis ( $A$ ), stomatal conductance ( $g_s$ ), water potential ( $\Psi$ ), and specific leaf area were generally lower in the nonwatered than in the watered treatment and exhibited significant seasonal decline, which was accompanied by an increase in water use efficiency (WUE) under both water treatments. Hybrids exhibited different strategies to cope with water availability. The hybrid 88BS was more water conserving, with the most decline in  $g_s$ , the least gradient in  $\Psi$ , and the lowest discrimination against  $^{13}\text{C}$  than in the remaining hybrids, indicating that 88BS responded to drought by increasing WUE and conserving water. BOX1 was more of a water spender, maintaining both higher  $g_s$  and  $A$ , low sensitivity of  $g_s$  to vapor pressure deficit (VPD) increase, largest gradient in  $\Psi$ , and the most negative carbon isotope ratio, indicating a higher capacity to absorb soil water and reach limited resources. GEL502 and G17 were more affected by water stress than were 88BS or BOX1. We conclude that relatively drought-resistant hazelnut hybrids suitable for the Great Plains can be identified for successful plantations.

**Key Words:** carbon isotope, *Corylus*, drought, Great Plains, photosynthesis, water potential, water use efficiency

# GRASSLAND BIRDS IN RESTORED GRASSLANDS OF THE RAINWATER BASIN REGION IN NEBRASKA

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**ABSTRACT**—Conservationists and managers mention grassland restorations as a conservation strategy to reverse the decline of grassland bird populations in the Great Plains. In the Rainwater Basin Region of south-central Nebraska, state and federal resource agencies have used grassland restorations to protect wetlands from sedimentation and agrichemical runoff. These grassland restorations may also provide important habitat for breeding grassland birds. In this paper, we describe the abundance, composition, nesting success, and habitat requirements of breeding birds in grassland restorations in the Rainwater Basin Region. We observed 14 grassland bird species in 12 grassland restorations. The most abundant species were dickcissels (*Spiza americana*), grasshopper sparrows (*Ammodramus savannarum*), and bobolinks (*Dolichonyx oryzivorus*). We found a total of 84 nests composed of 11 species in restorations. Dickcissels and grasshopper sparrows accounted for 77% of all nests found. Nest success was 31% (26 nests), and the major cause of nest loss was predation, which accounted for 66% (38 nests) of all nest failures. The occurrence of 10 of the species in grassland restorations was influenced by a variety of vegetation variables. Grassland bird species have benefited from grassland restorations in the Rainwater Basin Region. Conservation strategies for grassland birds in the Rainwater Basin Region should continue to focus on restoring marginal croplands back to grasslands.

**Key Words:** grassland birds, grassland restoration, Nebraska, Rainwater Basin Region

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# PRAIRIE SANDREED RESPONSE TO PRECEDING-YEAR DEFOLIATION AND PRECIPITATION REGIME

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**ABSTRACT**—Knowledge of how current-year grazing and drought stress affect subsequent-year herbage production is needed to enhance the management of semiarid Sandhills prairies. This study quantifies subsequent-year effects of defoliation and precipitation on prairie sandreed (*Calamovilfa longifolia*), a high-seral, warm-season tallgrass, and total graminoid herbage production in the Nebraska Sandhills. Mainplots (9.0 m<sup>2</sup>) received either ambient precipitation (noncovered) or precipitation was excluded during April-May, June-July, or August-September, resulting in 66% to 135% of the long-term average (434 mm) precipitation. All species in 1.0 m<sup>2</sup> defoliated subplots were clipped in early July at the stubble height required for 30%, 60%, or 90%

defoliation of *C. longifolia*. Measurements were made during July of the following year. Yield of *C. longifolia* declined about 5% for each 10 percentage points of defoliation compared to 3% yield declines for all graminoids (grasses and sedges) combined, regardless of precipitation regime. Additionally, excluding precipitation during June-July reduced tiller density by about 44% and yield and percent composition of *C. longifolia* by about 25% compared to ambient precipitation. Periodic full growing-season deferment may be necessary to maintain high-seral species dominance in these grassland communities, particularly in pastures where overgrazing and drought stress occur concurrently during June or July.

**Key Words:** herbage response, prairie sandreed, seasonal water stress, tallgrasses, tiller demography