# RANCHING AND STATE SCHOOL LAND IN CIMARRON COUNTY, OKLAHOMA

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ABSTRACT—Ranchers in Cimarron County, Oklahoma, have turned to leasing school trust land to sustain and sometimes expand their operations. Changes in the land tenure process have undergone profound transformations in the last 20 years, greatly impacting land use in the region. Coupled with an almost decade-long drought, land managers pursuing seemingly "traditional" agricultural practices call upon increasingly complicated, mixed private and public tenure options in order to make ends meet. Using a political ecology framework, we examine conflicting relationships between school land, the state, and local land managers as well as the sustainability of cattle ranching on school trust land in Cimarron County, Oklahoma. We conclude that school trust land needs to be re-envisioned in order to ensure the greatest good for the greatest number of people as well as to uphold traditional rights and livelihoods of those in Cimarron County.

Key Words: land tenure change, Oklahoma Panhandle, political ecology, ranching, school trust land

# DETERMINANTS OF NET MIGRATION IN MONTANA

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ABSTRACT—The Great Plains has experienced population loss for most of the 20th century while the Rocky Mountain region has experienced rapid population growth in the past few decades. This paper examines net migration by county for Montana between 1995 and 2000 disaggregated by age and educational level. Montana was chosen because it straddles the Great Plains and Rocky Mountain regions and thus provides an opportunity to compare and contrast net migration and population change in two regions undergoing fundamentally different population processes. Regression analysis was applied to determine the predictor variables responsible for net migration between 1995 and 2000. Dependent variables concerned economic, demographic, and environmental characteristics of each of the counties. Overall, median household income and the Rocky Mountains explained the greatest amount of variance in the dependent variables, suggesting that both economics and the environment play a role in migration patterns in Montana.

Key Words: amenities, internal migration, Montana, population change

# A TEST OF PERSONAL CHARACTERISTICS THAT INFLUENCE FARMERS' PRO-ENVIRONMENTAL BEHAVIORS

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**ABSTRACT**—Current models of farmer conservation practices minimize the role of individual personality characteristics. This study examined the relationship between farmers' use of conservation practices that impact surface water quality and the personality characteristics of work motivation, environmental attitude, and moral reasoning about the environment. A significant negative predictive relationship was found between an externally based self-concept and pro-environmental behaviors. This finding lends support to the notion that farmers concerned about what their neighbors and peers think may not believe their efforts to benefit surface water will be adequately recognized. A significant negative predictive relationship was found between anthropocentric reasoning and pro-environmental behaviors. This finding indicates that farmers who are concerned about the health of the environment for the sake of human health and well-being are less likely to use conservation practices. Implications for research and practice are included.

**Key Words:** conservation practices, environmental attitude, moral reasoning, motivation, pro-environmental behaviors, surface water quality

# GIS SPATIAL ANALYSIS OF
# UNIVERSITY OF NEBRASKA AT KEARNEY
# ALUMNI COHORTS, 1930–2004

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**ABSTRACT**—The purpose of this study was to utilize Geographic Information Systems (GIS) technology and spatial analysis coupled with the University of Nebraska at Kearney (UNK) alumni data from 1930 to 2004 in order to compare and contrast the changing distribution patterns of five-year alumni cohorts. Mean centers, location quotients, and cluster analysis were used to assess the degree to which UNK alumni cohorts have migrated over the 75-year period, the extent to which any regionalization or lack thereof occurs, and the proportion of UNK alumni per county compared to college graduates as a whole. These spatial patterns were then compared to migration trends throughout the United States for the same period.

**Key Words**: cluster analysis, GIS, migration, university alumni, Nebraska

# THE REALLY GOOD BUFFALO CONCEPT TEST
# FOR "VALUES ADDED" BISON

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**ABSTRACT**—A consortium of tribal bison producers, tribal and state university faculty, and business professionals defined a "brand" of Native American-raised bison that would reflect the cultural and spiritual values of American Indians and the historic relationship between American Indians and bison. Following a concept-testing market-research approach, surveys were distributed to potential producers and consumers of this "Good Buffalo." The consumer respondents indicated that environmentally friendly production practices (89%), humane treatment of animals (82.1%), and supporting prairie restoration were very important aspects of the brand. Price was very important for only 42.7% of consumer respondents, and being raised by American Indians was very important to 28% of consumer respondents. The number of producer survey respondents was too small to present clear conclusions. However, since completion of the brand development, Native American Indian and non-Native bison producers with similar interests have formed a business and adopted the brand concepts developed.

# LIVESTOCK RESPONSES TO COMPLEMENTARY FORAGES IN SHORTGRASS STEPPE

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**ABSTRACT**—Livestock gains of yearling Hereford heifers were evaluated during 1996-1999 on two complementary forage grasses, "Bozoisky-Select" Russian wildrye (*Psathyrostachys juncea* [Fisch.] Nevski) or "Hycrest" crested wheatgrass (*Agropyron cristatum* [L.] Gaertn. ssp. *desertorum* [Fisch. ex Link] A. Love). Average daily gains were similar between light and moderate stocking rates for both Bozoisky and Hycrest, and gains trended higher for Hycrest than for Bozoisky at light stocking rates. Total annual (spring + fall) beef production (kg/ha) was consistently greater for moderate (29%-46%) than for light stocking of both complementary forages. Spring gains represented >75% of the total annual beef production across forages. Average daily gains on these complementary forages were similar to those on native shortgrass steppe for the summer grazing season, but total annual beef production was two to four times greater with the complementary forages, suggesting that both Hycrest and Bozoisky can fill forage gaps and provide significant contributions to beef production.

**Key Words:** average daily gains, beef production, crested wheatgrass, forage gaps, livestock production systems, Russian wildrye, stocking rate

# A SOIL WATER CLIMATOLOGY FOR KANSAS

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**ABSTRACT**—Regional climate models suggest that summers in the Great Plains may become increasingly dry during this century, raising concern about the availability of water resources for irrigation and municipal water supplies. While the models predict drier conditions across the region, the impact of climate change on water availability at the local scale will depend largely upon the soils and their ability to store water during dry periods. This study presents a soil water climatology for Kansas using a climatic water balance approach. Monthly observations of temperature and precipitation for the period 1950–2006 are used to calculate climatologies of actual evapotranspiration, soil water utilization and recharge, and runoff at the soil unit level. Results indicate that actual evapotranspiration rates are small across the state during the winter and spring, reaching a maximum during summer. Soil water utilization is greatest during summer in eastern Kansas; soil water recharge is greatest in the spring in central Kansas and during the fall in eastern Kansas. Soil moisture surplus (runoff) is most pronounced in eastern Kansas during spring and early summer, and soil water shortages (deficit) are common year-round in western Kansas and in soils with low field capacities during the summer months.

**Key Words**: climatic water balance, Great Plains, hydroclimatology, Kansas, soil water

# EVALUATING A HYBRID SOIL TEMPERATURE MODEL IN A CORN-SOYBEAN AGROECOSYSTEM AND A TALLGRASS PRAIRIE IN THE GREAT PLAINS

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**ABSTRACT**—Simulation models of soil-related biological processes usually require soil temperature data. Frequently these soil temperatures are simulated, and the soil temperature algorithms cannot be more complicated than the original process model. This situation has led to the use of semi-empirical-type relationships in these process models. The objective of this study was to evaluate a hybrid soil temperature model, which combines empirical and mechanistic approaches, in an agroecosystem and a tallgrass prairie in the Great Plains. The original hybrid soil temperature model was developed and verified for a temperate forest system. This model simulated soil temperatures on a daily basis from meteorological inputs (maximum and minimum air temperatures) and soil and plant properties. This model was modified using different extinction coefficients for the plant canopy and ground litter. The agroecosystem consisted of a no-till rotation system of corn (*Zea mays* L.) and soybeans (*Glycine max* [L.] Merr.). Soil temperatures were measured at different depths in multiple years (three years and two-and-a-half years in the agroecosystem and tallgrass prairie, respectively). In the agroecosystem, the root mean square error of the modified model simulation varied from 1.41º to 2.05ºC for the four depths (0.1, 0.2, 0.3, and 0.5 m). The mean absolute error varied from 1.06º to 1.53ºC. The root mean square error and mean absolute error of the modified model were about 0.1º-0.3ºC less than the original model at the 0.2-0.5 m depths. For the tallgrass prairie, the mean absolute errors of the simulated soil temperatures were slightly greater than the agroecosystem, varying from 1.48º to 1.7ºC for all years and from 1.09º to 1.37ºC during the active growing seasons for all years.

**Key Words**: corn-soybean rotation, litter, no-tillage, simulation, soil temperature, tallgrass prairie