

# ENGINEER CANTONMENT, MISSOURI TERRITORY, 1819-1820: AMERICA'S FIRST BIODIVERSITY INVENTORY

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**ABSTRACT**—It is our thesis that members of the Stephen Long Expedition of 1819-20 completed the first biodiversity inventory undertaken in the United States at their winter quarters, Engineer Cantonment, Missouri Territory, in the modern state of Nebraska. This accomplishment has been overlooked both by biologists and historians, but it should rank among the most significant accomplishments of the expedition. The results of this inventory allow us to evaluate the environmental, faunal, and floral changes along the Missouri River in the intervening nearly 190 years. The historical records form a visual image of a dynamic riverine system in which a highly meandering river flows through a wide valley filled with oxbows, palustrine wetlands, and scattered groves of trees. This system has now been modified to a channelized river with the surrounding wetlands drained and converted to agricultural and municipal purposes. The suppression of prairie fires and the adoption of irrigation practices have promoted the growth of trees and other woody vegetation. The city of Omaha and its suburbs are expanding and encroaching on the site from the south and west. At least three taxa recorded at the site have become extinct—*Ectopistes migratorius* (passenger pigeon), *Conuropsis carolinensis* (Carolina parakeet), and *Canis lupus nubilus* (plains subspecies of the gray wolf)—and several more have been extirpated from the region. For mammals, the data indicate that nine species of the 1819-20 fauna have been lost, and two species have been added, thus resulting in a net loss of seven species. These changes represent a net loss of 15% of the mammalian biodiversity originally present in the Engineer Cantonment area. The species richness estimator for Engineer Cantonment in 1819-20 is 403 for vertebrates, insects, snails, and plants, but it is clear that this number is extremely low, because plants were not thoroughly surveyed by the expedition and only a small fraction of the insects were collected.

**Key Words:** biodiversity inventory, Engineer Cantonment, fauna, flora, Stephen Long, Nebraska, Titian Peale, Thomas Say

# TESTING MULTIGENERATIONAL COLONIZATION OF CARRION BY BLOW FLIES IN THE GREAT PLAINS

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**ABSTRACT**—The relationship between carrion and blow flies is well understood, but in situations where fresh carrion sources are unavailable, as may occur on the Great Plains, the potential for multigenerational colonization of a single carcass exists. By testing this possibility through a replicated choice/no-choice experiment using pig carcasses, we were able to demonstrate that multigenerational colonization of carrion by blow flies does not occur. Fresh pig carcasses were exposed to blow fly infestation, then placed in insect exclusion cages. After the emergence of this first generation of blow fly adults, “choice” cages were supplied with a fresh pig cadaver. No multigenerational colonization of the parent carcass took place in any of the choice or no-choice replicates. This demonstrates that carcasses act as temporary resource islands, with a “window of opportunity” of colonization in the ecosystem, and are vital for the biodiversity of the Great Plains.

**Key Words:** cadaver, Calliphoridae, carcass, decomposition, Diptera, entomology, forensic resource island, taphonomy

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# MAPPING AGRICULTURAL LAND COVER FOR HYDROLOGIC MODELING IN THE PLATTE RIVER WATERSHED OF NEBRASKA

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**ABSTRACT**—Throughout the western United States, natural resources managers are attempting to address the growing, and often competing, demands that municipal, agricultural and environmental interests have for water. The Platte River Cooperative Hydrology Study (COHYST) is a multi-agency effort that seeks to improve understanding of the ecology, geology, and hydrology of the Platte River watershed in central and western Nebraska. Information regarding the types, areal extent, and locations of crops (especially irrigated crops) is critical for estimating consumptive use of water. Digital land-cover and land-use datasets of the central and western Platte River valley have been prepared for four years: 1982, 1997, 2001, and 2005. Mapping was carried out using multirate Landsat satellite imagery in combination with ancillary geospatial data. The mapping was validated using field observations collected independently. Overall accuracy of the maps developed ranged from 74% to 82.7%. All land-cover maps and full documentation are available online at <http://www.calmit.unl.edu/cohyst/>.

**Key Words:** crops, land cover, Nebraska, satellite remote sensing

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# USING SCHOOLS TO MAP THE FRONTIER OF SETTLEMENT ON THE CANADIAN PRAIRIES

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**ABSTRACT**—Most attempts to map the frontier of agricultural settlement in western Canada have used land alienation data or population density calculated from census returns. Both methods are fraught with difficulties. Population density data are only available at five-year intervals at the 36-square-mile township level. Land alienation does not always reflect settlement. In Manitoba, entire townships were alienated years before they were occupied. The organization and building of schools is a better indicator of actual settlement and the emergence of community-based institutions. To test this hypothesis, school formation and land alienation in 35 townships in southeastern Manitoba were plotted. This showed a close correlation between school formation and land alienation. All rural schools in Manitoba were then plotted by year from 1871 to 1959 using GIS software. Interpretation of this mapped data supports the contention that the formation of rural school districts is an effective and easily employed indicator of the limits of frontier settlement. These mapped data suggest that the idea of a well-defined frontier line of settlement is not the best analogy to describe the progress of agricultural settlement in Manitoba.

**Key Words:** frontier, Manitoba, mapping, settlement, schools

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# MAPPING THE DISPOSSESSION: SCANDINAVIAN HOMESTEADING AT FORT TOTTEN, 1900-1930

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**ABSTRACT**—Once Spirit Lake Dakota Reservation was opened to white homesteading in 1904, the turnover of land from Dakota to Euro-American hands was rapid. Scandinavians, the largest foreign-born group in the state, took advantage of this land-taking opportunity and moved onto the reservation in great numbers, acquiring approximately 25% of the land within six years. In effect, while the Scandinavians lived as neighbors with the Dakota, they also became the harbinger of the dispossession of Dakota land.

Using quantitative analysis of landownership specified in plat maps of the reservation in 1910, this article analyzes the gender and ethnicity of the landowners. Oral histories contextualize the processes of land taking and land dispossession. The article then takes stock of landownership in 1929, finding that Dakota landownership declined 50% in less than two decades.

**Key Words:** Fort Totten, homesteading, landowning, Scandinavian, Spirit Lake Dakota Reservation

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# DEVELOPING THE NATURE-BASED TOURISM SECTOR IN SOUTHWESTERN NORTH DAKOTA

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**ABSTRACT**—Rural communities increasingly are looking to the tourism sector as a source of economic growth. Southwestern North Dakota has experienced substantial out-migration and population loss, resulting in designation of the eight-county area as a Rural Economic Area Partnership (REAP) zone in 1995. The purpose of this study was to (1) identify opportunities for expanding the region's tourism sector, (2) identify challenges and obstacles facing tourism businesses, and (3) frame key issues and outline potential options for area decision makers. Information was gathered from (1) a survey of the region's tourism businesses, (2) focus-group interviews with tourism business operators, and (3) personal interviews with community and business leaders. The findings provide insight into the basic characteristics of the tourism businesses, identify some of the key constraints to expansion and development, and identify sector participants' perceptions of opportunities for growth, thus providing direction for future research and policy initiatives.

**Key Words:** agritourism, hunting, nature-based tourism, North Dakota, sector development

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# PERCEPTION OF DROUGHT HAZARD AND ITS SOCIOLOGICAL IMPACTS IN SOUTH-CENTRAL NEBRASKA

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**ABSTRACT**—The lion's share of financial losses caused by drought is shouldered by crop and livestock producers. Producers' perceptions of and responses to drought were studied in the mid-1960s, the mid-1980s, and again in this study. Direct and indirect impacts are experienced by nonfarm businesses, communities, and individuals as well; some of those impacts have not been well researched and were integral to this project. Interviews with crop producers, livestock producers, and community members were conducted in Frontier County, NE, in late summer 2006. Producers are very perceptive of the drought hazard, a result found in the two previous studies. Adoption of drought mitigation practices has increased over the past 40 years. Producers are concerned about the myriad of factors they must consider when planning their farm or ranch operations, particularly as they are trying to adjust to water restrictions imposed as an outcome of the Kansas-Nebraska lawsuit regarding Republican River flow, but overall they are basically optimistic. Community members were very concerned about the future of farming and the quality of rural life. They expressed fears that changes in farming practices may lower the value of land, affect the tax base, and ultimately impact the school system and other county services.

**Key Words:** community, drought, perception, producers, sociological impacts, water restrictions

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# PERSONAL CHARACTERISTICS PRECEDING PRO-ENVIRONMENTAL BEHAVIORS THAT IMPROVE SURFACE WATER QUALITY

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**ABSTRACT**—The decisions made by individual farmers to adopt conservation practices that improve surface water quality will be of increasing importance in the 21st century. Currently, models attempting to explain pro-environmental behaviors ignore or minimize the role of individual personality characteristics. In this paper we give an overview of current research regarding how personal characteristics influence the adoption of Best Management Practices (BMPs) and propose an expansion of measured characteristics to include farmers' work motivation, environmental attitude, and moral reasoning toward the environment. Our purpose is to spur an interest in understanding the antecedents to the pro-environmental behavior of farmers that benefit surface water quality. We include several propositions regarding the direction of correlation between characteristics and pro-environmental behavior. We propose a positive correlation of pro-environmental behavior with a pro-environmental attitude, ecocentric reasoning about environmental issues, intrinsic process motivation, goal internalization motivation, and a farmer's internal self-concept. We propose a negative correlation between pro-environmental behavior and a low environmental attitude, anthropocentric reasoning about environmental issues, instrumental motivation, and a farmer's external self-concept. We also discuss policy and education implications.

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

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