Jan 3rd, 12:00 AM

05. Geography

Northeastern State University

Abstracts from the 2016 Oklahoma Research Day

Held at Northeastern State University

04. Liberal Arts

05. Geography

04.05.01 Analyzing the Feasibility of Sheltered Bus Stops on the Edmond Citylink Bus Routes with Geographic Information Systems

Watkins,Brad *University of Central Oklahoma*

Chopra,Nagesh *University of Central Oklahoma*

The Edmond Citylink is a free public transportation bus service used by commuters to gain access to key locations within and outside the city limits. The onus of providing an effective and efficient bus service rests on the local government such that they satisfy the requirements of users as well as service providers within the limited resource constraints. However, the lack of adequate sheltered bus stops combined with inclement Oklahoma weather raises significant challenges to the main users of this civic service. This study uses geographic information systems (GIS) to analyze the alternatives available for rider comfort. The authors mapped the five routes and stops of the Edmond Citylink bus service. It was found that out of the 32 bus stops, only six have shelters while the rest have benches. Nearby buildings and/or trees along the unsheltered bus stops offered little or no protection from severe weather. Ultimately, the City of Edmond will need to break down the traditional barriers of fragmentation to find a middle ground that improves the basic infrastructure of Citylink (sheltered bus stops).

04.05.02 The Historical Distribution of Eastern Red Cedar (Juniperus virginiana L.) at the University of Central Oklahoma's Selman Living Laboratory

McGregor,Erin *University of Central Oklahoma*

Watkins,Brad *University of Central Oklahoma*

Eastern red cedar (Juniperus virginiana L.) is an invasive species currently encroaching into mixed grass prairies of western Oklahoma. Native to the state, it historically was limited to streambanks and other sheltered areas in prairies, for example, rock outcrops. Understanding the dynamics of plant communities within the context of landscape is critical and leads to better environmental protection. The earlier distributions of eastern red cedar when compared to the current distribution can inform the development of management strategies. The goals of this study are to determine the historical trend, rate of encroachment and the conditions under which eastern red cedar became established in mixed-grass prairies at the western limit of its range in Oklahoma. The authors are utilizing geographic information systems (GIS) to map the landscape-level encroachment of eastern red cedar in a mixed-grass prairie by using georeferenced time-series aerial imagery from 1959, 1965, 1973, 1984, 1990, 2003 and 2013.

04.05.03 GIS for Rural Community Development: Vegetation Management and Fire Safety Assets in Cedar Valley West, Oklahoma

Wieczorek-Pemberton,Mila *University of Central Oklahoma*

Harris,Maxton *University of Central Oklahoma*

Watkins,Brad *University of Central Oklahoma*

Geographic information systems (GIS) is an important tool for community development and management. The authors built a GIS database containing fire safety assets (fire hydrants and water pipelines) and the vegetation structure and management of eastern red cedar (Juniperus virginiana, L.) trees within Cedar Valley West, Oklahoma. In addition to analysis, GIS provides mapping and visualization capabilities for effective communication of results. We analyzed the spatial properties of fire safety assets and vegetation distribution in relation to built structures within the community. Through fieldwork and research, we built a spatial database that can be used for community planning, development, and management. The results of this project have been used to attain grant funds to expand the fire safety infrastructure in Cedar Valley West, Oklahoma.