Land Use Change in the Eastern Corn Belt Plains Ecoregion, 1970 to 2000

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BACKGROUND

Land Cover Trends is a research project focused on understanding the rates, trends, causes, and consequences of contemporary U.S. land use and land cover change. The research is supported by the Geographic Analysis and Monitoring Program of the U.S. Geological Survey (USGS) and is a collaborative effort with the U.S. Environmental Protection Agency (EPA) and the National Aeronautics and Space Administration (NASA).

The Land Cover Trends project uses the EPA defined Level II ecoregions as the spatial framework for national assessment and reporting. Ecoregions are designed to serve as a spatial framework for environmental resource management. They denote areas that contain a geographically distinct assemblage of environmental conditions, natural communities, and plant species. The rates of land use and land cover change are estimated using a stratified random sampling of 10-km by 10-km blocks allocated within the ecoregion framework.

During the Spring 2010 semester, two undergraduate students and one faculty member at EIU, cooperated with the Land Cover Trends Project by working on three of the 10-km sample blocks located in the Eastern Corn Belt Plains Ecoregion. The work was funded by a Council on Faculty Research Grant from Eastern Illinois University which helped pay for software, travel, and student work.

This poster displays the land cover interpretation results of those three sample blocks. Data from these blocks were then combined with data from the other 30+ sample blocks to show the overall land use and land cover change that has occurred in this region during the 30-year study period.

STUDY AREA

The Eastern Corn Belt Plains ecoregion is perfectly a rolling hill plain with low-relief mesas, in full mature forest cover and has fewer natural tree cover and farming decline (due to the Eastern Corn Belt Plains (ECP)). The region is shaped like a large sand dune, with alluvial plain in the Southeastern Illinois region. The region's climate is continental with cold winters and hot summers.

RESULTS

Block 656 is located on the southeast edge of Indianapolis, IN. Urban development was the predominant land cover change, mostly at the expense of agricultural lands. Of the three Corn Belt ecoregions, this region saw the highest amount of urban development.

Block 513 is located 40 miles east of Indianapolis on I-70, and is highly representative of this ecoregion. Very little change was observed throughout the study period. Most of the land is agricultural with a smattering of trees and rural residences.

Block 101 is located in north-central Ohio, just west of Buckeye. It is bisected by the Sandusky River. Most of the change occurring in this block is related to new exurban housing development with a small loss of forest and agricultural lands.

SUMMARY

This project conducted land use and land cover interpretation in three 10-km by 10-km sample blocks in the Eastern Corn Belt Plains Ecoregion. Of the three Corn Belt Plains ecoregions, this region experienced the greatest amount of total change (6.4%), and by far the greatest increase (5.6%) in developed land. Further west in the Central and Western Corn Belt Plains Ecoregions, lower amounts of total change were found (3.4% and 3.2%, respectively).

Land change in the Eastern Corn Belt Plains is expected to continue to follow the trends seen in this research. Large and moderate-size urban areas will continue growing out into nearby agricultural lands, while further away from the urban fringe, new exurban housing will do the same. The changes seen in this region are indicative of common land use and land cover changes seen in densely populated, highly agricultural regions.