

## An Assessment of Tree Canopy Change at Indiana University, 2008 – 2012

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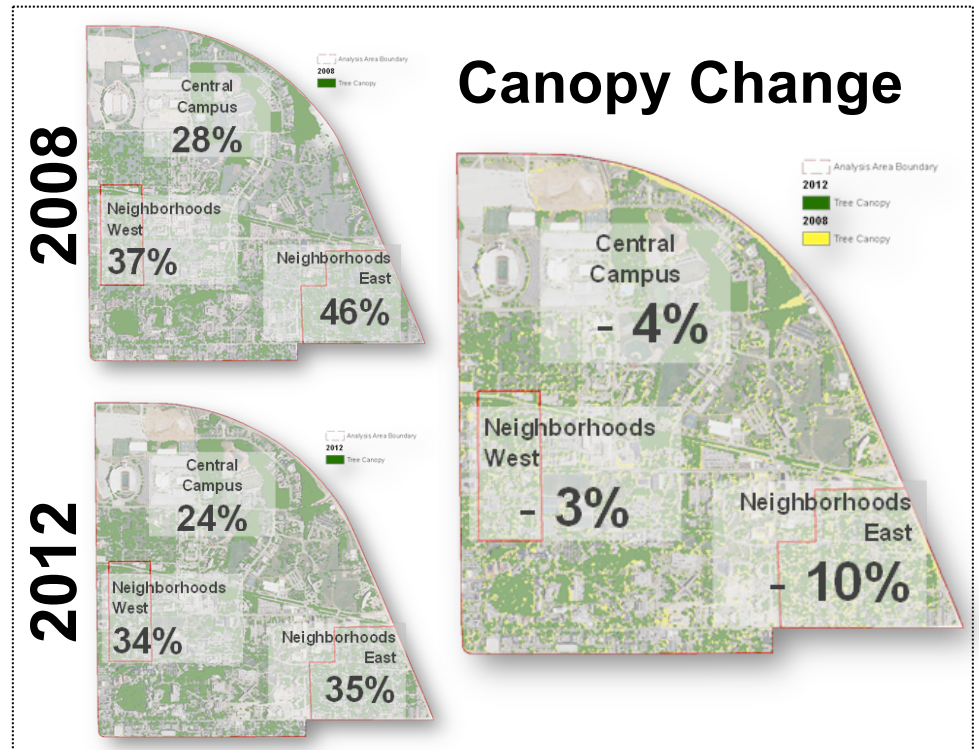
**Project Overview:** Woodlands and trees on the campus of Indiana University Bloomington (IUB) are an integral component of the character, health, beauty and distinction shared by visitors, students, and life-long residents. The distinction was galvanized in 2008 when IUB became one of the first Campus Tree USA (see [Arbor Day Foundation Campus Tree USA](#) program) institutions. Construction of new facilities and infrastructure and natural processes have resulted in recognizable declines in campus trees and forests, but changes have not been quantified until now.

**Objective and Methods:** The objective of this project was to conduct a land cover change assessment between 2008 and 2012 across the core of IUB's campus (south and west of the Indiana 46 bypass) and adjacent residential areas. Tree canopy in 2008 was mapped using National Agriculture Imagery Program (NAIP) imagery and 2012 canopy was mapped using NAIP and 2011 LiDAR for Monroe County (both available through the Indiana Spatial Data Portal (ISDP)). Manual quality control was used to reach 95% or better accuracy for tree canopy in each time period.

**Results:** Results demonstrate that tree canopy declined across the 1,245 acre study area from 372 acres (30%) in 2008 to 319 acres (26%) in 2012. Comparisons between campus and neighborhoods indicate the greatest decline in residential areas southeast of campus.

- Central campus (1,055 total acres) showed a tree canopy decline from 290 acres (28%) in 2008 to 253 acres (24%) in 2012.
- Residential areas in the west and east (61 and 129 total acres respectively) declined from 23 acres (37%) to 21 acres (34%) in the west and from 59 acres (46%) to 45 acres (35%) in the east.

These trends are illustrated in the figure above.



**Tree Canopy Change.** Tree canopy was mapped using remote sensing for (top left) 2008 and (bottom left) 2012 across Indiana University's Bloomington campus and adjacent residential areas. Comparison between the two time periods (right; 2008 in yellow, 2012 in green) reveals a shrinking forest within all analysis areas.

**Follow-on:** The tree canopy change study results are being used by the Indiana University Office of Sustainability's Environmental Quality and Land Use Committee to address one of their four focus areas (Land) and a specific campus goal "To ensure sustainable open space planning."

**Acknowledgements:** This project was supported in part by the IndianaView Consortium.

### FOR FURTHER READING:

Indiana University 2010 master plan.

<http://masterplan.indiana.edu/iub/contents.cfm>

Indiana University Office of Sustainability. GIS and Street Tree Inventory and Analysis. <http://sustain.indiana.edu/>