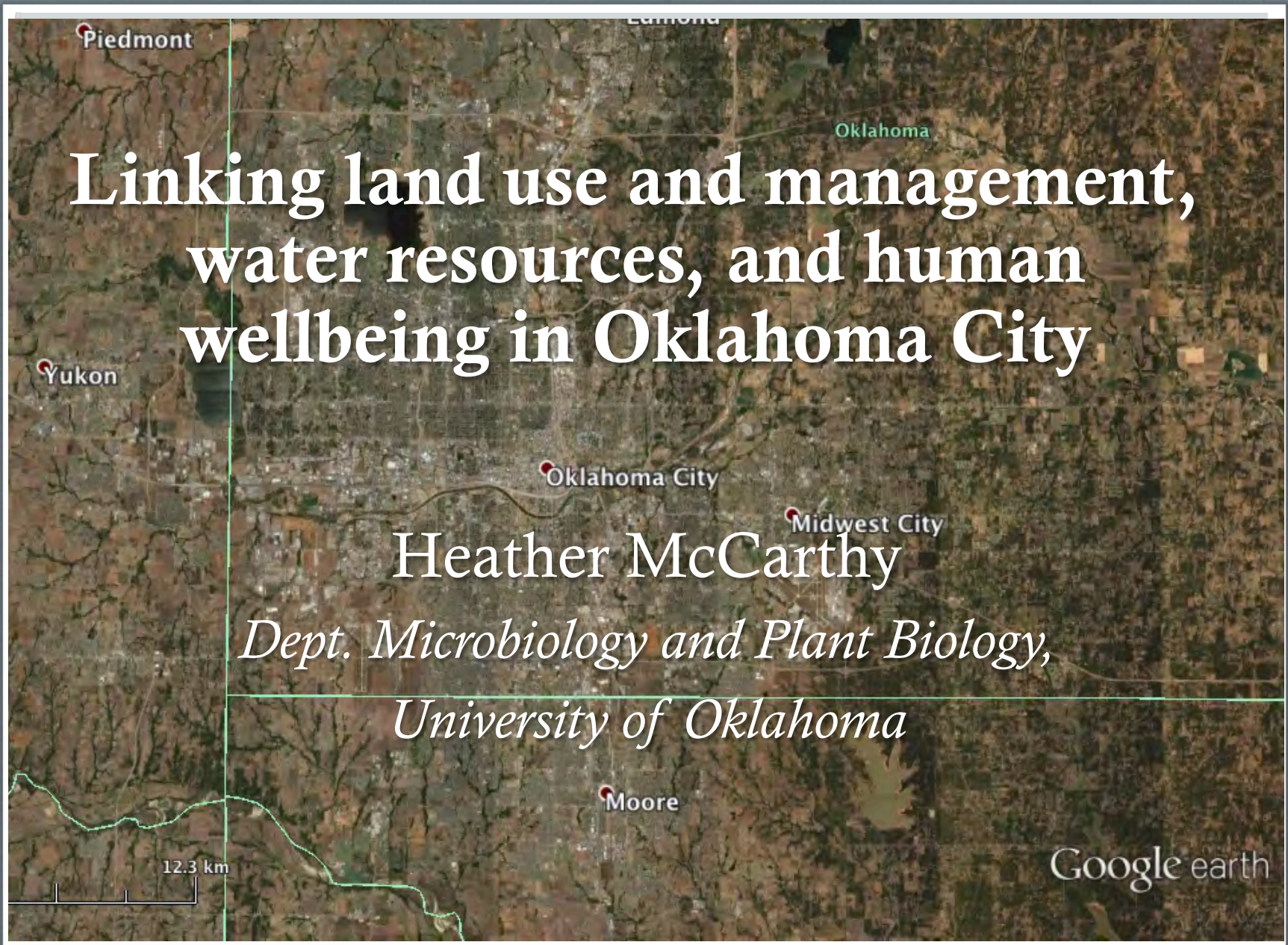

Linking land use and management, water resources, and human wellbeing in Oklahoma City

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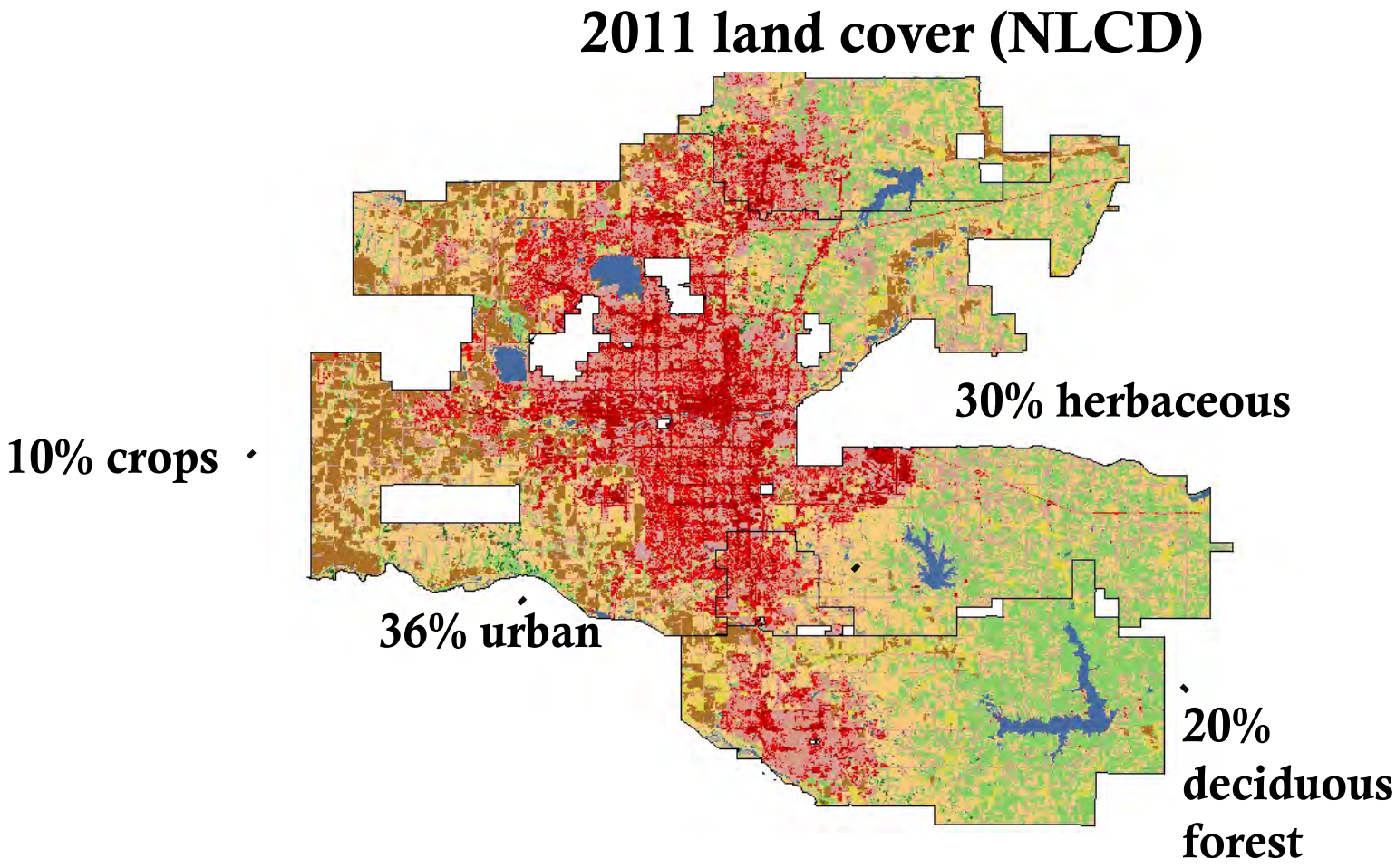
Team:

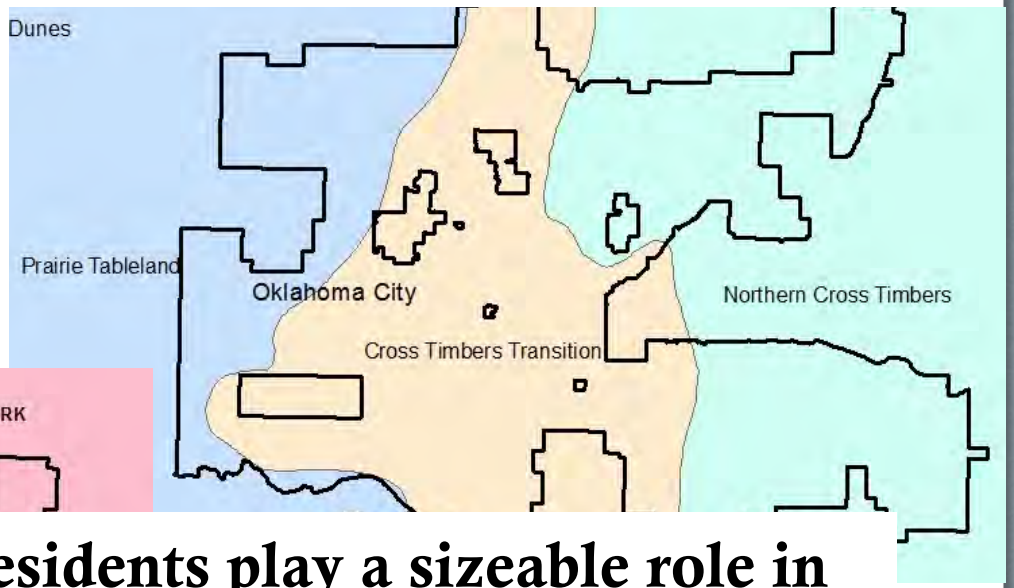
- **Beth Caniglia**, *Sociology, OSU*
- **Tracy Boyer**, *Agricultural Economics, OSU*
- **Garey Fox**, *Biosystems and Agricultural Engineering and Oklahoma Water Resources Center, OSU*
- **Jack Friedman**, *Center for Applied Social Research, OU*
- **Jennifer Koch**, *Geography and Environmental Sustainability, OU*
- **Renee McPherson**, *Geography and Environmental Sustainability, OU*
- **Xiangming Xiao**, *Microbiology and Plant Biology, OU*

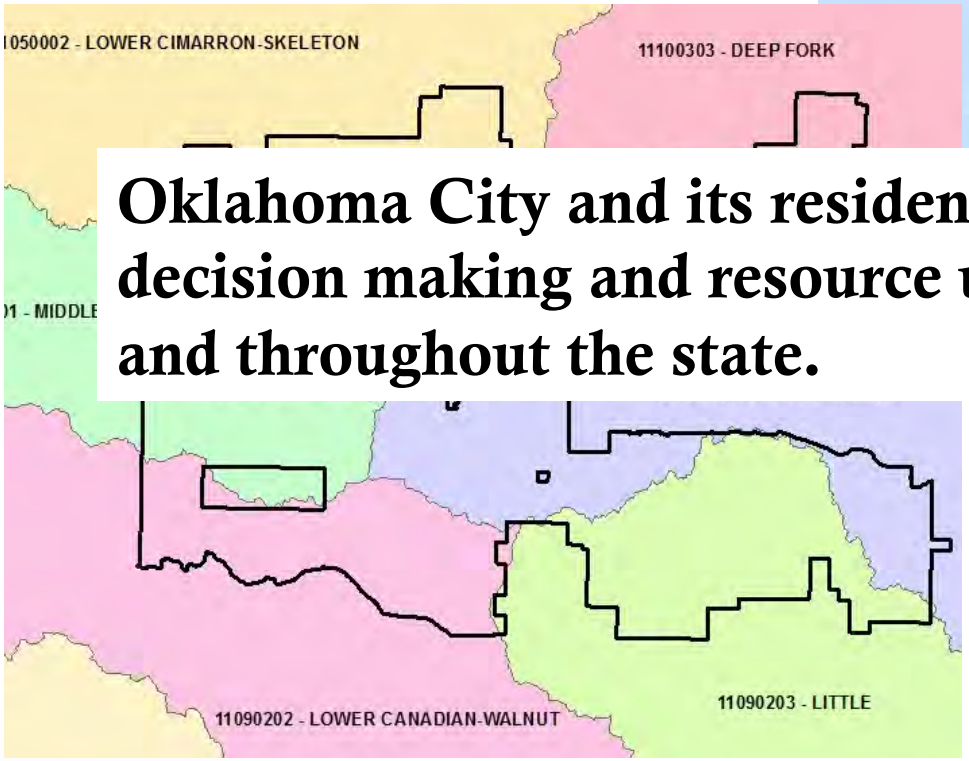
Setting: Oklahoma City Metro



Oklahoma City conforms to social and political rather than watershed boundaries. Its large geographical area spans:

- 4 counties
- 6 watersheds
- 3 major ecoregions



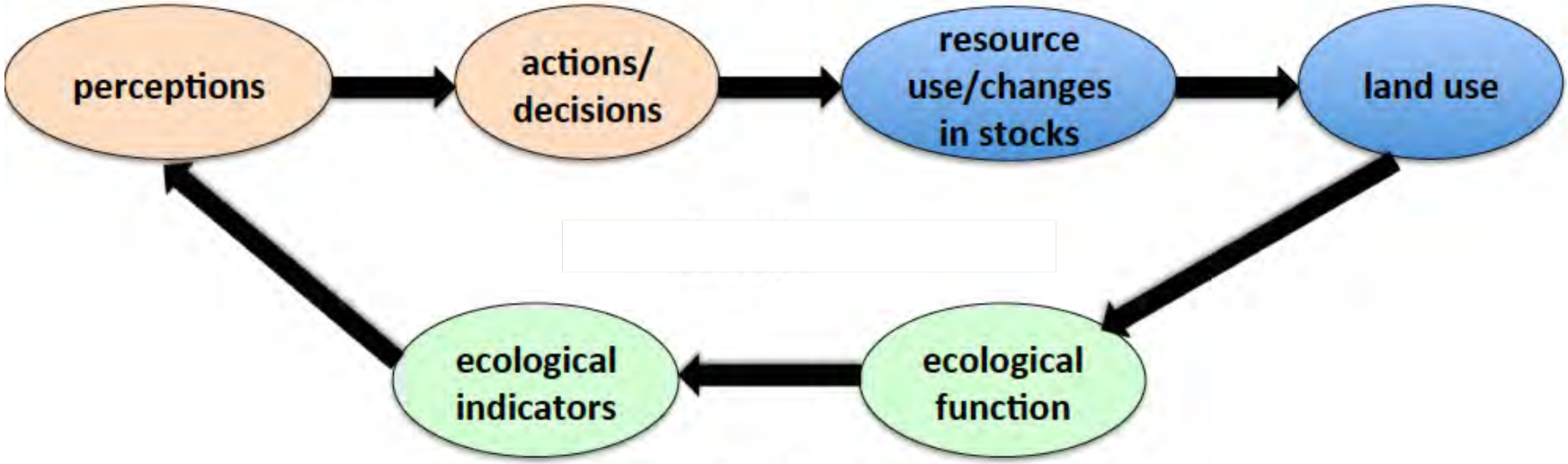


Oklahoma City and its residents play a sizeable role in decision making and resource use in Central Oklahoma and throughout the state.

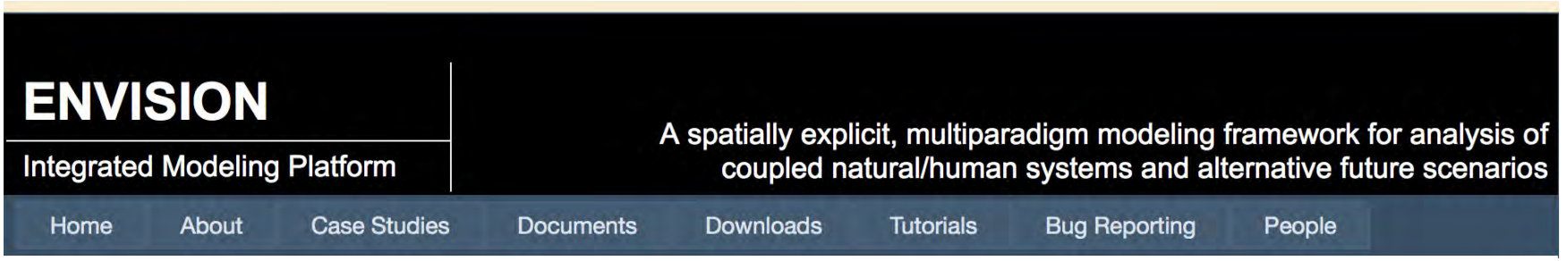
diverse actor groups

Overarching questions:

- How do changes in land use, land management and water resource use feed back to impact human wellbeing?
- What ecological metrics or indicators do people perceive and respond to?



Tools: ENVISION

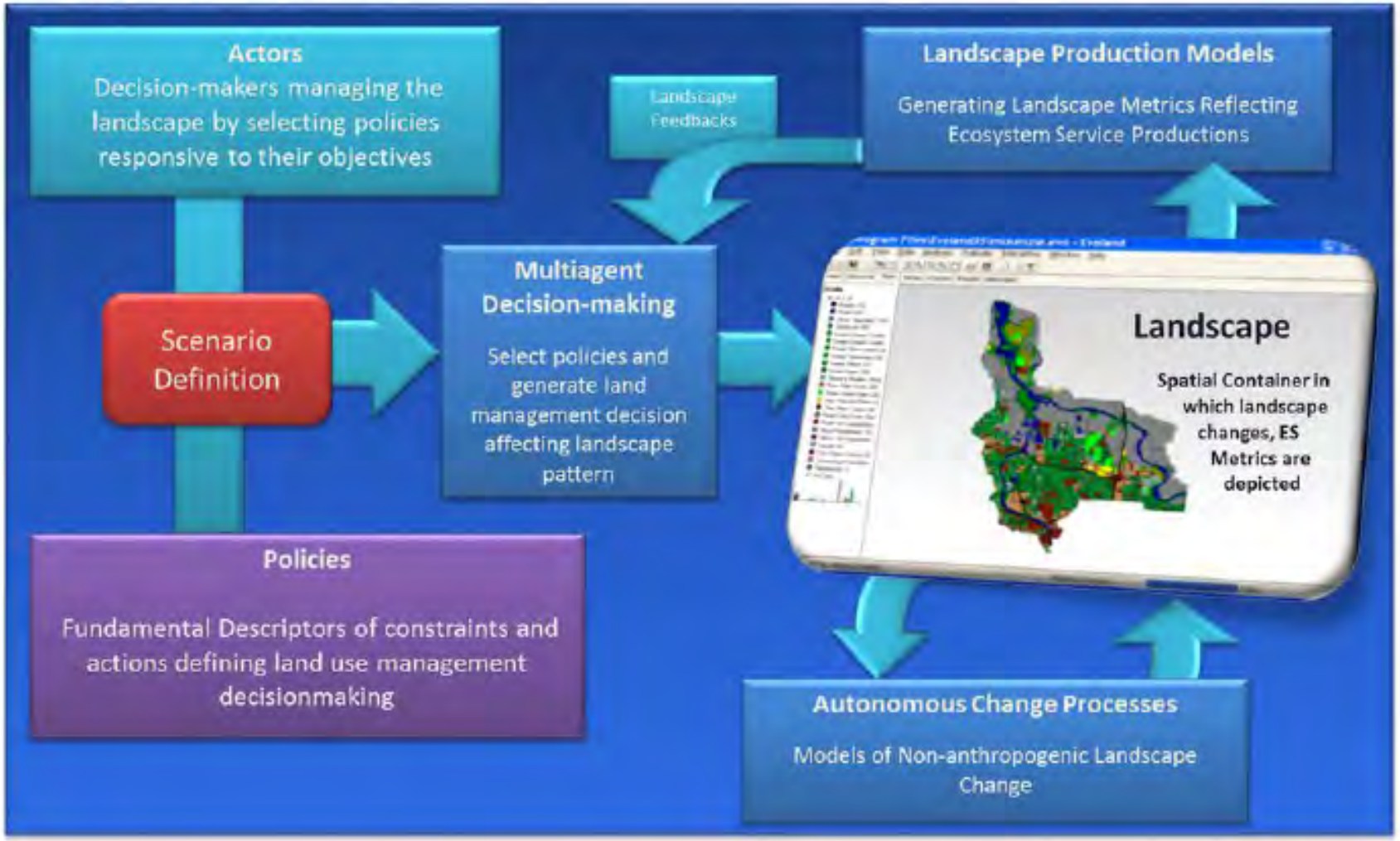


Characteristics:

- GIS-based tool
- Open-source, freely available
- Analysis and simulation of actor decision making in parallel with landscape change
- Alternative futures analyses
- Adaptable to a variety of geographic locations and application domains

Tools: ENVISION

Conceptual Framework:



Identified data needs:

- Remote sensing data of land cover and fluxes, at varying spatial resolutions (very fine – 1m to relatively fine – 30m)
- Basic demographic data (census block data)
- Data on water costs, policies, and regulations
- Metrics on human wellbeing
- Understanding of municipal and household decision making regarding water resources
- Water budget (including human infrastructure and local hydrology)
- Quantification of ecosystem services provided by urban landscapes

Examples of available data:

household water use and adoption of water conservation measures

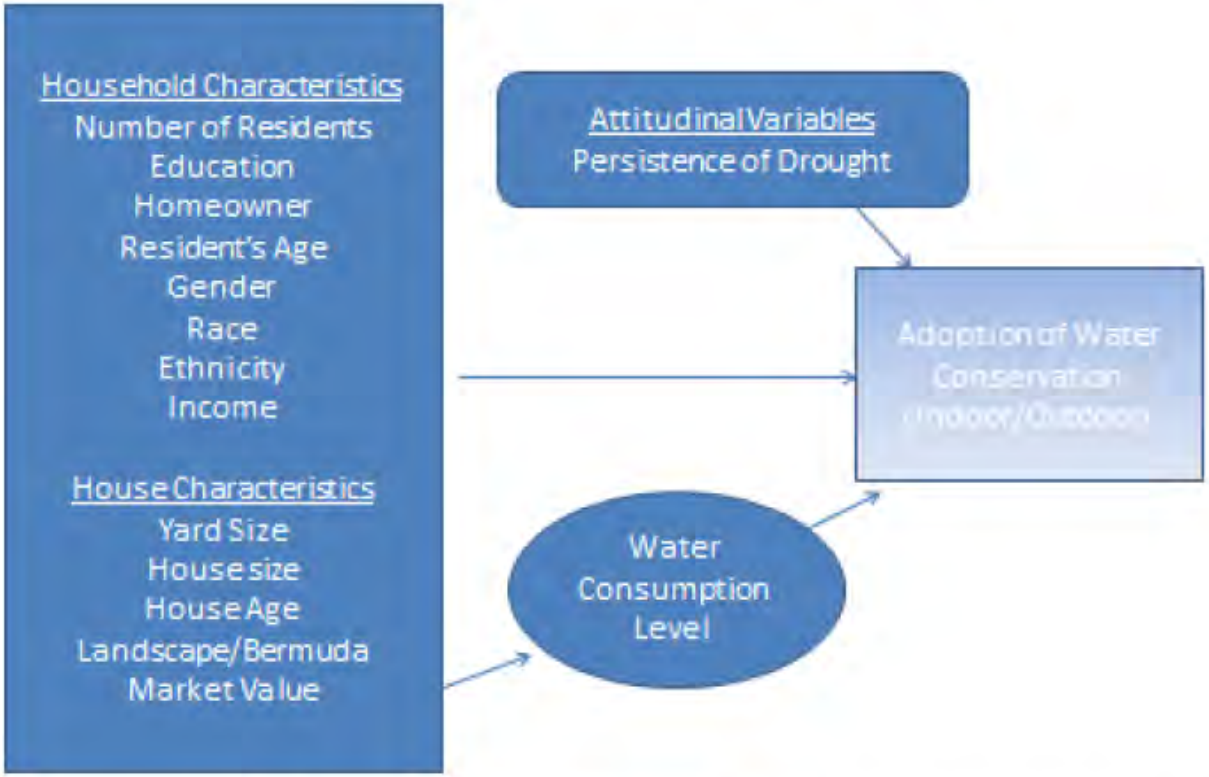
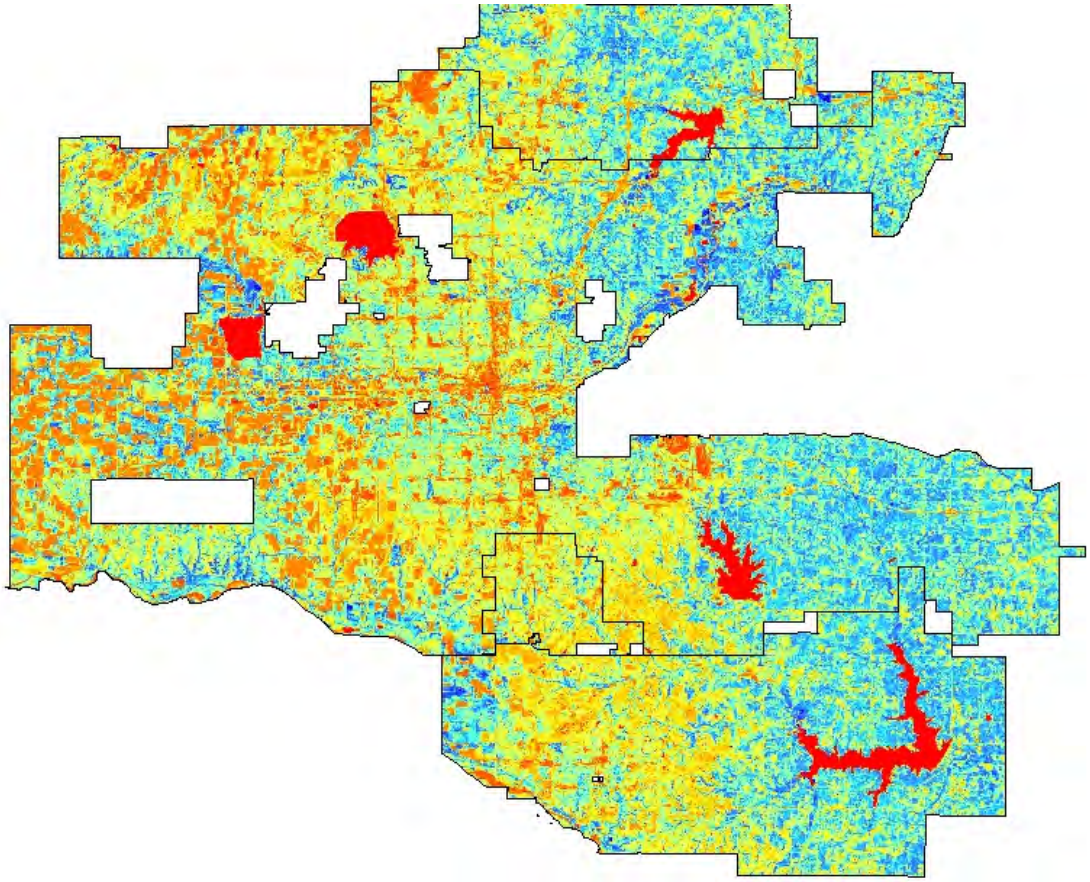


Figure 1. Hypothesized Influence of Independent Variables on Indoor and Outdoor Adoption of Conservation Measures

Tracy Boyer et al, *Water Economics and Policy* (2015)

Examples of available data:

remotely sensed land cover, greenness, primary productivity, evapotranspiration



Landsat 30m Enhanced vegetation index (EVI)

Xiangming Xiao

Examples of available data:

access to greenspaces, influence of policies to increase access

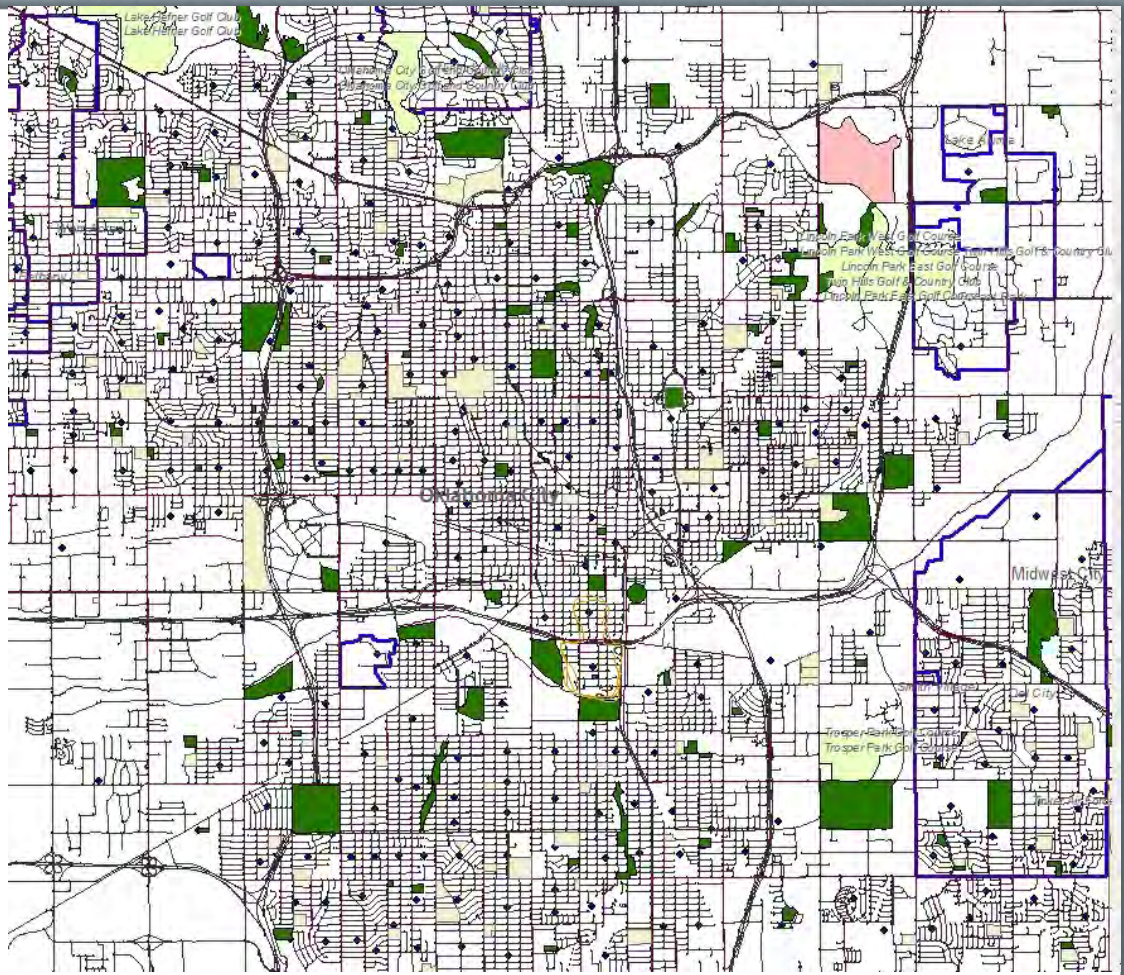
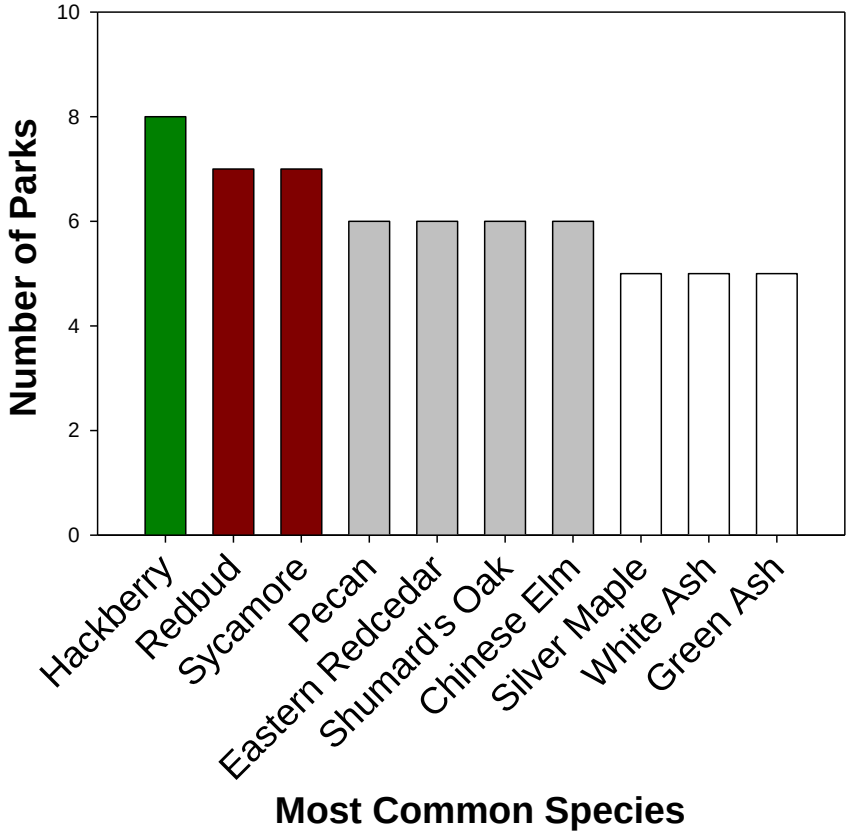


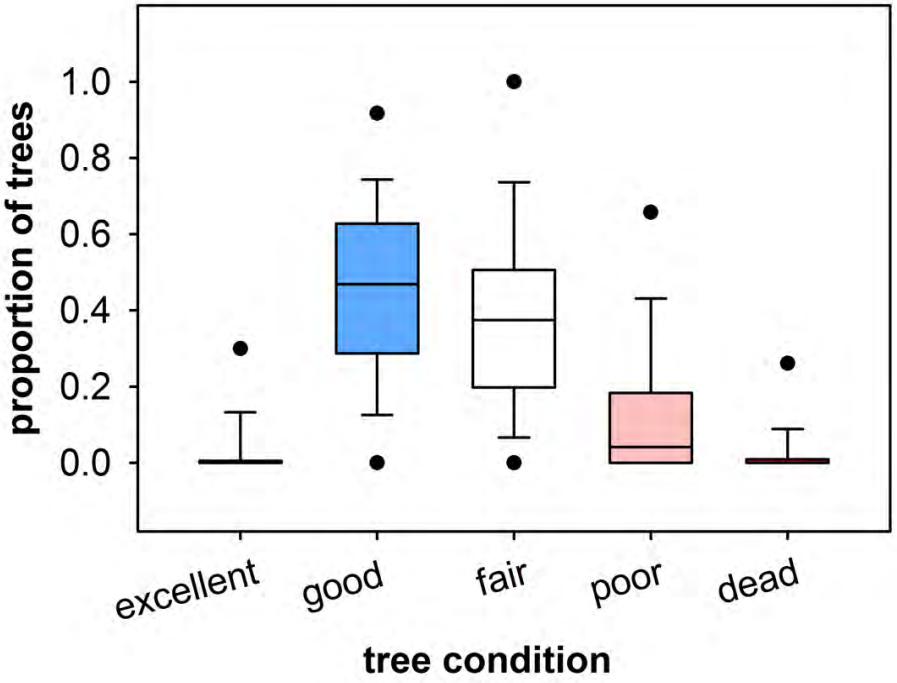
Figure 6: Smaller Green Spaces in the Inner City Area

Daisha Delano, MA thesis (advisor: Beth Caniglia)

Examples of available data:

urban forest composition, condition, growth, mortality





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What next?

- Compile additional (relevant) information
- Determine appropriate scenarios
- Begin model construction

Conceptual Framework: