

ESTIMATING ABOVE AND BELOW GROUND VEGETATION BIOMASS AND CARBON  
STORAGE ACROSS AN INTRA-URBAN LAND-USE GRADIENT IN MID-MISSOURI

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ABSTRACT

Urbanization includes a gradient of disturbance along which impacts on vegetative communities can widely vary. Urban forests play a vital role as carbon sinks for atmospheric carbon dioxide. In order to further understanding of the impacts of urbanization on vegetative communities and carbon storage six intra-urban 50m<sup>2</sup> plots were surveyed for vegetation characteristics such as species richness, basal area, proportion invasive species, and species morphometrics. Morphometric data were used to quantify vegetative biomass and carbon storage. Trees within the bottomland hardwood forest were shown to be significantly larger in DBH and canopy height than all other sites. Total estimated carbon storage was also largest within a bottomland hardwood forest (38,990.2kg) and smallest within a bottomland floodplain grassland site (15.9kg). Carbon storage estimates generated with i-tree Eco were significantly smaller ( $p = .00013$ ) than estimates made with allometric biomass equations. This study increases understanding of vegetative communities' composition, biomass and carbon storage across an intra-urban gradient and provides science-based information that will improve urban forestry practices.