ARBORICULTURE & URBAN FORESTRY
Volume 52, No. 2, March 2026
Formerly the Journal of Arboriculture, 1975 – 2005 (Volumes 1 – 31)

CONTENTS

Abstract. Background: Practitioners rely on sample-based estimates of street tree population characteristics when complete inventories are not feasible. Selecting a sample size is a primary consideration when implementing a sample-based inventory, as it involves a tradeoff between costs and data quality. Methods: We used street tree inventory data from 16 municipalities in Indiana, USA, to assess how data quality improves with increasing sample size. Specifically, we conducted 1,000 random draws of street segments at increasing sample depths to observe how estimates improved for the number of total trees citywide, species richness, species diversity, and vulnerability to an invasive pest. Results: Compared to previous research, our results indicate that a larger percent of sampled street segments is needed to achieve relative standard error values below the heuristic target of 10%. We also calculated reliability thresholds that showed the percent of street segments that would need to be inventoried to achieve estimates within a given margin of the true citywide value in 95% of random draws. Again, relatively large random samples were needed to reliably achieve accurate estimates of street tree characteristics, especially in smaller municipalities. Conclusions: This study provides information that practitioners can consider when planning street tree sampling given the community's size, capacity to inventory trees, and level of data quality needed for planning and management activities. In general, we suggest that municipalities may need to acquire larger samples than previously thought to achieve accurate estimates of citywide street tree characteristics, and smaller municipalities should conduct complete inventories when possible.

Keywords. Data Collection; Municipal Forestry; Tree Inventory; Urban Forest Management.

Abstract. Urban forests have been widely recognized as a nature-based solution to address urban environmental changes like urban heat islands. Although previous studies have explored the cooling effects of urban forests, the extent of this effect and related influencing factors remain unclear and have not been comprehensively synthesized yet. To fill this research gap, we conducted a systematic literature review using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) method with 20 keywords and their combinations in Web of Science to address 3 main research questions: (1) what is the cooling range of urban forests; (2) what are the factors that may affect the cooling effects; and (3) how can we better manage urban forests to optimize cooling effects? We systematically reviewed 73 peer-reviewed articles selected from an initial pool of 4,072 search results following the PRISMA method. We found that urban greenspaces generally have cooling effects, but it is challenging to draw a clear conclusion on the cooling range due to variation in study design, measurement approaches, spatial scales, and local climate contexts. Moreover, the main influencing factors include land cover compositions, tree cover and canopy structures, leaf area index, forest types and tree species, and spatial arrangements of urban vegetation. Additionally, the cooling benefits of urban forests might be affected by local background climate and weather conditions, as well as distances from water bodies. These findings can help guide urban greening efforts (e.g., land cover types, tree species selection, and spatial arrangements) to achieve a greener and cooler future.

Keywords. Air Temperature; Land Surface Temperature; Nature-Based Solutions; Urban Greenspaces; Urban Heat Islands.

Abstract. Background: For the past 20 years, approximately twice as many trees were removed annually from urban areas in the USA as were harvested annually from the US National Forest System. Yet, most of this wood is treated as waste instead of as a valuable resource to generate economic growth and sustainable cities. Residential landowners are key actors in the establishment of local urban wood economies as both sources of material and users of urban wood products, yet they remain a difficult to reach group compared with others, such as tree care companies, mill operators, and public landowners. Methods: We analyze a representative survey of urban residential landowners in 6 United States cities. We assess (1) status of participation in urban wood systems; and (2) interest in and perceived importance of urban wood

Abstract. Background: Street tree plantings are common in urban greening programs, and these trees provide important ecosystem services that increase as trees survive to maturity. Field-based monitoring to understand mortality rates and causes is valuable for urban forest management but very time-consuming. Methods: We used street-level imagery to virtually monitor survival for 2,884 street trees over several years postplanting in Philadelphia, Pennsylvania, United States. Results: We observed similar mortality rates to other studies, with 7.5% of trees dead or removed by the first summer after planting and the mortality rate dropping to 3.5% between the third and fourth summers postplanting. Logistic regression models were constructed over various time horizons to understand which site, neighborhood, and species characteristics related to survival outcomes. These models showed that higher tree survival was associated with less impervious surface surrounding the tree; lower social vulnerability in the neighborhood; and tree planting in the fall season as opposed to spring. Conclusions: Our results point to management activities that could improve survival outcomes, such as planting site enhancements and establishment maintenance, as well as the use of monitoring data to drive decisions regarding planting season. This study demonstrates the value of street-level imagery interpretations to provide mortality data on a large number of street trees planted over multiple years.

Keywords. Civic Science; Street Tree; Street View; Tree Mortality; Tree Planting Initiative; Urban Forest Management.