ARBORICULTURE & URBAN FORESTRY
Volume 34, Issue 6, November 2008

Formerly the Journal of Arboriculture, 1975 – 2005 (Volumes 1 – 31)

www.isa-arbor.com

CONTENTS

Abstract. With the availability of many sources of imagery and various digital classification techniques, assessing urban forest canopy cover is readily accessible to most urban forest managers. Understanding the capability and limitations of various types of imagery and classification methods is essential to interpreting canopy cover values. An overview of several remote sensing techniques used to assess urban forest canopy cover is presented. A case study comparing canopy cover percentages for Syracuse, New York, U.S. interprets the multiple values developed using different methods. Most methods produce relatively similar results, but the estimate based on the National Land Cover Database is much lower.
Key Words. Remote Sensing; Urban Tree Canopy.

Abstract. The U.S. Department of Agriculture, Forest Service (USFS), together with state partners, developed methods to monitor urban forest structure, function, and health at a large statewide scale. Pilot studies have been established in five states using protocols based on USFS Forest Inventory and Analysis and Forest Health Monitoring program data collection standards. Variables and data analysis are described. Advantages of a large-scale monitoring study are discussed and examples of results from Wisconsin are presented. Studies in Indiana, Wisconsin, New Jersey, Tennessee, and Colorado, U.S., have shown that urban forest health monitoring data collection and analysis is feasible and can be implemented nationally.
Key Words. Forest Health Monitoring; Forest Inventory andAnalysis (FIA); Urban Forest Effects Model (UFORE); Urban Forestry, Wisconsin, U.S.

Abstract. To properly manage urban forests, it is essential to have data on this important resource. An efficient means to obtain this information is to randomly sample urban areas. To help assess the urban forest structure (e.g., number of trees, species composition, tree sizes, health) and several functions (e.g., air pollution removal, carbon storage and sequestration), the Urban Forest Effects (UFORE) model was developed. Data collection variables and model methods are detailed and urban forest structure results are compared among 14 United States cities with average tree density ranging between 22.5 trees/ha (9.1 trees/ac) in Casper, Wyoming, U.S. to 275.8 trees/ha (111.6 trees/ac) in Atlanta, Georgia, U.S. Advantages and disadvantages of this ground-based method of assessing urban forest structure, functions, and values are discussed.
Key Words. Air Pollution Removal; Carbon Sequestration; Tree Measurement; Urban Forest Monitoring; Urban Forest Sampling.

Abstract. A method combining numeric data collection with the preparation of street tree cross-sections and plans, based on surveys of 33 urban forests around the world, is reviewed. The combination can provide design professionals with graphic information on urban forest structure not collected by more traditional methods for urban forest inventories.
Key Words. Composition; Planting Space; Species Frequency; Street Cross-Section; Street Plan; Structure; Tree Spacing.

 ISSN:1935-5297

Abstract. Surveys of urban forests in the compact city environment of Hong Kong were initiated in 1985 and regularly updated thereafter. Roadside trees were evaluated first in a tree census and reported in this article followed by urban parks, public housing estates, and special habitats such as old stone walls or special specimens such as heritage trees. The survey method aimed at collecting comprehensive data to echo both tree conditions and treeâ€“environmental interactions. Detailed information was gleaned, with the help of well-trained assistants, on tree sites, tree growing space, tree structure, and tree defects and disorders. A field record form was designed, pilot-tested, and refined to solicit responses to multiple choices or direct measurements to minimize subjectivity and errors in data recording and entry. The study also identified potential planting sites, registering suitability for tree growth, site characteristics, and dimensions. Data fields were designed to be quantitative or convertible to ordinal ranks to facilitate statistical analysis. Locations of trees and planting sites were marked on large-scale maps to permit spatial analysis. Besides statistical analysis, community ecology attributes and custom-designed indices were used to assess urban forest structure. The multipurpose method could be appropriately adjusted for use in other compact city areas.
Key Words. Compact City; Forest Structure; Heritage Tree; Hong Kong; Planting plan; Species Composition; Species Diversity; Tree Census.

Abstract. This article summarizes the assessment of the urban forest structure and health in central areas of Shenyang, China. Urban forest cover analysis was conducted using aerial photographs, satellite imagery, and a field survey of 282 plots as major study methods. Based on the location, function, and management objectives, the urban forests were classified into five cover types: landscape forests, ecologic forests, road forests, park forests, and commercial forests. Total tree cover in the study area is 7.85%. Most trees and shrubs are in good to very good health and have relatively small diameter at breast height and height. The major tree species are different in urban and suburban areas, which was the result of the natural occurrence of the species and manmade disturbances. Major recommendations for the future management include increasing urban forest cover, especially in the city center, east side, and outskirts; and increasing species diversity and urban forest connectivity.
Key Words. Distribution; Health Condition; Species Composition; Tree Cover; Urban Forest Structure.

Abstract. Accurate field data can be used to assess ecosystem services from trees and to improve urban forest management, yet little is known about the optimization of field data collection in the urban environment. Various field and Geographic Information System (GIS) tests were performed to help understand how time costs and precision of tree population estimates change with varying plot and sample sizes in urban areas using random sampling approaches. Using one-tenth acre (0.04 ha) plots, it is estimated that, on average, approximately three plots per day can be measured with plot data collected on several variables for all trees greater than 1 in (2.54 cm) in diameter along with general plot, ground cover, and shrub data. A field crew of two people can gather approximately 200 one-tenth acre (0.04 ha) plots during a 14 week summer field season depending on city traffic, city area, and tree cover conditions. These 200 plots typically yield approximately a 12% relative standard error on the total number of trees.
Key Words. Tree Measurement; Urban Forest Monitoring; Urban Forest Sampling.