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Abstract. Increasingly, homeowner associations and municipalities are requiring a certain percentage of native trees and shrubs as part of any new landscape installation. These native species mandates make numerous claims as to the superiority of native plants over introduced species, including their ability to enhance ecosystem biodiversity. In contrast, nonnative trees and shrubs are labeled as harmful to biodiversity, primarily because they are improperly grouped with known invasive species. This review summarizes the current published science regarding the effects of native and nonnative woody species on urban landscape stability as measured by biodiversity of associated plants, birds, insects, reptiles, and mammals. The preponderance of studies demonstrate that parameters other than species nativity have the greatest influence on biodiversity of these groups. Rather than limiting tree and shrub selection lists to a narrow palette of native species, a more practical, science-based approach to enhancing urban landscape biodiversity is suggested.

Key Words. Alien Species; Biodiversity; Botanical Gardens; Golf Courses; Home Gardens; Native Species; Nonnative Species; Planting Mandates; Public Parks; Residential Landscapes.

Abstract. Past research on urban ecosystem performance has focused mainly on ecosystem services, rather than disservices. However, to justify and fully utilize urban ecosystems, it is important also to assess and minimize the disservices they provide. The aim of this pilot study in Sweden was to contribute to the emerging understanding of urban ecosystem disservices. The central research question focused on how complaint/comment recordings at municipal park departments could be used as a source of knowledge on urban tree disservices. Records obtained from the municipal park departments in the three largest cities in Sweden provided evidence of several types of disservices. However, they also had obvious shortcomings that would need to be resolved before they could be used more widely as a source of information on ecosystem disservices. Suggestions for improving the data are provided.

Key Words. Municipal; Public Opinion; Sweden; Urban Tree Management.

Abstract. Bark-included junctions in trees are considered a defect as the bark weakens the union between the branches. To more accurately assess this weakening effect, 241 bifurcations from young specimens of hazel (*Corylus avellana* L.), of which 106 had bark inclusions, were harvested and subjected to rupture tests. Three-point bending of the smaller branches acted as a benchmark for the relative strength of the bifurcations.

Bifurcations with included bark failed at higher displacements, and their modulus of rupture was 24% lower than normally formed bifurcations, while stepwise regression showed that the best predictors of strength in these bark-included bifurcations were the diameter ratio and width of the bark inclusion, which explained 16.6% and 8.1% of the variability, respectively. Cup-shaped, bark-included bifurcations where included bark was partially occluded by xylem were found, on average, to be 36% stronger than those, where included bark was situated at the bifurcation apex.

These findings show that there are significant gradations in the strength of bark-included bifurcations in juvenile hazel trees that relate directly to the level of occlusion of the bark into the bifurcation. It therefore may be possible to assess the extent of the defect that a bark-included bifurcation represents in a tree by assessing the relative level of occlusion of the included bark.

Key Words. Bifurcation; *Corylus avellana*; Hazel; Included Bark; Rupture Tests; Three-Point Bending.

Abstract. Expanding urbanization, characterized by increased impervious surfaces and decreased tree canopy, is contributing to rising urban temperatures. This trend has implications for energy consumption and human health, which urban trees may help mitigate by casting shade upon building surfaces. This study looks at how tree form and placement can improve on current shade tree planting guidelines to more effectively use shade trees to offset this trend. Shade provision is not only a function of tree characteristics but also daily, seasonal, and latitudinal variability in sunlight exposure. In order to understand how these variables influence shade provision and to evaluate existing tree planting guidelines, a computer program called Shadow Pattern Simulator was employed to quantify shade cast by a single tree upon a prototypical residential structure in four U.S. cities. A total of 576 shade simulations showed large trees situated within five meters on the east or west aspect of the structure provided the greatest amount of shade during the cooling season. The simulation results affirm existing tree planting guidelines in the northern latitude that recommend planting shade trees on the east or west aspect while avoiding tree plantings on the south to minimize the heating penalty of unwanted shade in northern latitudes. However, planting trees on southerly aspect should not be discounted in southern latitudes because the shorter heating season lessens the detrimental heating penalty of unwanted shade while providing much-needed cooling season shade.

Key Words. Climate Change; Cooling; Energy Conservation; Heat Stress; Heating; Urban Heat Island; Urban Tree Canopy.

Abstract. Trees on the campus of Auburn University (Auburn, Alabama, U.S.) were used to test the efficiency of different crew sizes in conducting a 100% tree inventory. Seventy trees were randomly sampled at-large from a previously conducted 100% inventory (7,345 trees) on the Auburn University campus. Different crews consisting of one, two, or three individuals collected and recorded data using a GPS unit that timestamped the initiation and completion of data collection for each tree. The average time spent per tree was then calculated. Crews visited separate trees each time so there would be no overlap or bias. Each tree sampled was visited by all three crew sizes at different times. The relationship of sampling time per tree with increasing tree dbh was determined using regression analysis and subsequently likelihood ratio F tests. There was no statistical difference in the interval required to inventory a tree as dbh approached 0 (intercept, fixed time) for a two- and three-person crew, but the set-up (fixed) time for a one-person crew was significantly greater (approx. 2×) irrespective of dbh. The time interval it takes to inventory each tree increased with increasing dbh; however, the rate of change was significantly less for a three-person crew compared with the other crew sizes. Based on these results, the number and relative sizes (dbh) of trees to be inventoried must be considered when determining optimal crew size.

Key Words. Alabama; Chinese Elm; Crew Size; i-Tree Eco; Loblolly Pine; *Pinus taeda*; *Quercus phellos*; Sampling Efficiency; Tree Inventory; *Ulmus parvifolia*; Urban Forest Sampling; Willow Oak.