ARBORICULTURE & URBAN FORESTRY
Volume 47, No. 1, January 2021
Formerly the Journal of Arboriculture, 1975 – 2005 (Volumes 1 – 31)

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Abstract. Municipally managed urban trees provide environmental, social, and economic benefits. Continued provision of these benefits depends on the health and sustainability of these trees, which depends in turn on tree managers having the type of information usually found in a tree inventory. The city of Ithaca, New York, USA possesses 7 inventories of its street and park trees dating back to 1902. This paper uses the data contained in these inventories to assess the health and sustainability of the city's street and park tree populations. Attention is given to the structure of these populations with emphasis placed on species and genera diversity and DBH size class distributions. Prior to 1987, the city's municipal tree population was dominated by a few species, such as Norway maple (*Acer platanoides*), and genera such as maples (*Acer*) and elms (*Ulmus*), and the DBH size class distribution was skewed unsustainably towards older trees. From 1987 onwards, new plantings have significantly increased species and genera diversity, and the DBH size class distribution suggests sufficient younger trees to account for tree mortality and removals. These changes did not occur quickly due to the persistent legacy effect of past planting preferences and practices, but required a consistent effort by municipal tree managers over many years. As a result, based on an analysis of the most recent tree inventory conducted in 2019, the city's street and park trees and the benefits they provide look to be on a more sustainable footing, although challenges still remain.

Keywords. Legacy Effect; Norway Maple; Species Diversity; Tree Inventory; Urban Tree Management.

Abstract. Eastern hemlock (*Tsuga canadensis* [L.] Carrière) is an important component of the riparian ecosystem. Due to the widespread establishment of hemlock woolly adelgid (*Adelges tsugae* Annand)(HWA) across the range of eastern hemlock, woodland trees may be infested for extended periods (years), resulting in their decline. Imidacloprid, a systemic neonicotinoid insecticide, may be used as a strategy in forested settings to manage HWA while more long-term solutions become established, such as biological controls. Symptoms of prolonged infestation include extensive dieback and thinned canopies. In this study, trees with a diameter at breast height (DBH) of 24.7 ± 2.7 SD cm in poor condition were treated with imidacloprid. Trees were treated once by trunk-injection (IMA-jet) or by soil drench in the Greenbrier area of the Great Smoky Mountains National Park, Gatlinburg, TN, USA. Changes in tree growth and HWA density were measured for 3 consecutive years. Imidacloprid-treated trees recovered, whereas the untreated trees declined. Imidacloprid treatments resulted in significantly higher 3-year mean percent growth (65.6% to 71.7% of tips) compared to the untreated controls (10.5% of tips). HWA density 3-year means in the imidacloprid-treated trees (0.10 to 1.09 per cm) likewise were statistically different to the untreated trees (2.72 per cm). The extended activity of imidacloprid-treated hemlock was attributed to storage in the symplast (xylem ray parenchyma) and to perennial needle retention. This study demonstrates that trunk-injection with IMA-jet is effective against HWA and comparable with soil drench to protect trees in the long term (≥ 4 years).

Keywords. Hemlock Woolly Adelgid; Imidacloprid; Residual Activity; Soil Drench; Tree Injection.

Abstract. As urban land cover increases around the globe, it is increasingly important to train competent urban forestry professionals for the future. Urban Resources Initiative (URI), a program of the Yale School of Forestry and Environmental Studies and an affiliated New Haven-based nonprofit, has provided field experience and learning opportunities for professional graduate students in urban and community forestry for over 25 years. URI's clinical training programs are uniquely designed to equip students with both technical skills and social competencies. They do this by working with local residents, municipal staff, and community leaders to promote community-based land and tree stewardship, restore neglected open spaces, and build social cohesion in urban neighborhoods. We used a mixed-method approach, which included semi-structured interviews with current and past URI interns as well as an online survey, to determine long-term impacts and learning outcomes from URI's clinical training programs. We also evaluated archival program documents to examine key programmatic features and confirm interview and survey trends. Survey and interview responses revealed that in addition to having gained key technical field skills, interns also obtained skill sets associated with the social dimensions of urban forestry. One-third of survey respondents identified effective "strategies for community engagement" as the most significant learning outcome from their internship experience. URI's program can serve as a unique and effective model for clinical training in urban forestry higher education, particularly for universities and nongovernment organizations interested in integrating a stronger social or community engagement component to their programs and curricula.

Keywords. Educational Programs; Higher Education; Human Dimensions of Forestry; Social Forestry; Urban and Community Forestry.