REMOVAL HISTORY AND LONGEVITY OF TWO STREET TREE SPECIES IN JERSEY CITY, NEW JERSEY

by Nicholas Polanin

Abstract. A random sample of more than 500 streetside plantings of London plane, *Plantanus* x *acerifolia* and Norway maple, *Acer plantanoides*, were removed over a ten year period 1975-1985. London plane trees, attaining an average site of 39.03 years, were removed due to sidewalk damage, while dead Norway maples were removed after an average of 48.13 years ($P<0.05$).

It is well documented that in an urban setting, stress can weaken a tree to the point where normally 'minor urban factors' such as pests, diseases, or other environmental factors may become extremely deadly (5). It is for these reasons that studies on urban tree success and longevity are necessary.

The city of Jersey City is located just west of Manhattan in Hudson County, New Jersey. Jersey City has employed a full time forester and staff since the 1950's. As early as 1960, policy was set that plantings would exceed removals of street and park trees by a margin of 2:1.

Tree removals in Jersey City have never been fully examined. London plane, P*lantanus* x *acerifolia*, and Norway maples, *Acer platanoides*, comprise nearly 55% of Jersey City's urban forest and are the main focus of this study. Data were available as to planting and removal dates (longevity), and reasons for removal. This allows for comparisons to be made, thereby examining the effects of urban forestry decisions generations old.

Materials and Methods

Data were collected from three sources. The city has records of Shade Tree activity dating back to the turn of the century, but complete records only date back to 1960. It was determined that the ten year period 1975-1985 would be closely examined, as outside removal contracts and recorded citizen complaints would augment the historical data. These three sources, in combination, make the comparisions possible.

Once a removal location (address) was identified from the various contracts, complaint records were examined to verify species and reason for removal. These reasons were grouped into four categories: dead, sidewalk upheaval, request, and other. The last two categories contain such removals as those politically requested, invasive roots, traffic accidents, etc. A random sample of 270 trees/species was selected from the original removal data collected to study removal categories, while a randomly selected subsample of 90 trees/species was taken for longevity comparisons. Site age (longevity) of the trees involved was determined through available planting and removal dates previously recorded for each location.

Results

As seen in Table 1, significant removals of London plane occurred due to sidewalk upheaval ($P<0.05$). These sidewalk conditions had a major impact on the site age data for this species, which ranged from a low of 35.33 years to a high of 42.00 years. Norway maples, however, were removed significantly more often due to death of the tree ($P<0.05$). Norway maples "outlived" London planes by nearly ten years, ranging from 46.63 years to 49.57 years in site age.

Discussion

An informal 1973 inventory of Jersey City's urban forest revealed that London plane far outnumbered Norway maple and other species not included in this study. At the time of this study, London plane continued to be the dominant street tree species in Jersey City. London plane has been heralded as a species which could grow anywhere and withstand rather adverse conditions

(1). Being much more tolerant of anthracnose (*Gnomonia platani*) than American sycamore (4), London plane more often falls victim to mechanical damage (3) and rooting problems around curbs and sidewalks, especially in older communities (2,4).

Historically, tree removals in Jersey City were confined to dead or dangerous trees as strong neighborhood preservation groups attempted to slow the spread of urban blight. As the liability insurance crisis broadened, however, more citizens and their local representatives requested if not demanded the removal on the basis of sidewalk upheaval. As shown in this study, two thirds of those requests centered about a 35 to 40 year old London plane. These removals were not due solely to insurance concerns, but also to the perceived usefulness of the tree, whether by the city, the local politician, or the homeowner (6).

Compounding this 'root problem' is the fact that Jersey City is known for an abundance of narrow, one-way streets affording little room for streetside parking, let alone streetside planting. It is not uncommon for the total distance between curb and house front to be fifteen feet or less. Therefore, it was extremely difficult to use the term 'tree lawn' to describe the two to three foot square openings cut through four inch thick concrete sidewalks that support the majority of streetside plantings. Recent species selection for new plantings and stricter planting site approval regulations reflect this severe space restriction.

This study also revealed that Norway maple tends to remain 'on-site' until it succumbs to the rigors of the urban environment, attaining a site age ten years greater than that of London plane. Despite the recent bad press Norway maple has been receiving, these findings indicate that, even with overly restrictive growing conditions, potential girdling root problems, and heavy pressure from pedestrian and vehicular traffic, this species remains a viable streetside selection for highly urbanized areas. Although no historical data or statistical evidence are available through this research, recent removals in Jersey City have shown that dead Norway maples average 18 inch dbh, while London planes average 24 inch dbh. This size difference alone can be translated into a direct savings for the contracting authority. Future studies should be done to verify these observations, seeking to establish a correlation between species, diameter, site age, and removal costs in a highly urbanized environment.

Conclusion

London planes outgrew their available space and perceived usefulness necessitating their removal on the basis of sidewalk upheavals approximately 40 years after they were planted along the streets of Jersey City. In contrast, the majority of Norway maples remained on site until they succumbed to urban stress and died after a span of nearly 50 years. This difference alone provides information vital to the proper selection of species suitable for urban plantings, pertinent to problems which arise when certain considerations are ignored during the selection process.

Literature Cited

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Table 1. Statistical results table

Longevity Average site age		*CHI square test Expected citywide removals (%)*			
Tree	*Years*	*Sidewalk*	*Dead*	*Request*	*Other*
London plane	39.03	55.93*	16.33	17.00	10.76
Norway maple	48.13	16.33	54.11*	12.52	17.04

* Denotes significant category within species ($P<0.05$)

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CONTRIBUTED ABSTRACT

POTTER, D.A., G.M. TIMMONS, and F.C. GORDON. 1988. **Flatheaded apple tree borer in nursery-grown red maples: phenology of emergence, treatment timing, and response to stressed trees.** J. Environ. Hort. 6(1): 18-22.

The flatheaded apple tree borer, *Chrysobothris femorata* is a common and destructive pest of many species of deciduous shade, fruit, and nut trees, especially those that are newly transplanted or otherwise under stress. The adult borers are flattened metallic-colored beetles that emerge in spring and summer, mate, and lay eggs on the bark, often around wounds. The larvae burrow and feed beneath the bark, making winding tunnels that are tightly packed with yellowish, sawdust-like frass and damaging to the cambium, phloem and outer sapwood. Nurserymen often suffer severe losses due to infestation of young maple trees, especially *Acer rubrum*. Infestations in nursery-grown maples nearly always occur in the main trunk, within 3 feet of the g round.

Research in Kentucky showed that a single, properly-timed application of lindane or chlorpyrifos (Dursban®) at labeled rates will protect young maples from infestation by the flatheaded apple tree borer. Bark sprays should be applied soon after the adults begin to emerge to mate and lay eggs, so that a lethal residue will be present to kill the newly-hatched larvae as they chew through the bark at the point of egg attachment. The date of first emergence of adult borers ranged from May 8 to June 6 (avg. date: May 18), depending upon spring temperatures, or about three weeks after the first red maple leaves were fully expanded and about the time that American holly (*Ilex opaca*) began to bloom. A predictive model based on accumulated degree-days was developed which can be used to estimate optimum treatment date, even in years with unseasonable temperatures (degree-day records are available from most local Cooperative Extension offices). Borer emergence began after an average accumulation of 742 degree days (Fahrenheit) calculated from a base temperature of 50°F. The borer emergence period lasts about three weeks, but adults may be present in the nursery from May until August. Consequently, a second application, 3-4 weeks after the first treatment, may possibly provide additional protection. Experiments showed that red maples that had been stressed by root-pruning, transplanting, wounding, or defoliating were generally more attractive to flatheaded apple tree borer and other flatheaded borers than were non-stressed trees.

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