

# BOULEVARD TREE OPERATIONS OF VANCOUVER, B.C.<sup>1</sup>

by Gregory Paris and Hugh Monroe

**Abstract.** Vancouver, B.C. is a 100-year-old municipality with a population of 400,000 people. Vancouver's boulevard tree program started in 1896, and its current street tree population is about 130,000 trees. These trees are distributed along the City's 10,000 residential and commercial blocks, about 800 miles of streets. This paper discusses historical and operational aspects of the boulevard tree program.

**Résumé.** La ville de Vancouver, B.C., fut créée il ya 100 ans et a une population de 400,000 habitants. Le programme de plantation d'arbres le long des rues a débuté en 1896, et la population actuelle d'arbres de rues est de 130,000. Ces arbres sont distribués le long des 10,000 pâtés de maisons en zones résidentielles et commerciales, ce qui représente environ 800 milles de rues. Cet article expose les aspects historiques et opérationnels du programme de plantation des arbres de rues.

The Arboriculture Section of the Operations and Maintenance Division of the Vancouver Park Board is responsible for boulevard trees. The Arborist oversees the maintenance and planting of boulevard trees, the maintenance and reforestation of the Stanley Park Forest, and the operation of the Langley Tree Farm. The Arborist reports to the Manager of Horticulture. Three foremen report to the Arborist, and their areas of responsibility are as follows:

1. medium and large tree pruning, root pruning, removals, stumping, Stanley Park forestry, and emergency services
2. tree planting, young tree culture (including watering, staking, pruning), and tree farm operations
3. investigations.

The consolidated annual budget for capital planting is about \$200 thousand, the annual boulevard tree maintenance budget is about \$1.3 million, the annual budget for Stanley Park forestry is about \$250 thousand, and the annual budget for the Langley Tree Farm is about \$100 thousand.

Current field staff for the Arboriculture Section includes 24 full time staff and 9 seasonal laborers. The full time staff include 3 Foremen, 2

tradespeople, and 19 laborers and equipment operators. The purpose of this paper is to discuss the Boulevard Tree Program of the Vancouver Park Board.

The legislation governing trees on boulevards in Vancouver is the Street Tree By-Law (1986). This by-law defines a boulevard, identifies the responsibilities of the civic departments in planting and maintaining trees on city boulevards, and outlines unauthorized actions by the public that can be subject to penalty. Tree selection, placement, and planting standards are not set out in the by-law. These standards are left to the civic departments to identify. Civic departments have developed a variety of policies, guidelines, and standards for the care and management of trees on boulevards. Both the City Engineer and the General Manager of the Board of Parks and Recreation share responsibility for trees on boulevards in Vancouver. In general, the Engineering Department determines where trees can be planted, and the Park Board identifies what trees will be planted. The Park Board is responsible for the long-term maintenance of street trees. While other by-laws make reference to trees on City property, the Street Tree By-Law is the governing legislation for boulevard trees.

## History

In 1896 the first City by-law was passed in an effort to control and encourage the planting of trees on boulevards. A fifty cent per tree incentive was offered for the planting of approved tree species on the boulevard. The planting incentive was withdrawn in 1899. The City Charter was amended in 1913 to provide for the planting and directed by resolution. The funds were to be derived from a frontage tax, not to exceed ten cents per foot, to be assessed by the City Council by resolution. In 1914, a list of 49 streets and triangles were transferred to the Park Board for

1. Presented at the annual conference of the International Society of Arboriculture in Vancouver, B.C. in August of 1988.

maintenance.

The City Council in 1916 turned the full jurisdiction of tree planting and tree maintenance over to the Park Board with the proviso that the City Engineer's office was to ascertain whether the boulevards were of permanent grade. Property owners were able to make application for planting trees on the boulevards. In 1917, the Arbor Day By-Law was approved, thereby defining a period for tree planting by the citizens of Vancouver. The municipalities of Point Grey and South Vancouver were incorporated into the City of Vancouver in 1929 adding a considerable stock of trees to be maintained.

Vancouver's boulevard tree population numbers about 130,000. These trees are located on the City's 10,000 blocks, that is, 800 miles of streets. Boulevard tree plantings are composed of 50 genera. About 96% of boulevard trees belong to 16 genera (Figure 1). A significant portion (37%) of the street trees are Prunus species.

Over time, trees on residential streets have shifted from the large trees such as plane, chestnut, and elm, to small and medium trees because of maintenance concerns (eg. pruning) and concern about the scale of these larger trees in residential areas. This shift occurred in the early 1950's. Very little boulevard tree planting occurred in the period 1940-1952. When planting was re-established, a decision was made to move away from larger trees, and to plant flowering cherry, flowering plum, crabapple, and hawthorn. These varieties are relatively short-lived, and since many of these trees were planted in the 1950-60's, Vancouver is likely facing a significant replacement program in the next 10-20 years. Currently, the preferred species for boulevard tree planting are columnar Norway maple, several varieties of red maple, the upright European hornbeam, English beech, Kobus magnolia, several varieties of flowering cherries, flowering plum, pin and red oak, and Crimean linden.

**Operations**

**Planting.** In surveys carried out by City administration, residents consistently emphasized the importance of vegetation in enhancing the livability and enjoyment of their neighborhoods. In response, the City has pursued the objectives of

beautifying and softening the urban environment by maintaining and enhancing the existing street tree stock, and expanding the current street tree population.

Tree planting on residential streets in Vancouver is funded with Park Board capital. Current funding is targeted to five neighborhoods which were identified as being park deficient. About \$150,000 will be spent on street tree planting on residential streets in each of the four years of the 1987-1990 Capital Plan.

Tree planting on commercial and industrial streets is undertaken through street beautification projects initiated by business associations and the Engineering Department, and funded through property owner levy and the Engineering Department's Four Year Capital Plan. Localized street tree planting is also initiated through Engineering Department street widening and left turn bay projects and funded through the Department's Four Year Capital Plan.

Another source of funding for street tree planting is developers paying for street tree planting adjoining a residential, commercial, or industrial development. A modest amount of street tree planting has been funded by donation, for example the work of "Friends of the West End Trees", who received an ISA Gold Leaf Award for their program.

In general, two-inch diameter trees are planted on boulevards. Trees are planted on blocks with curbs and planting strips at least three feet wide.

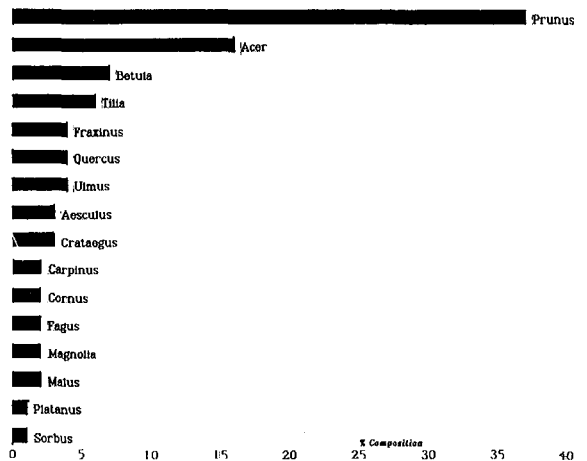


Figure 1. Street tree genus composition diagram

Tree pits are dug by hand because of the numbers and locations of utilities in the road rights-of-way. Pits are often prepared in the summer, and planting occurs in the fall and winter.

Replacement tree planting is funded through the Park Board's operating budget (Figure 2). Trees were removed because they were determined to be dead or dangerous, or because they were diseased and in decline. About 600 trees are planted annually in this program.

**Tree Culture.** In the first two growing seasons after planting, street trees are watered and staking is maintained. Young trees are pruned to establish suitable structure and to direct growth. Two crews are assigned to young tree culture, each with one gardener, one pruner, and one laborer.

The Park Board has two 1800 gallon water trucks outfitted with pumps and a water wand. A watering crew is composed of a driver and a helper. Two watering crews usually water 35 to 50 trees per shift depending on the location of trees and planting density.

**Pruning.** The pruning work that is performed on street trees is clearance pruning and horticultural pruning. Horticultural pruning includes removal of dead, broken, crossing, and weak branches to enhance the overall health of the tree. There are three pruning crews, that is two bucket truck crews and one platform truck crew, and their work is divided among 10 management areas which cover the City. The pruning crews spend at least one month in each management area annually. On entering a management area, the first priority of the crews is to resolve outstanding service requests. About one-half of the operating budget is allocated to pruning.

The platform truck crew generally prunes small trees. The crew is composed of six pruners and laborers working from the ground. A chipper and chip truck, with driver and laborer, accompany the platform truck for clean up.

The bucket truck crews prune medium and large trees. The trucks have a 55 foot reach, and they are outfitted with hydraulic chain saws. The trucks have a chip box, and they have a chipper in tow. The crews are each composed of a driver/pruner and a helper, and the two crews prune about 6500 medium and large trees per year.

B.C. Hydro (ie. utility company) funds the pruning of street trees below utility lines for conductor clearance. Currently, B.C. Hydro contracts this pruning work to tree service companies. Pruning for other utilities such as the telephone company and the cable television company is funded by these organizations and performed by city arboriculture crews.

Within the street right-of-way, a limited amount of root pruning is undertaken in consultation with the Engineering Department when roots have invaded underground utilities. The first stage remedy is clearing clogged pipes, and the second stage remedy is the replacement of the clogged pipe with a new continuous pipe, all by the Engineering Department. Removal of portions of roots which have caused sidewalk heaving or curb displacement is performed by the Engineering Department. Estimates of the Engineering Department operating funds spent on tree related sidewalk/curb damage and sewer blockage are in the range of \$900,000 per year.

**Other Services.** All conditions which pose a

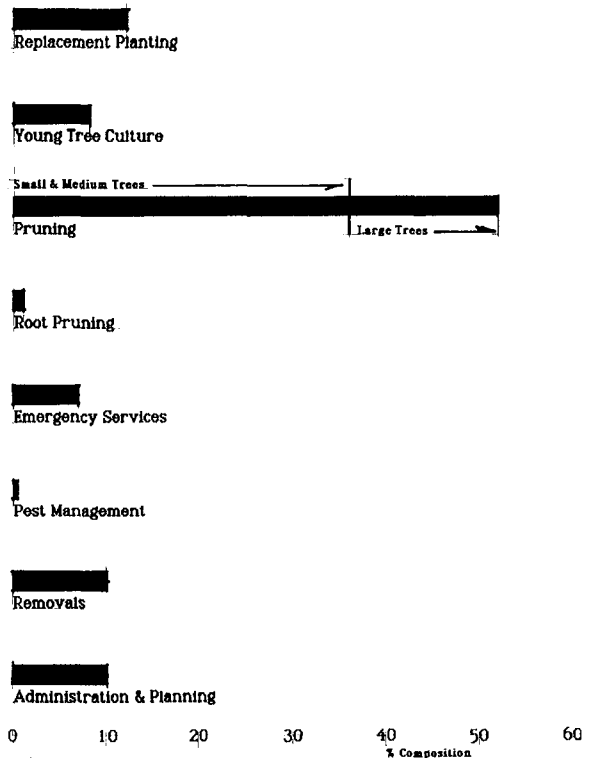


Figure 2. Arboriculture operating budget

hazard to public safety arising from damage to street trees caused by vandalism, Acts of God, and declining tree health are rectified immediately.

The current pesticide use policy states that cultural, biological, and chemical methods of pest control will only be undertaken when the long-term viability of street trees is threatened. The Park Board has recently undertaken a small-scale test to determine the effectiveness of Bt and insecticidal soap in controlling an insect identified as the oak skeletonizer. The study is currently at an insect monitoring stage. A limited amount of "Bio-Sonic Disbursal" is performed by a local pest management firm to disburse flocks of starlings which roost in large street trees during the summer.

The Arboriculture Section maintains (i.e. weeding, litter removal, pruning, and watering) some of the shrub plantings at the bases of designated street trees located in sidewalk cut-outs and planting areas on commercial streets. About 30 sites are maintained.

The components of the removal program include removal of trees that have died or are in decline according to a schedule that minimizes public safety risk; removal of trees such as mountain ash, crab apples, hawthorns, and Modesto ash that are in decline as a result of disease infection, chipping of stumps left after tree removal, and boulevard restoration. About 500 trees are removed annually.

**Communications with the public.** The Park Board receives some 3000 street tree service requests each year from the public. Currently, most service requests involve pruning-related problems (over 35%), but others are removal and replacement requests (16%), damage notification (14%), surface displacement and sewer blockage due to roots (5%), insects (5%), and other problems like disease, decay, or poor appearance (25%).

Approximately 10% of these requests can be resolved on the telephone, and 90% are investigated by staff on a site visit. Of these investigations, 30% are acted upon on a priority basis, 20% are rejected because they involve actions (i.e. removal, topping) that are too drastic for the problem, and the remainder are scheduled for attention over a longer period.

Some residents have made persistent requests

for the drastic pruning or removal of trees due to a combination of the problems listed above as well as a desire to open up views and a dislike for the yard work related to trees (i.e. raking leaves, leaves and seeds in gutters). The Park Board's present policy with regard to these requests is to take action only if a tree is a safety hazard or is dead. The public is advised that radical pruning to reduce the size of a tree will leave it susceptible to disease and decay and will diminish it aesthetically. Further, the removal of healthy trees would only progressively reduce the total stock and run counter to the goal of increasing the number of street trees in the City.

On receipt of a service request by the public, the investigating foreman visits the site to determine the nature of the request, and the appropriate course of action that should be followed. The resident making the request is notified of the response in person, by message on a "door hanger" card, by phone, or by letter.

Residents of blocks that will have tree removal and replacement under the diseased tree program will receive letters, and a general street tree pamphlet with an insert card identifying the tree that will be planted. The same procedure is used on residential blocks designated for new planting. Opinions of residents are solicited by survey questionnaire when a range of reactions is anticipated, i.e., in cases of tree removal and pest control, and in some cases, tree planting.

Residents are asked to water young trees planted on the boulevard adjoining their house for at least the first two growing seasons. The initial request is stated in the general street tree pamphlet, and reminder notices are sent to residents in subsequent growing seasons through the media.

The Vancouver Park Board is currently developing a street tree management plan as a planning tool which documents the policies, programs, and guidelines which will ensure that existing funds and manpower are allocated effectively, and that the concerns of residents are addressed efficiently.

### Summary

The annual Park Board maintenance budget for Vancouver's 130,000 boulevard trees is about

\$1.3 million. These trees are maintained by 24 full time staff and 9 seasonals. About one-half of this maintenance budget is allocated to pruning. Both the City Engineer and the General Manager of the Park Board share responsibility for trees on boulevards. Generally, the Engineer deals with location or placement issues and the Park Board deals with tree selection issues. The Engineering Department funds tree planting on commercial and industrial streets, and the Park Board funds planting on residential streets. A significant portion of the current street tree population are *Prunus*

species. The net growth in the boulevard tree population in Vancouver is about 500-600 per year.

The Park Board receives about 3000 street tree service requests each year from the public. A significant portion of these are pruning requests. The majority of these requests are investigated by staff on-site visits.

*Vancouver Park Board  
Vancouver, British Columbia V6G 1Z4*

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## Abstracts

KUHNS, LARRY. 1988. **Controlling weeds in ornamentals.** *Grounds Maintenance* 23(4): 81, 84, 135-137.

Eliminate all weeds before you plant. You can best accomplish this with Roundup because it will kill annual and perennial weeds, and it leaves no harmful residue in the soil. Allow at least 7 days before you plant. Prevent weed growth from seed with a mulch or an application of pre-emergence herbicides. For effective control, use a broadleaf herbicide in combination with a grassy weed control, and make more than one application per year (if it is in accordance with the pesticide label). Eradicate weeds that escape your preventive measures before they are well-established, and definitely before they set seed. Use handpulling, hoeing or careful spot applications of Poast, Fusilade or Roundup. Use extreme caution when applying Round-up in existing plantings.

HAREIN, P.K. 1988. **A pesticide primer.** *Am Nurseryman* 167(11):111-119.

Pesticides are both good and bad; there are both benefits and risks associated with pesticide use. Pesticides also play a major role in producing acceptable food. They are the best and primary defense against the pests that produce spots on apples and make plants look ugly, sick and unsalable. Pesticides do have undesirable effects, such as contaminating the air we breathe and the water we drink. They can also injure non-target animals or plants, or the people applying them. In addition, their use can lead to resistant pests.