

STREET TREE POLICIES IN OHIO TOWNS

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Abstract. Fourteen small- to medium-size Ohio towns were visited to determine their street tree policies and programs. Their street trees were assessed for kinds of trees, size, density, and general condition. Towns with long-term, well-founded programs had superior street trees as evidenced by more kinds of trees in better condition, a more consistent and greater density, a more balanced distribution of sizes.

The particular combination of law, practice, and funding that a town implements for tree care will, in time, be reflected by the abundance, species, size, and condition of its street trees. Or will it? Did Dutch elm disease which occurred in Ohio towns influence communities to establish formal street-tree programs? Do cities with such programs have superior street-tree situations?

This report explores municipal tree-care practices and their effects on trees. The results of street-tree policies are most visible in older residential neighborhoods where trees are mature

and densely planted (Fig. 1). Here removal, maintenance, repair, and replanting practices are concentrated. Tree-care practices in Ohio towns were assessed on the basis of trees in such neighborhoods. Among the towns, there are those with long-established policies, or newly established or no street-tree policies.

Methods

Fourteen Ohio towns with populations ranging from about 13,000 to 82,000 were sampled. Four random points were located in each of the roughly equal quadrants of each town's map. The points marked the beginning for 16 sample street segments ranging in length from 0.2 to 0.6 mile each. For each sample the land use classification was noted, including the age of residential neighborhoods. We assessed all trees planted in the strip between road and sidewalk, or, lacking

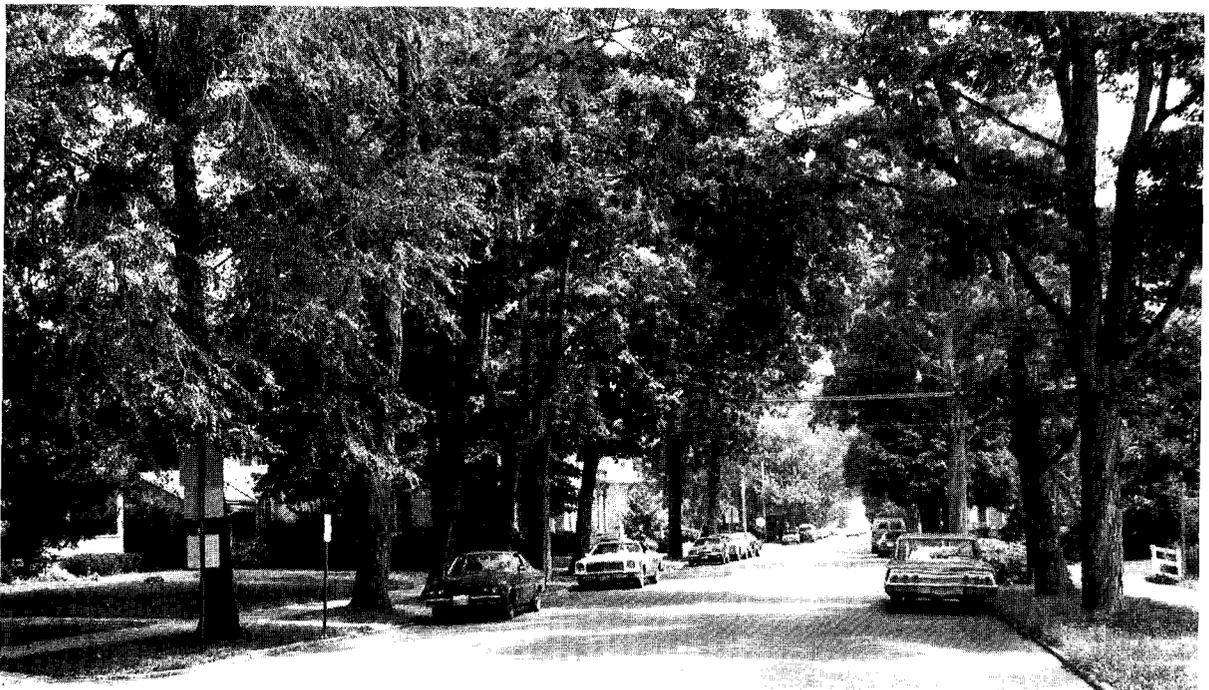


Fig. 1. Street trees in an older residential neighborhood. Trees such as these were the basis of our assessment of municipal tree-care practices.

sidewalks, we included those trees legally defined by each town as a municipal responsibility. Kinds, size class, and condition of the trees were recorded (1). Within residential areas over 40 years old, our survey included 2,545 trees on 33.2 miles of streets. Information about tree-care policies and practices were gathered from public information sources so that we could understand the scope of each town's efforts.

City Policies and Shade Tree Programs

The essential components of a town's street-tree policy are legislation, budget, and actual practice. The towns differed in their policies toward street trees. The attitudes toward policies ranged from apathy to a desire for nearly complete municipal control of the trees.

Legislation. Every town owns rights-of-way easements that extend beyond the actual street width. If it chooses to manage the trees in this strip, this is usually enacted by an ordinance declaring the city's liability and responsibility for the trees. The strength of a tree ordinance is indicative of the value a municipality sees in its trees and is linked to the effectiveness of a shade tree program (Ottman and Kielbaso 1976). An ordinance can declare responsibility for only removal of dead or dangerous trees. An additional clause can prohibit the planting of certain tree species or, vice versa, list acceptable species for planting. An ordinance can require a special permit for planting, specify restrictions on street-tree maintenance by private citizens, or prohibit citizens from touching municipal trees.

There were three active, official shade tree commissions in the towns sampled. They were supported by municipal ordinances that (1) list acceptable species, (2) delineate municipal liability and responsibility for planting and removal of trees on easement strips, and (3) require planting permits and adherence to a planting plan. One ordinance also required developers in new subdivisions to provide trees in accordance with the municipal planting plan. Such strong ordinances discourage homeowner initiative. Decisions affecting the planting strip, often thought of by the homeowner as part of the building lot, were made

by city officials. To many citizens this represents government encroachment, even though it may also be effective tree management. For this reason, many legislative bodies are reluctant to enact such a restrictive ordinance.

Resistance to shade tree legislation may arise from differences between the perceived needs of property owners and the interests of municipal shade tree commissions. The property owner's tenure is usually shorter than the life of a tree and the owner cannot wait 35 years for a slow-growing tree to provide abundant shade. Thus, legislation that forbids planting fast-growing trees, such as poplars or silver maple, is likely to be unpopular with homeowners. Utility companies tend to support legislation that favors small trees which do not grow into power lines. Property owners, however, often prefer large trees. When municipalities desire one type of tree and property owners another, conflicts arise.

Most tree ordinances invest some official body with authority to make decisions about planting, maintenance, or removal. This legislation must then be funded and put into action. In some towns, one legacy of Dutch elm disease was enabling legislation that required municipal decisions on removal of diseased trees. With most of that activity now past, some towns have slipped back into *laissez faire* policy, ignoring their legislation. Other towns created tree-care bodies, but have failed to provide them with funds.

Budget. Adequate funding is an important aspect of an effective tree-care program. In large cities, two common standards for annual spending are \$1 per capita or \$8 per tree (2). But frequently less than that is actually spent on street trees.

The shade-tree commissions in the towns surveyed spend from \$0.50 to \$0.85 per capita annually for operations. This is much more than the typical allocation for dead tree removal only — about \$0.13 per capita.

Most often the street or the parks department absorbs the tree-care budget so it is difficult to know just how much is being spent on trees. Several town officials said this method of overall budget allocation is unsatisfactory. For example, a parks department may combine costs for tree-care equipment rentals with other expenses such

as wages and costs for recreational equipment. Also, when a department is responsible for several functions, tree work done by the city crew may be relegated to the slack season.

Our budget information is based on the money spent annually for tree operations and does not include equipment for other departments or wages.

One town had no tree budget and only removed trees downed by storms. Another town had no separate budget and used parks crews for tree maintenance, including pruning. Tree removal only, funded from \$1,000 to \$2,500 annually, was budgeted in three towns. In those towns, most removal was done by professional firms. Street crews, however, did cut up and haul away storm-downed trees. The remaining towns budget from \$3,000 to \$25,000 to remove and plant trees.

Practice. Administrative decisions are made by the body designated by legislation. A tree ordinance may be carried out by a paid municipal employee such as an urban forester, parks superintendent, or the head of the street department. Or decisions may be made by a volunteer shade tree commission.

Among the towns sampled, the degree of authority invested in commissions of three to seven members differs: some can make all decisions regarding trees; some can reach decisions jointly with a designated municipal department head; some are asked to rubberstamp established municipal decisions. Two towns use their volunteer commissions solely as public relations bodies convened by paid municipal officials.

Commissions engage in a wide variety of activities. Making decisions about tree removal is the most basic responsibility. One group surveyed its town's street trees, noting size, condition, and species. Some groups have developed long-range planting and removal plans. Educating the public about trees is an important activity to all the groups. Several towns regularly conduct Arbor Day ceremonies, and several distribute information booklets on species alternatives and tree care. As in many organizations, the range of duties is closely tied to the leadership, energy, and imagination of the commission.

Ample information and assistance are essential for the effective functioning of volunteer shade

tree commissions. Information about insects, diseases, tree varieties, and basic arboricultural research and practice is important to educate commission members.

The Ohio Agricultural Research and Development Center at Wooster is attempting to fill this need by conducting workshops for shade tree commissions. Also, the Ohio Department of Natural Resources sends regional urban foresters to meet with local tree commissions (3). This assistance is especially valuable in assessing the existing tree ordinances and their funding, developing a tree-care program, and communicating ideas and plans to the community.

There is no consistent pattern in the reasons for forming street-tree commissions. The inception of Dutch elm disease appears to have precipitated the formation of at least one group and perhaps influenced others. Old and decayed silver maples that created an overall impression of decadent tree quality was mentioned as a precipitating factor in five towns — the most cited single cause. Of the 14 towns surveyed, 10 had some official body concerned with street trees. Of these, eight had had one or two energetic, enthusiastic people spearheading the formation of a volunteer shade tree commission. Two towns had appointed tree groups that later disbanded for lack of interest.

Street-Tree Evaluation

The tree assessment data were divided into two groups according to (a) whether a town had a functioning tree-care program for at least 10 years or (b) whether it had a new program or no organized tree care. There were three shade tree commissions older than 10 years and one parks and street-tree program at least that old. Of the remaining 10 towns, 4 had no programs, 6 had new programs.

We determined whether tree-care programs were worthwhile by estimating the health of the trees and their site conditions. Performance standards were selected whereby each town was allotted one point for meeting each of these criteria: number of species — 60% of the total number of trees represented at least 3 species; tree condition — no more than 10% of the trees 10 to 16 inches dbh (diameter at breast height)

and 25% of 16-inch dbh and larger trees in fair to poor condition; abundance — at least an average of 100 trees/mile; size distribution — no less than 35% of the trees smaller than 10 inches dbh and no more than 65% of the trees larger than 16 inches dbh.

On a subjective scale (from 0 points = worst, to 5 = best), the three towns that scored 3 to 4 points all had well-established shade tree commissions, tree-care programs, and annual operating budgets from \$12,000 to \$16,000. None of the towns had a perfect score of 5 (Table 1). Of the towns with established programs, 75% had scores of 3 or 4 while all of the towns with new or no programs had scores of 2 or less. It appears that towns with all three components that go to make up a shade-tree program — laws, funding, and practice — have a vastly better chance of achieving satisfactory street-tree situations.

Table 1. Number and percentage of towns that meet the performance criteria for street-tree situations, by tree-care program.

Street tree situation elements ^a	Established program ^b		New or no program ^c	
	Number	Percent	Number	Percent
Kinds of trees	1	25	1	10
Tree condition				
10"-16" dbh ^d	3	75	0	0
16" dbh and above	2	50	1	10
Abundance	3	75	3	30
Size distribution	3	75	2	20
Point Score				
1	1	25	5	50
2	0	0	1	10
3	1	25	0	0
4	2	50	0	0

^aThese elements are defined in the text.

^bThe four towns with established programs budgeted an average of \$11,000 annually for tree care.

^cTen towns with new or no programs were sampled. Their annual budget for tree care averaged \$4,350.

^dDiameter at breast height, 1 inch = 2.5 cm.

Kinds of trees. In the older residential areas, towns with established tree-care programs have relied less on maples (Table 2). These towns have planted fewer kinds of trees (16 versus 21) than other cities. Possibly through mass buying of young trees or by refusing to plant certain species, they have limited the kinds of younger

trees. In these towns, five species are heavily represented (about 5% of the total tree population) compared with only three in the other towns (Table 2). However, 70 to 74% of the total tree population is composed of only three kinds of trees: maple, honeylocust, and sycamore.

Table 2. Trees less than 10 inches dbh as a percentage of the street tree population in selected Ohio towns in 1977, by kind of tree and tree-care program.

Species	Established program	New or no program
Hard maple ^a	26.4	33.6
Soft maple ^b	25.6	30.4
Sycamore	0.0	10.8
Honeylocust	18.8	3.5
Crabapple	8.7	3.3
Basswood	7.5	2.6
Hawthorn	2.4	0.2
Mountainash	2.4	0.9
Ash	1.9	3.8
Orn. cherry	1.6	1.0
Dogwood	1.6	0.7
Sweetgum	1.2	1.6
Redbud	0.8	0.2
Boxelder	0.8	0.9
Poplar	0.4	0.0
Callery pear	0.4	0.0
Buckeye	0.4	0.0
Tuliptree	0.0	0.2
Ginko	0.0	0.2
Birch	0.0	0.2
Catalpa	0.0	0.5
Oak	0.0	0.9
Conifer sp.	0.0	1.6
Elm	0.0	1.6

^aSugar, black, and Norway maple.

^bRed and silver maples and their hybrids.

Tree abundance. Towns with established programs generally had a greater abundance of trees throughout the entire town than those with new or no programs (66 versus 53 trees per mile). They also had more street trees per mile in older residential areas (106 versus 79 trees per mile). Three towns with new or no tree programs did have 100 trees per mile. The size distribution of trees in these three towns revealed a legacy of densely planted older trees.

Size distribution. Planting and removal activities are reflected in the tree-size distribution in residential areas over 40 years old. Towns with

tree-care programs had a smaller proportion of mature trees over 16 inches dbh and twice as many trees under 4 inches dbh than other towns (Fig. 2). This large proportion of small trees probably indicates that efforts were made to replace trees in older neighborhoods. Lack of management in "new or no program" towns created more of an even-age situation in the older residential areas, with only 25% of the trees under 10 inches dbh (Fig. 2).

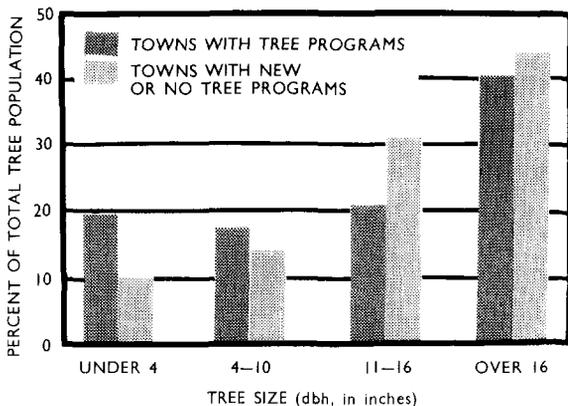


Fig. 2. Size distribution of trees in Ohio residential areas over 40 years old.

Tree condition. Towns with tree-care programs have more trees in "excellent" and "good" condition than those towns with new or no programs (Table 3). This is true regardless of tree-size class. The maintenance and repair work routinely carried out as part of the program may be responsible for the differences in tree condition.

There were almost three times as many trees 11 to 16 inches dbh in "fair" or "poor" condition in towns with new or no tree-care programs than there were in towns with established programs. On the average, as many as 40% of the largest trees and 28% of the 11 to 16-inch trees need expensive care or removal in towns with new or no tree-care programs, compared with 32% and 10% in towns with established programs. Towns with new or no programs can expect higher costs for tree maintenance and removal in the future.

Discussion

Among the towns sampled, the attitude toward

street trees ranged from apathy to the kind of concern that generates nearly complete municipal control of the trees.

Table 3. Percentage of trees in each condition class in residential areas over 40 years old in selected Ohio towns in 1977, by tree size and tree-care program.

Tree-care program	Condition class			
	Excellent	Good	Fair	Poor
Less than 4" dbh^a				
Established	96.6	1.5	1.2	0.7
New or none	93.4	2.1	1.9	2.6
5"-10" dbh				
Established	79.8	14.8	4.2	1.2
New or none	73.9	17.1	6.7	2.3
11"-16" dbh				
Established	62.1	27.6	8.6	1.7
New or none	48.5	23.0	21.0	7.5
Greater than 16" dbh				
Established	38.1	30.0	23.1	8.8
New or none	27.8	30.5	29.7	12.0

^aDiameter at breast height, 1 inch = 2.5 cm.

All of the 14 towns have a high proportion of maples in their street-tree plantings. A maple monoculture, more in evidence in towns where citizens initiate planting, carries the risk of esthetic and economic loss in the event of an epidemic disease of maple or a decline. Our data show that towns with established tree-care programs have a variety of tree species planted in greater numbers than do other towns. Eventually, their street-tree plantings will reflect this deliberate diversification.

A comparison of the distribution of tree size in towns with tree-care programs and in those with none illustrates the difference in the esthetic quality between uneven-aged forests that are managed and even-aged forests that are simply allowed to grow. Uneven-aged forests that are managed contain many young healthy trees. If no attention is given to replacement planting, trees in towns — as in forests — will tend toward even-age decadence and will be ripe for damage by wind, ice, insects, and disease (Jorgensen 1977).

The higher percentage of trees of all sizes in good and excellent condition is the result of organized tree-care programs. Through management, the number of older trees is reduced, as is

the expensive, labor-intensive tree maintenance and repair work so often necessary for older trees. Cost for tree removals and funding for replanting should be planned over many years to ensure an even flow of shade-tree expenditures in the annual city budget.

Of the towns with established tree-care programs, three had volunteer shade tree commissions and one had a parks/street-tree program. A combined parks and street-tree program must divide the available money, time, energy, and work force among municipal concerns that have nothing to do with trees. By contrast, a separate shade tree commission usually has responsibility only for street trees. Since there were differences between tree populations in the two types of programs, towns investigating the possibility of instituting a tree-care program need to carefully analyze which type of program would be best for them.

A long-range management plan based on a tree survey should be tailored to a specific town and could be used to justify funding. A survey indicating tree location, species, size, and condition would enable the town to plan and budget for tree planting, maintenance, and removal. Decadent trees located by the survey could be removed according to an appropriate schedule. Without these plans, potentially dangerous situations are ignored until, for example, high winds or ice storms suddenly reveal those trees that should have been pruned or removed (Fig. 3). Efficient management is necessary to economically sound, effective shade-tree programs (Ottman and Kielbaso 1976; Vick 1919).

Many people in charge of tree programs find it advantageous to develop a constituency that can urge city councils to provide funds for shade tree programs. Rendering a service which the public finds it cannot do without is a way to develop such a constituency (4). This service may take the form of establishing public gardens or of landscaping municipal parking lots. For example, the Toledo Forestry Division created public gardens around the municipal buildings in downtown Toledo. These gardens, as well as display booths at neighborhood and citywide fairs, have helped to educate Toledo citizens about the benefits and

the importance of urban trees and plantings.

A tree commission in one small Ohio town created a program that makes it possible for an individual to donate money for a tree to be planted as a memorial to a person or event. A commemorative plaque is affixed to the tree and the donor receives a card telling the location of the tree. Such public relations activities create good will and serve to accent municipal tree-care programs. The three shade tree commissions included in our sample depend upon the high level of energy and expertise of their volunteer members to sustain their programs and to oversee such activities.

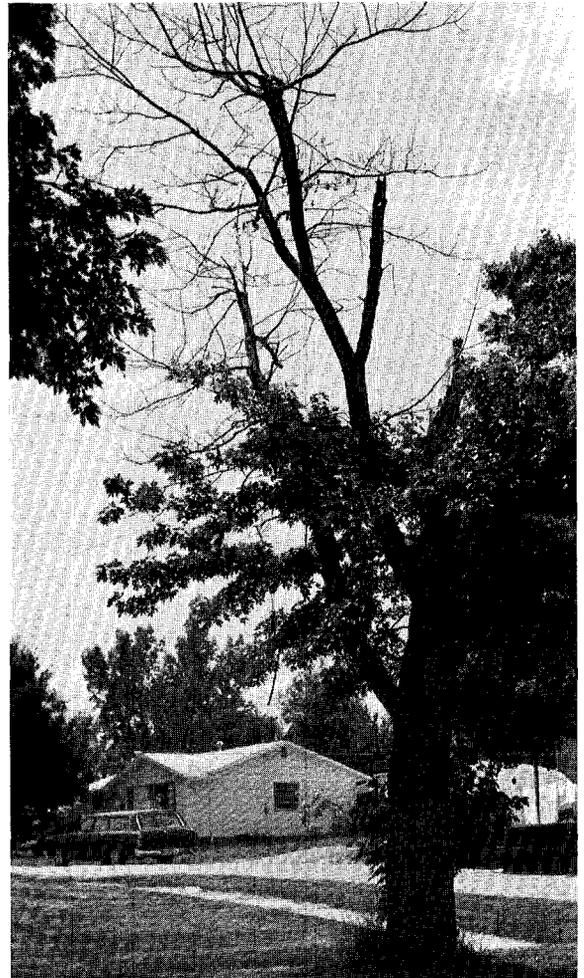


Fig. 3. A silver maple street tree with several dead or dying branches. A large portion of the crown was broken off during a storm.

Conclusions

Some of the towns sampled demonstrated the positive effects of tree-care programs. The successful programs were rooted in both legislation and funding. Legislation that effectively supports a town's tree-care program is balanced between the interests of the community officials and the citizens. Adequate funding is necessary to support the planning and operation of a program to maintain and repair, or to remove and replace, municipally controlled trees.

Compared with towns having new or no programs, towns with long-term, well-founded programs had more kinds of trees in healthy condition. Tree density was more consistent and generally greater, and there was a better balance among tree sizes. These conditions indicate that tree-care towns are further along the road toward having well-managed uneven-aged street tree situations that can be maintained through wise legislation, adequate funds, and thoughtful practice.

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Vick, A.F.W. 1919. *The classification and census of city trees*. Am. City 20:368-370.

References

(1) The detailed instructions and forms for street-tree assessment are available from the last named authors, Northeastern Forest Experiment Station, P.O. Box 365, Delaware, Ohio 43015.

(2) The Arbor Day Foundation, Nebraska City, Nebraska, uses the \$1 per capita public funds expenditure as a standard for eligibility for recognition as a "Tree City U.S.A." The national average expenditure per tree is \$8.20. (Ottman and Kielbaso 1976).

(3) Donald E. Richter, Urban Forester, Ohio Department of Natural Resources. Statement made at Street Tree Conference, Wooster, Ohio, July 1978.

(4) Richard W. Boers, Commissioner Forestry and Open Space Planning, Toledo, Ohio. Presentation made at Street Tree Conference, Wooster, Ohio, July 1978.

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