

# MUNICIPAL TREE PROGRAMS IN PENNSYLVANIA

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**Abstract.** Municipal tree programs were assessed in Pennsylvania through mail surveys. Pennsylvania has approximately 378 tree programs of which 57% are implemented through shade tree commissions. Only 28% of Pennsylvania's cities and boroughs have tree programs. A high level of tree health exists in only 27% of the cities with programs. Only 28% of the programs have street tree inventories. Numbers of street trees are declining in 40% of the communities with programs.

Many studies have shown that street trees provide a wealth of benefits to communities by beautifying neighborhoods, improving the environment, and increasing property values. Development of a long-term care program for street trees is essential for maintaining the health and beauty of a community's urban forest. Tree programs are an investment in a community's future by maintaining the existing urban forest, removing safety hazards, and planting trees that will benefit future generations.

Cities, boroughs, and incorporated towns in Pennsylvania are empowered to establish Shade Tree Commissions (STCs) by the municipal codes of the Commonwealth (4). Communities enacting a STC may appoint members to the body, charge fees to landowners for tree planting and removal, and tax the community to pay for tree care. The STC must issue a report to the municipal government annually and notify the public when STC meetings are held.

While a STC is an excellent method of organizing for the care of public trees, many communities have supplementary or alternative arrangements. Communities use municipal park, forestry, or public works departments, as well as volunteer programs and park commissions, to manage their trees. What is important is that the tree programs provide comprehensive ongoing maintenance, develop long- and short-term plans, and build for the future.

This paper describes the results of a two-stage mail survey which obtained information on municipal street tree programs in Pennsylvania. Goals included estimating the number of tree programs

in Pennsylvania, categorizing the level of care provided, and determining the helpfulness of various types of assistance. The information was needed for developing educational opportunities and materials to assist communities with their tree programs.

## Literature Review

In 1988, the Illinois Council on Forestry Development conducted a survey which had some similarities to the Pennsylvania survey (5). Questionnaires were sent to all municipalities in the state, asking for information about urban tree programs, forest preserves and open space, utility companies, and the green industry. The Illinois survey found that the low number of trained professionals hindered management of urban forests in a large number of communities, recommending that municipalities increase the proportion of employees with forestry training. Another finding was a general lack of inventories, indicating a lack of planning effort. Educating communities about the usefulness of inventories was suggested. Financial support was deemed to be insufficient in over 50% of the communities studied, so funding for Illinois' Urban Forestry Assistance Act was urged.

The results of another survey, published in 1988, focused on street tree management nationally (2). Questionnaires were sent to all cities in the U.S. with a population of 10,000 or more, and to a sampling of cities with populations between 2,500 and 9,999. It was found that 39% of respondents had systematic tree care programs. The authors stated, "The major obstacle to effective urban forestry management is no longer a lack of the technical expertise; but inadequate funding for proper maintenance." Respondents indicated that 30% of tree care budgets went to trimming, while 28% went to removal and disposal, and 14% went to planting. Tree records were kept by 52% of respondents, and computerized by 23%. The sur-

vey found 68% of respondents had municipal tree ordinances. Among those with ordinances, 70% regulated species selection on public streets, 13% regulated species selection on private properties, 68% defined maintenance responsibilities, 78% regulated removals, and 28% required replacement of trees that were removed.

Several articles on urban tree ordinances indicate that there are other types of ordinances besides those that deal with street trees. An analysis of ordinances in New Jersey (1) found tree removal ordinances, subdivision ordinances, and site plan review regulations to be the most common types of ordinances among their respondents. Though this study was not based on a statistical sample of the state, it illustrates that many tree ordinances deal mainly with land development and landscaping.

Robson et al (3) summarized the views of panelists on urban forest management at a national conference. Concerns related to street tree management centered around the need to educate landowners, the importance of licensing professionals, and the complexity of working out compromises with municipal government and utility companies.

At the time when Pennsylvania's Urban and Community Forestry Program was just getting underway, little information on the status and needs of municipal tree programs was available. Accordingly, this survey was conducted to obtain facts and opinions that would be useful in making plans to assist communities with their trees.

## Methods

A two stage mail survey was used to sample Pennsylvania municipalities. The first mailing, consisting of a cover letter and a one page questionnaire, was sent in May 1991 to 2,555 of Pennsylvania's 2,571 municipalities. This included 1,544 of 1,551 townships, 959 of 968 boroughs, and all 52 cities.

The second stage, consisting of a longer questionnaire, was sent to stage one respondents who indicated their community had a tree program of some type (not necessarily a tree commission) and to other communities that were known to have a STC. The second mailing was sent to 240

municipalities thought to have tree programs (44 townships, 169 boroughs, and 27 cities). This questionnaire asked for data which was then used to categorize existing programs. Respondents were also asked what kinds of information and assistance would be useful in improving their programs.

A mailing list of municipal leaders containing a single name and address for each municipality in the Commonwealth was obtained from the Pennsylvania Department of Community Affairs. For communities with a STC, the chairperson was sent the questionnaire. For communities without a STC, the questionnaire was sent to the head of local government. The cover letter explained the intent of the survey and asked that the survey be completed by the person most knowledgeable about the community's program, be that person the recipient of the mailing or someone else.

## Results.

**Stage 1.** The overall response to the first survey stage was 38.7% (988 of 2,555). Response rate was 41% for boroughs (397 of 959), 37% for townships (564 of 1,544), and 52% for cities (27 of 52).

Results show significantly higher percentages of tree care programs in cities than in boroughs or townships, as might be expected (Table 1). Many of the boroughs are small and have limited resources; most townships are rural, with dispersed residential and business properties. The relatively low percentage of boroughs with programs should not obscure the fact that the number of boroughs is greater than the number of cities and townships that have tree programs in the Commonwealth.

The first stage results can be used to estimate the number of tree programs in the Commonwealth. The response rate among communities with STCs can be used as an estimate of response rate among communities with all forms of tree programs. Six of the 12 cities in Pennsylvania having STCs responded to the first stage, giving an estimated response rate of 50% for cities with tree programs. Applying this rate to the 21 cities with tree programs identified in stage 1 gives an estimate of 42 cities with tree programs. For boroughs, the response rate was 50.5% (50 of

**Table 1. Does your municipality have a street tree program?**

	Cities		Boroughs		Townships		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	21	77%	120	30%	31	6%	172	17%
No	6	22%	269	68%	531	94%	806	82%
Not Sure	0	-	8	2%	2	-	10	1%
Totals	27		397		564		988	

99), and for townships 31.5% (6 of 19). Using these rates, there are an estimated 238 boroughs with tree programs and 98 townships with tree programs. Accordingly, 81% of Pennsylvania's cities, 25% of boroughs, and 6% of townships have tree programs, 378 in all (15% of all municipalities).

The 28% of Pennsylvania's cities and boroughs that have some type of tree program may be compared to the 39% of U.S. cities that have "systematic tree care programs" (2).

Cities expressed the greatest interest in education programs (Table 2). Among boroughs 222 were interested, representing 56% of respondents. Over 140 townships (25%) also showed an interest in education programs. This indicates that education programs should be scheduled in such a way that the many smaller communities can participate. Communities are most interested in workshops scheduled for single weekdays or evenings.

Both cities and boroughs showed great interest in receiving a brochure or newsletter about tree programs (Table 3). Townships were less inter-

ested in receiving one or both of these items. Pennsylvania's municipalities, both large and small, have a great deal of interest in learning more about tree programs.

Interest in education programs and mailings was higher among municipalities that have tree programs. Of communities with tree programs, 72% were interested in workshops and 95% were interested in mailings. Of municipalities without programs, 30% were interested in workshops and 53% were interested in mailings. This shows that communities with existing programs are most interested in learning how to improve their programs, but also that others are interested in starting programs.

**Stage 2.** Response to the second stage was 67% (161 of 240). Response rate for townships was 71% (32 of 45), for boroughs 64% (107 of 167), and for cities 81% (22 of 27).

*Programs, Policies and Plans.* Nearly half of respondents did not have a STC (Table 4). This illustrates that STCs are only one method of organization that communities use to care for trees. The high percentage (73%) of respondents

**Table 2. Would you like to learn more about municipal tree care at a workshop in your area; if so, how much time could you spend?**

	Cities		Boroughs		Townships		Total	
	No.	%	No.	%	No.	%	No.	%
Yes, 2 Weekdays	7	26%	28	7%	16	3%	51	5%
Yes, 1 Weekday	13	48%	106	27%	73	13%	192	19%
Yes, Evenings	8	29%	105	27%	65	12%	178	18%
Yes, Saturday	4	15%	60	15%	31	5%	95	10%
Sum of yes responses	21	78%	222	56%	142	25%	385	39%

**Table 3. Would you be interested in receiving a brochure and/or newsletter about community tree care programs?**

Cities Interested in:	Boroughs		Townships		Total		No.	%
	No.	%	No.	%	No.	%		
Brochure	21	78%	277	70%	177	31%	475	48%
Newsletter	22	81%	238	60%	220	39%	480	49%
Neither	1	4%	85	21%	293	52%	379	38%

**Table 4. Does your community have a Shade Tree Commission, tree ordinance, or tree inventory?**

Response	STC		Ordinance		Inventory	
	No.	%	No.	%	No.	%
Yes	92	57%	116	73%	45	28%
No	66	42%	35	22%	112	71%
Not sure	1	1%	7	5%	2	1%

with ordinances is encouraging, as ordinances serve the important purpose of formalizing responsibilities, setting standards, and providing a legal basis for the program. The low number (28%) of inventories is troublesome. An inventory is an important tool for maintaining street trees, scheduling work, and developing long-term plans. Computer inventories are especially useful in larger communities, and can actually save money by increasing the efficiency of the tree program.

Ninety-two municipalities reported a STC. Of these, 87% met once or more yearly, and 67% met twice or more yearly. This shows a high degree of activity among communities with STCs.

Development of long range plans and policies was reported by 137 of 154 municipalities (88%). This was done principally by elected officials or municipal tree commissions. This high level of planning and policy activity is encouraging.

Property owners were offered a method of input into plans and policies in 74% of responding communities. However, input was obtained principally through complaints according to 66% of the respondents. Only 20% of the planning bodies regularly sought property owner input. Public support for a tree care program can be built by seeking landowner input instead of waiting for complaints. Tree care programs can be improved

by soliciting the ideas and input of the public.

*Tree Planting.* Almost half of responding communities have a high degree of street tree cover (over 59% of street mileage lined with trees) in their communities (Table 5). More aggressive planting programs can help other communities to reach this high level of tree cover. The very large number of spaces along streets where trees could be planted represents a tremendous opportunity for the nursery industry. It could also lead to serious problems for utilities, if trees incompatible with electric lines were planted. Technical advice on species selection can help to ensure that mature tree size will be appropriate for the planting space.

Many Pennsylvania communities are faced with declining numbers of street trees (Table 6). The

**Table 5. In your estimation, what percentage of the community's street mileage is lined with trees?**

Response	No.	%
Greater than 80%	41	26%
60-79%	36	23%
40-59%	32	20%
20-39%	27	17%
0-19%	22	14%

**Table 6. In the past five years, how has the number of trees planted compared with the number of trees removed?**

Response	No.	%
More planted than removed	63	29%
As many planted as removed	37	23%
More removed than planted	46	40%
Not sure	12	8%

low percentage of programs with increases shows a need to educate communities about the benefits of new plantings, and possibly a need for planting funds.

Many communities do not conduct yearly plantings to replace removed trees and fill empty tree spaces (Table 7). Yearly plantings are important for maintaining the tree population. Programs which fail to conduct regular planting face a declining number of street trees, as removals fail to be replaced by new trees. Yearly plantings also help maintain a range of tree ages.

Numbers of trees planted over a five year period ranged from 0 (7% of respondents) to greater than 500 (7%), with the largest proportion of communities (48%) planting less than 50. No statistically significant correlation could be established between number of trees planted and population, nor between number of trees planted and number of street miles.

Fully 72% of the responding municipalities had a list of desired tree species for planting. Ideally, species lists contain those that will survive and flourish under the harsh conditions facing street trees. Such lists also may help ensure that selected trees will be suited to various types of planting spaces, if species are appropriately categorized.

STCs have roles in tree selection in only 43% of the communities (Table 8). As tree selection is an important aspect of long-range planning, it is important that expertise be developed and applied by those who select trees for various types of planting sites.

Most communities have defined who has authority to plant trees (Table 9). In many communities, more than one option exists. In situations where the community does not require a planting

**Table 7. How frequently are municipal street trees planted?**

Response	No.	%
One or more times yearly	67	44%
Less than once yearly	9	24%
Never	10	5%
Only when trees are removed	32	7%
Not sure	20	20%

**Table 8. Who selects street tree species for planting?**

Response	No.	%
STC	54	43%
Adjacent Landowner	18	14%
Municipal employee	24	19%
Nursery or contractor	10	8%
Other	14	11%
Not sure	6	5%

**Table 9. Who is allowed to plant trees along municipal streets?**

Response	No.	%
Municipality	91	57%
Adjacent landowners, permit needed	61	39%
Adjacent landowners, permit not needed	43	27%
Others with permits	16	10%
Authority not defined	23	15%

permit, there is little assurance that the tree planted will be appropriate for the planting space, opening up the possibility that the planted tree may someday grow into a liability. When communities allow landowners to plant street trees, the municipality should ensure in some way that the tree is appropriate in order to avoid costly problems such as interference with overhead wires and buckling sidewalks.

*Maintenance Work.* Most respondents (65%) believe that over half of their trees are in good or excellent condition (Table 10). Only 27% of respondents perceived nearly all (more than 75%) of a community's trees to be in good or excellent condition. There is a need to help communities increase maintenance to improve the quality of their urban forests. Additionally, it is interesting to

**Table 10. What percentage of the municipality's street trees are in good or excellent condition?**

Response	No.	%
Greater than 75%	42	27%
50-74%	60	38%
Less than half	25	16%
No basis for judgement	30	19%

see that over half the respondents felt qualified to judge the health of their street trees without an inventory.

Many communities allow several parties to prune street trees (Table 11). It is important that those trimming street trees possess adequate training in pruning and safety techniques. Improper pruning can damage trees. When landowners or contractors are allowed to trim street trees, the municipality should ensure that they have training.

There is significant room for improvement in pruning practices among communities with street tree care programs (Table 12). A five year pruning cycle is a common goal for street trees. Only 12% of respondents approach this level.

The high number of respondents reporting no regular maintenance work (Tables 12 & 13) shows an opportunity to increase the frequency of tree care activities conducted by Pennsylvania communities.

Systematic checks for trees that need to be removed were conducted annually by 40% of the respondents. However, 43% responded that systematic checks occurred only in emergency situations. This raises the issue of safety in Penn-

**Table 11. Who prunes or trims the municipality's street trees?**

Response	No.	%
City employees	74	47%
Landowners	73	47%
Contractors	64	41%
No pruning work is done	10	6%

**Table 12. What percentage of the street trees in the community are pruned within a five year period?**

Response	No.	%
Greater than 80%	19	12%
60-79%	10	6%
40-59%	12	8%
20-39%	20	13%
1-19%	54	34%
No	9	5%
Not sure	35	22%

**Table 13. What types of maintenance work on trees have been done on a scheduled basis in the past five years?**

Response	No.	%
Fertilizing	29	9%
Watering	35	22%
Spraying	39	25%
Cabling	20	29%
Wound repair	23	15%
None of the above	65	41%

sylvania communities. With such a large percentage of active street tree care programs failing to check regularly for hazardous trees, the situation state-wide seems serious.

Table 14 shows that many communities allow several options for removing street trees. It is important that those performing this task take adequate safety precautions and be experienced with removal techniques. Landowners who remove trees are especially in need of such training. The small number of communities who have not defined removal responsibility would be well advised to do so.

*Availability of Expertise.* Only 24% of the municipalities had contracted or employed a professionally educated forester or arborist to manage their trees. Only 6% had at least one full-time person with such training. This result is consistent with the Illinois study which found that most communities lacked trained arborists to care for their street trees. Of the communities with trained part-time arborists, 7 had less than 2,500 residents. Obviously these communities have a strong commitment to their street trees. The smallest Pennsylvania community with a full-time arborist

**Table 14. Who removes hazardous, dead or dying street trees in your community?**

Response	No.	%
The municipality	98	79%
Landowners	85	53%
Electrical utilities	56	35%
Contractors	67	42%
Responsibility not defined	13	8%

has between 10,000 and 24,999 residents.

Thirty-six percent of respondents had at least one employee (trained or untrained) assigned to the community's trees. Of respondents with municipal tree employees, 72% had either 1 or 2 workers.

Thirty-eight percent of responding municipalities reported at least one trained person active in the maintenance of the community's street trees. These individuals could be employees or volunteers. Of respondents with at least one trained person, 82% had one or two. The similarity of the results for numbers of workers and numbers of trained persons suggests that a high proportion of workers have received some training.

Few communities reported involvement of volunteers in street tree care. Volunteers were most often involved with tree planting.

**Education Needs.** When asked what kinds of information would be helpful to those involved in tree programs, 52% responded that information on starting a street tree program would be "very helpful" (Table 15). This is interesting when one remembers that all of those sent the survey had some form of existing tree program. Our interpretation of this finding is that many communities are interested in expanding or reinvigorating the

program they have and that they are eager for advice as to how to proceed.

When asked about pruning techniques and species selection, 60% and 63%, respectively, responded that this kind of information would be "very helpful". High interest was shown in various types of arboricultural information among communities with tree programs. Cost-sharing programs sparked the keenest interest. It is noteworthy that more communities were interested in cost-sharing than fund-raising. Fully 75% of respondents stated that information on this subject would be very helpful. This response may indicate that many communities find money to be a limiting factor in their tree care program, a finding consistent with the national survey. Written comments by respondents support this idea. Many individuals wrote that their community was organized and eager to increase street tree care, but that lack of funding prevented greater action.

### Conclusion

Pennsylvania communities have expressed great interest in education about tree care programs, including workshops and informational mailings. The 28% of cities and boroughs with existing programs are especially interested in

**Table 15. How helpful would information about the following topics be to your municipality in conducting or developing a street tree program?**

Topic	Very helpful		Somewhat helpful		Not helpful	
	No.	%	No.	%	No.	%
cost-sharing programs	103	75%	21	15%	14	10%
species selection	86	63%	35	26%	15	11%
pruning techniques	80	60%	41	31%	13	9%
raising funds	78	60%	28	22%	23	18%
disease & pest control	76	59%	41	32%	11	9%
street tree inventories	69	54%	37	29%	21	17%
starting a program	63	52%	31	26%	26	22%
street tree ordinances	63	50%	34	27%	28	23%
planting methods	61	49%	46	37%	18	14%
fertilization	62	48%	49	38%	17	14%
removal of trees	53	42%	46	37%	26	21%
consultant services	50	40%	48	39%	26	21%
nuisance birds	39	32%	38	31%	45	37%
birdwatching & trees	28	24%	39	33%	50	43%

such education. Many of these programs can be improved by conducting inventories, increasing plantings, defining work responsibilities, and scheduling regular, comprehensive maintenance.

Many Pennsylvania communities are rural and may not have enough municipal trees to warrant a tree program. Non-rural communities without tree programs, however, could be educated about the benefits a tree program would provide to their community.

Information collected in this survey will be used to improve the assistance program conducted by the Pennsylvania Urban and Community Forestry Council (PUCFC). The PUCFC assists communities through five Extension Urban Foresters, through education programs, and through a matching grants program. With the help of federal and commercial funding, Pennsylvania's UCFC has established a network of resources that will provide that assistance. In this way, the opportunities for improving street tree care identified in this survey can be pursued.

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### Literature Cited

1. Gutman, R., and J. Landry. 1977. *An analysis of tree ordinances: The example of New Jersey*. J. Arboric. 3(10): 191-197.
2. Kielbaso, J., B. Beauchamp, K. Larison, and C. Randall. 1988. "Trends in urban forestry management". Baseline Data Report, Volume 20, No. 1. International City Management Association, Washington, D.C.
3. Robson, H., J. Morell, E. Page, and D. Cepelcha. 1982. *Municipal ordinances' relation to trees*. J. Arboric. 9(5): 128-136.
4. Shade Tree Commission Act of 1907, May 31, P.L. 349.
5. Illinois Department of Conservation. 1988. Urban forestry practices in Illinois. Report to the Urban Needs Task Group of the Illinois Council on Forestry Development. 32 pp.

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**Résumé.** Les programmes municipaux sur les arbres en Pennsylvanie furent évalués par le biais d'enquêtes postales. La Pennsylvanie compte environ 378 programmes sur les arbres, dont 57% sont accomplis au sein d'une commission de l'arbre. Seul 28% des villes et municipalités de Pennsylvanie ont un programme sur les arbres. Un niveau élevé de santé des arbres n'existe qu'au sein de 27% des villes possédant un programme. Seul 28% des programmes compte sur un inventaire des arbres de rues. Quarante pourcent des communautés présentant un programme renferment de nombreux arbres de rues en dépérissement.

**Zusammenfassung.** Kommunale Programme für Bäume wurden in Pennsylvanien durch schriftliche Anfragen statistisch untersucht. Pennsylvanien hat ca. 378 Baumprogramme, von denen 57% durch Kommissionen für Schattenbäume umgesetzt werden. Nur 28% der Städte und selbstverwalteten Bezirke in Pennsylvanien haben überhaupt Baumprogramme. Ein hoher Anteil gesunder Bäume ist in nur 27% der Städte mit Baumprogrammen vorhanden. Nur 28% der Programme befassen sich mit Straßenbäumen. Die Zahl der Straßenbäume geht in 40% der Gemeinden mit Programmen sogar zurück.