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MUNICIPAL TREE MANAGEMENT IN THE U.S.-1980[1]

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Abstract. A survey of 2861 cities to determine status of tree care produced a 54% response. Only 50% identify their program as systematic. The manager's average age is 43 years, with 14 years of experience and 8 years in the current position. Membership patterns of tree managers is presented. The various organizations have potential to expand membership among municipal tree care managers, and thus greatly influence urban tree management. Of cities surveyed, only 22% know, with certainty, the number of trees in their jurisdiction. Total U.S. street trees are estimated to number 49,000,000. Overall per capita expenditures for tree care is $2.19 and the per tree expenditure is $10.78. Budgets for tree care are allocated primarily to street trees (61%) and park trees (24%). The major cultural practices related to these are trimming (27%), removal (23%), and planting (14%).

Cities with numerous, well-cared-for trees along streets and in parks reap many benefits. Among them are an enhanced civic pride resulting from the esthetics; an attraction to outside investors to locate in such a pleasant, comfortable area; increased tax revenues from higher valued treed properties; and the several environmental benefits associated with trees.

Ottman and Kielbaso (1976) reported on the status of municipal tree care in the U.S. as of 1974. The survey was revised, updated, and questionnaires sent to an expanded number of 2861 cities during 1980. Some of the results are presented here to provide an updated status report of municipal tree care on a national level. Further details are presented by Giedraitis and Kielbaso (1982). We are able to report on the responses from 1,534 cities, an increase from 864 cities in the earlier survey. Much of the increase is in the city population groups below 50,000 which were sampled much more heavily in this update than in the original survey. The 1,534 responses represent a 54% response rate. Response rates were higher for larger cities and for cities in the West and North Central region, 68% and 60%, respectively.

As a preliminary question, cities were asked to respond if they conducted systematic tree management which suggests an orderly plan for the current and long-range needs of trees. This definition was not provided; respondents could choose their own definition. Of all cities responding, only 50% identified their tree care as systematic. This was related to city size and to region as presented in Table 1.

Manager Profile. On a national basis, the profile of the average city tree manager was obtained. The average (mean) age is 43 years. The manager has an average of 14 years experience in tree care and has been in the current position for 8 years; the most common numbers of years in position, however, are 1, 2 and 3 years, with a maximum of 51 years.

The title of the tree manager varies considerably. Of those tree managers with tree-related titles, most positions are related to parks, public works and forester/arborist as presented in Table 2. Some 62% earn in the $15,000-$25,000 income range, fairly uniformly spread across the range. The education of the tree manager includes 31% with high school as the maximum, 16% with associate degrees and

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52% with a bachelor's degree or more. For those who attended, the college major is fairly equally divided between horticulture (16.8%), forestry (16.6%), parks (16.2%) and engineering (11.8%).

Tree managers must keep up with their field to perform at the highest possible level. Membership in professional organizations is important in this effort. It is on this point that a surprise is evident. The most prominent tree-related organizations represented were the International Society of Arboriculture, National Recreation and Parks Association, and the Society of American Forestry. Of all tree managers (full-time duty and part-time duty), the percent holding memberships is presented in Table 3 by category of response. Since the care of trees is paramount, and not whether or not the person is full time or part time, this membership pattern suggests that the various organizations, in order to influence city tree management, should somehow expand their memberships. It should also be realized that memberships are inflated somewhat since some persons belong to more than one organization.

Management

The management practices dealing with urban trees vary considerably, as does the level of management. These have been reported by Ott-

Table 1. Percentages of cities having systematic tree care management — 1980.

Population group (thousands)	*Systematic Yes %*
Overall	50
over 1,000	60
500-999	62
250-409	67
100-249	65
50-99	65
25-49	55
10-24	45
5-9	28
25-49	36
Region	
Northeast	47%
North Central	52%
South	40%
West	63%

Table 2. Tree Manager Titles — 1980.

Title	*Number*	*Percentage*
Director, Supt., Supt. Parks	251	19
Public Works Dir., Supt. Streets	242	18
Forester/Arborist	206	16
Tree Warden (esp NE)	80	6
Horticulturist	50	4
City Manager	46	4
Shade Tree Commissioner	36	3
Other tree related	59	4
Misc. non-tree titles	339	26

Table 3. Membership patterns of city tree managers.

Organization	*Number reporting*	*% of sampled cities*	*% of 1534 returned questionnaires*	*% of 716 responses to this question*	*% of 406 full time tree care managers*
International Society of Arboriculture	249	9	17	35	50
National Recreation and Parks Association	228	8	16	32	32
Society of American Foresters	67	3	5	9	15
Society of Municipal Arborists	54	2	4	8	11
International City Managers Association	57	2	4	8	2

man and Kielbaso (1976) and Giedraitis and Kielbaso (1982). Finding a means of setting a quality standard for a tree program is most difficult since there are profound differences between programs. Nevertheless, some attempt will be made. As a first criterion, some knowledge of budget size is necessary, and as a second criterion, the number of trees; the combination allows the calculation of dollars spent per tree.

Of the cities responding to the questionnaire, only 344 (22%) were sure enough of the number of trees in their jurisdiction that they provided the number with assurance, rather than as an estimate. Another 167 were able to place an estimate on the number of trees on streets in their jurisdiction. Thus, only 22% of the cities surveyed have the level of management which permits calculation of dollars per tree expenditure.

The number of trees on city streets may be considered from different perspectives. The overall average number of city street trees is 26,818 trees per city; when weighted by city size, this suggests that there are about 49,000,000 street trees in the U.S. as of 1980. The median (half above/half below) number of street trees for all cities is 11,324. Both the average and median are presented in Table 4. The average is the only valid number to use statistically but the median allows an estimation of ranking. Even though a case could be made that the overall average number of trees and total 6,749 cities would estimate 180,000,000 street trees, the 49,000,000 cited above is a better estimate, since it recognizes differences in city size. The data presented in Table 4 may be useful in a first approximation of the number of trees in the various population classes.

Budget information is another most important means of determining quality of urban tree care, especially when combined with population data. Table 5 presents dollar expenditures by city population groups on a per person and per tree basis and by average and median. For groups with small numbers reporting, an average with the groups above and below might provide a more reliable estimate. The overall per capita expenditures in 1980 and 1974 averaged $2.19 and $1.63 respectively, and the median expenditure in 1980 was $1.28. The overall per tree expenditures averaged $10.78 and $8.70 for 1980 and 1974, with median expenditures of $6.28 in 1980.

The trees for which budgets are spent as noted in Table 5 are not only to be considered as trees, but the budget may be considered from the perspectives of where the trees are located and for what cultural practices the expenditure are used. These budgetary divisions were as follows: streets, 61%; parks, 24%; cemeteries, 2%; nursery, 2%; public grounds, 7%; other, 3%. There were only a few significant differences from these overall averages: the largest cities are weighted to streets (74%) and the smallest to grounds (11%) and parks (29%) rather than streets; cities in the Northeast are weighted to streets (73%), and in the South to parks (38%) and grounds (11%). Other than these exceptions, most cities do not vary greatly from the averages.

The percent budget allocations for the various cultural practices are presented in Table 6. The only significant differences from the averages are: largest cities plant less (5%), trim more (32%) and devote more to nursery work (5%). Cities in the Northeast and North Central regions devote more to planting (17%) and removal (29%) and less to trimming (21%). This is no doubt due greatly to the presence of Dutch elm disease. The West devotes considerably more to trimming (43%) and watering (9%) and less to planting (10%) and removal (10%). Since the West is dominated by California responses, and there are no current serious problems, it is probable that the Western balance between planting (10%), trimming (43%) and removal (10%) is a goal to be aimed at when the tree population is more stable.

Summary

Care of city-owned trees is important for cities to reap the many benefits from trees. The responsible person may have a title relating to parks, or public works, or forestry/arboriculture more often than other titles. These titles account for 53% of the 1309 respondents to this question. Of all cities providing responses to the questionnaire, only 50% identify their tree care as systematic, by their own definition. This suggests that a great

Table 4. Numbers of street trees in U.S. cities by population and region — 1980.

Population group (thousands)	*Total number of cities*	*Number reporting*	*Median*	*Mean*
Overall	6749	344	11,324	26,818
over 1,000	6	2	250,000	455,000
500-999	18	8	103,888	162,037
250-499	34	13	50,000	87,038
100-249	105	36	39,838	50,557
50-99	258	69	20,000	27,160
25-49	590	93	10,000	13,128
10-24	1484	113	4,000	8,432
5-9	1663	5	985	1,903
2.5-4.9	2217	5	150	2,070
Projected total U.S., based on above categories			28,219,579	48,934,210

Table 5. Average and median annual expenditures in dollars for tree care in cities, by population; 1980.

	Per capita			*Per tree*		
Population Group (thousands)	*Reporting*	*Average*	*Median*	*Reporting*	*Average*	*Median*
Overall	945	2.19	1.28	263	10.78	6.28
over 1,000	5	1.42	.53	2	11.03	5.28
500-999	10	1.58	1.17	5	7.78	1.55
250-499	24	2.42	1.08	11	11.05	4.79
100-249	65	2.11	1.59	29	6.55	5.23
50-99	132	2.51	1.93	55	11.89	7.50
25-49	225	2.52	1.53	77	11.56	7.34
10-24	427	1.98	.85	78	11.23	4.62
5-9	27	1.59	.70	3	3.19	.10
2.5-4.9	30	2.09	1.06	3	11.17	1.50

Table 6. Overall municipal budget allocations, by percent for various cultural practices, 1980.

Supervision	9	Fertilization	2
Office	1	Watering	3
Planting	15	Storm Work	4
Trimming	28	Repairs	3
Removal	24	Stump Removal	4
Nursery	1	Other	2
Pest Control	4	TOTAL	100

deal remains to be accomplished to obtain the full potential of our approximately 49,000,000 street trees in the United States.

The membership pattern of persons responsible for trees in our cities also suggests great opportunities since so few of the respondents belong to the larger organizations able to emphasize tree care. An increase in the appeal of these organizations could result in many more tree managers being more informed about tree care.

Criteria for evaluating tree care programs are difficult to identify, but budget and tree numbers provide one means. Unfortunately, as of 1980 only 344 cities (22% of returned questionnaires) know the number of their trees with any confidence. Another 167 (11%) were able to estimate, but the remaining 67% presumably have little idea as to the number of trees they manage. Some idea of inventory of resources is important in any management program.

Of those cities with the relatively high level of management inherent with knowing the tree inventory and the budget, the average expenditure per city street tree is $10.78, with a median of $6.20. The per capita expenditure is $2.19. The major budget divisions for tree care are 61% for street trees and 24% for park trees. Of the actual cultural practices, the bulk of municipal tree care budgets are allocated to planting (14%), trimming (27%) and removal (23%); a total of 64%.

There are obviously several challenges to improve tree care in U.S. cities. Some general guidelines relative to budgeting and budget allocations as presented in this paper may serve as guides for cities beginning tree programs and as comparisons for cities already having some level of tree management.

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