A Description of Texas Municipal Forestry Programs: How Critical Programs Elements Vary According to City Size, Expenditures, and Assistance from the State

By

Keith O'Herrin

Applied Research Project

keith.oherrin@gmail.com

Submitted to the Department of Political Science
Texas State University-San Marcos
In Partial Fulfillment for the Requirements for the Degree of
Masters of Public Administration

Spring 2013

Faculty Approval:

_____

Patricia Shields, Ph.D.

_____

Billy Fields, Ph.D.

_____

Stephanie Reyes, MPA

Abstract

Purpose: The purpose of this research study was to describe how six critical program elements of urban and community forestry programs in Texas municipalities vary according to city size, expenditures, and assistance from Texas A&M Forest Service. The six critical program elements are 1) staffing levels, 2) tree ordinances, 3) advocacy, 4) urban forest management plans, 5) tree inventories, and 6) the program's status in the larger municipal structure. This study also was designed to compare current expenditure rates against benchmarks set by previous research studies found in the literature.

Method: Survey research was the sole method of data collection for this study. The survey was sent to 441 Texas city managers, parks department directors and other executive-level parks department staff, and municipal foresters in 241 unique Texas cities. Surveys were returned from 81 unique cities for a response rate of about 34% at the city level. Surveys were returned from 93 individuals for a response rate of about 21% at the individual level.

Findings: Expenditures on urban forestry activities are low compared to the findings of related literature and represent a continued downward slide. On average, Texas cities of any size are spending less on urban forestry per capita today than the average U.S. city was spending at any period previously recorded; 1974, 1980, 1986 or 1994. If the Arbor Day Foundation's Tree City USA expenditure requirement of $2 per capita (set in 1974) is adjusted for inflation, it rises to $9.38 in 2012 dollars; only about 13% of respondents meet or exceed this adjusted value. Additionally, spending on urban forestry as a percentage of a municipality's total budget is quite low.

There appears to be a strong connection between a city receiving assistance from the Texas A&M Forest Service and those cities currently possessing the critical elements of an urban and community forestry program. Strong tree ordinances are relatively common in Texas municipalities, including municipal codes that protect trees on private property during construction activity or regulate the removal of trees on private property. Tree boards and non-

profit groups are both fairly common as well. Urban forestry management plans are very uncommon and there appears to be a strong connection between high expenditure rates and management plans. The same connection to high expenditure rate can't be made with tree inventories of street trees or park trees which are also very uncommon, whether they are comprehensive or sample inventories.

About the Author

Keith O'Herrin grew up in the rural Kickapoo River valley in the heart of the 'Driftless Area' of Southwest Wisconsin. He received his B.S. in Urban Forestry from University Wisconsin – Stevens Point before working as the City Forester of La Porte, Indiana for 2 years. He has now been with the Urban Forestry Program of the City of Austin, Texas for 3 years where he is currently a Forestry Supervisor. He is also a Master's of Public Administration candidate at Texas State University – San Marcos.

Southwest Wisconsin in early fall

Dedication

This research is dedicated to my parents, Bill and Mary

There is a strong pattern between a city receiving assistance from Texas A&M Forest Service and those cities which have the **Program Elements**; this speaks towards the primary function of Texas A&M Forest Service program which is to advise municipalities on implementing and maintaining these program elements. Cities that did receive assistance were more likely to have dedicated staff than those that didn't; however this statement (cross tabulation) could be reversed and it could be said that those cities with dedicated staff were more likely to attempt to receive assistance from Texas A&M Forest Service. Regardless, the original statement holds true for the program elements of ordinances, both types of advocacy (board and non-profit), management plans, and both types of inventories (street tree and park tree).

RECOMMENDATIONS FOR FUTURE RESEARCH

These recommendations are based on the findings of the literature review, the results of the survey conducted for this research study, and the author's 5 years of experience as a professional municipal forester.

This research study only attempted to describe facts, not opinions. Numerous research studies found in the literature that describe or examine municipal forestry programs asked practitioners their opinions on different topics using Likert-scale survey questions. This forces the subject to change from facts about municipal forestry programs to the opinions of municipal foresters. Future researchers may need to incorporate elements of both into their studies to address some of the recommendations presented in this section.

This research study was designed to describe four main factors instrumental to municipal forestry program management; program elements, expenditure benchmarks, assistance from Texas A&M Forest Service, and city size. The program elements chosen for this research study were drawn from the literature and the author's own experience. Replication in the future should consider adding public education and outreach in place of **Program Position** within the municipal structure; this research study ignored public education and outreach which is an important component in itself and has potentially significant effects on **Advocacy**. The element in this research study that described the position of the program within the larger municipal structure was interesting, but didn't offer particularly useful insights. Adding public education and outreach, to the five topics of staff, ordinance, advocacy, plans, and inventories would result

in the best possible parts of a municipal forestry program to describe or examine. Possible measurements of education and outreach include the presence of a volunteer training program, quantity of public presentations given, and quantity of social media presence.

The three expenditure benchmarks used in this research study were mirrored after those used by Kielbaso and several different renditions of graduate students in three nation-wide surveys conducted in 1974[40], 1980[41], and 1986[42]. Tschantz and Sacamano (1995) utilized two of those three expenditure benchmarks for their nation-wide survey. Together these four studies represent the most important baseline data regarding municipal forestry programs in the United States. Adjusting those ratings for inflation allows for reference against almost 40 years of change. A research study examining municipal forestry programs that didn't include these expenditure benchmarks would be seriously deficient. Additional benchmarks to consider including in future research are 'number of trees on public property per capita' and 'number of municipal forestry staff per total number of municipal staff'.

Several previous research studies that surveyed municipal forestry programs focused on how the actions of the state-level urban forestry program affected or assisted local-level programs. Municipalities are the resource managers and practitioners in the field of municipal forestry; state-level programs exist to advise and assist them (and other local-level managers) since state-level programs do not usually directly manage themselves. Since this advisory role is their primary function and they represent the primary pipeline by which funding and technology flow from the Federal program to the local-level, it is a very worthwhile effort to attempt to describe how successful they are in reaching municipal forestry programs. This research study grouped assistance into three broad categories based on the literature and the author's experience: Financial, Technical, and Educational. However, only quantity of assistance was addressed and no attempt was made to examine the quality of that assistance or the outcomes directly associated with that assistance. Future research examining the quality of that assistance would almost certainly have to be opinion-based. Any questions designed to examine the outcomes of that assistance could be based on the expected outcomes established by Texas A&M Forest Service program or the Federal Urban Forestry Program.

[40] The 1974 study was conducted by Ottman and Kielbaso (1976)
[41] The 1980 study was conducted by Giedraitis and Kielbaso (1982)
[42] The 1986 study was conducted by J. J. Kielbaso et al. (1988)

In municipal forestry programs, as in any other kind of municipal program or service, everything is relative to the size of the city being served. City size (population) will continue to be an important variable in any research study that attempts to describe municipal forestry programs. Different categories of city size were created after survey responses were collected and were based on the results of one question: 'city population'. A logical pattern clearly presented itself at that point; requesting cities self-report themselves into pre-determined city size categories would have offered no benefit to this research study.

Responding cities of population between 0 and 5,000 residents were clearly lacking from this research study. Most communities this size likely don't have any staff dedicated to urban forestry activities; however city managers would be a good starting point for future contact. Communities this size, possibly under advisement from Texas A&M Forest Service, very well may have tree ordinances and a tree board. Due to their small size (population), small tree planting or maintenance projects may have a great effect on expenditure ratings such as $ per capita and may therefore offer surprising results.

FINAL THOUGHTS

This research study contributes to the context of urban and community forestry programs in Texas by taking the pulse of municipalities of varying sizes, politics, and geography. The main descriptive categories[43] of this research study were derived from a thorough review of the literature and the author's 5 years' experience in the municipal forestry industry. They are the most relevant topics that could be asked in a research study seeking to describe facts; questions which are designed to poll opinion would be added as well if this research study were repeated.

The expenditure benchmarks used here and pioneered by Kielbaso and others in the 1970's and 1980's will continue to be relevant, though less-so unless another nation-wide survey is performed; the last was performed almost 20 years ago. These ratios of expenditures per city size or expenditures per budget size allow for easy comparison in the present between survey respondents, and comparison against historic benchmarks dating back over 40 years.

[43] See Shields and Rangarajan (2013) for a thorough discussion about using descriptive categories as a framework for social science research

The 1990 Farm Bill has resulted in a top-down funding scheme where state government's assist and provide grants to local governments; so unless that funding dries up Texas A&M Forest Service will always have at least one expert there to guide and assist layman and professionals. The number of municipalities tapping these experts for advice needs to increase dramatically or, put another way, Texas A&M Forest Service needs to continue expanding their reach by assisting more municipalities.

The program elements of staff, ordinances, advocacy, plans and inventories are the foundation of a well-rounded urban and community forestry program; the addition of public education and outreach would have been beneficial and relevant, but that element is probably the least critical when compared against the first five mentioned. The most surprising finding of the entire research study is certainly how many Texas municipalities have ordinances which regulate trees on *private* property, in addition to public tree regulations.

This information would certainly be interesting to municipal foresters and parks department executives, improving upon their already basic understanding of how they compare to their Texas peers. Comparing their expenditure ratings against other Texas cities of a similar size allows for direct comparison and can fuel budget increase requests.

City managers will also be interested in how they compare to Texas municipalities of a similar size. A common question posed by city managers concerning a very wide range of topics from public safety to refuse collection is 'are we doing better than our neighbors, or worse?' This research study allows Texas city managers to have this conversation about their urban and community forestry efforts for the first time, and draw meaningful comparisons with hard numbers on spending and real examples of the critical elements of a high-functioning program.

Texas A&M Forest Service will be interested to know the difference between how many municipalities they are assisting with urban and community forestry efforts, and how many more municipalities are engaged in urban and community forestry but they aren't reaching.

BIBLIOGRAPHY:

Casey, Cynthia J., and Robert W. Miller. 1988. "State Government Involvement in Community Forestry: A Survey." *Journal of Arboriculture* 14 (6) (June): 141 – 144.

City Policy Associates. 2008. "Protecting and Developing the Urban Forest Canopy". United States Conference of Mayors.

Clarke, John D., and Charles McNary. *Clarke-McNary Act of 1924*.

Dunster, J., and K. Dunster. 1996. *Dictionary of Natural Resource Management*. 1st ed. Vancouver, B.C., Canada: UBC Press, University of British Columbia.

Dwyer, John F., E. G. McPherson, Herbert W. Schroeder, and Rowan A. Rowntree. 1992. "Assessing the Benefits and Costs of the Urban Forest." *Journal of Arboriculture* 18 (5) (September): 227 – 234.

"Federal UCF Program Summary." 2005.

"Federal UCF SOAPs Definitions." 2012.

Giedraitis, John P., and J. J. Kielbaso. 1982. "Municipal Tree Management." Urban Data Service Report. Washington DC: International City Management Association.

Harris, Richard W., James R. Clark, and Nelda P. Matheny. 1999. *Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines*. 3rd ed. Upper Saddle River, NJ: Prentice Hall.

Hauer, R. J, C. J Casey, and R. W Miller. 2008. "Advancement in State Government Involvement in Urban and Community Forestry in the 50 United States: Changes in Program Status from 1986 to 2002." *Arboriculture and Urban Forestry* 34 (1): 5.

Hauer, R. J, and G. R Johnson. 2008. "Approaches Within the 50 United States to Meeting Federal Requirements for Urban and Community Forestry Assistance Programs." *Arboriculture and Urban Forestry* 34 (2): 74.

Hauer, Richard J. 2005. "Urban Forestry and Urban Forest Capacity: Defining Capacity and Models of Capacity Building". University of Minnesota.

HortScience, Inc., and The Aslan Group. 2004. "Assessment of the USDA Forest Service Urban and Community Forestry Program."

Johnson, Curtis. 1982. "Political and Administrative Factors in Urban Forestry Programs." *Journal of Arboriculture* 8 (6) (June): 160 – 163.

Kielbaso, J., G. Haston, and D. Pawl. 1982. "Municipal Tree Management in the U.S. - 1980." *Journal of Arboriculture* 8 (10) (October): 253 – 257.

Kielbaso, J. J. 1990. "Trends and Issues in City Forests." *Journal of Arboriculture* 16 (3) (March): 69 – 76.

Kielbaso, J.J., B. Beauchamp, K. Larison, and C. Randall. 1988. "Trends in Urban Forestry Management." Baseline Data Report. Washington DC: International City Management Association.

Kuhns, Michael, Brook Lee, and Douglas K. Reiter. 2005. "Characteristics of Urban Forestry Programs in Utah, U.S." *Journal of Arboriculture* 31 (6) (November): 285 – 295.

McPherson, G., D. Nowak, G. Heisler, S. Grimmond, C. Souch, R. Grant, and R. Rowntree. 1997. "Quantifying Urban Forest Structure, Function, and Value: The Chicago Urban Forest Climate Project." *Urban Ecosystems* 1 (1): 49–61.

McPherson, G., James R. Simpson, Paula J. Peper, Scott E. Maco, and Qingfu Xiao. 2005. "Municipal Forest Benefits and Costs in Five U.S. Cities." *Journal of Forestry* (December).
Miller, Robert W. 1988. *Urban Forestry: Planning and Managing Urban Greenspaces*. 1st ed. Englewood Cliffs, NJ: Prentice hall.
Miller, Robert W., and William A. Sylvester. 1981. "Economic Evaluation of Pruning." *Journal of Arboriculture* 7 (4) (April): 109 – 112.
Nowak, David J. 2006. "Institutionalizing Urban Forestry as 'Biotechnology' to Improve Environmental Quality." *Urban Forestry & Urban Greening* 5: 93 – 100.
Ottman, Ken, and J. J. Kielbaso. 1976. "Managing Municipal Trees." Urban Data Service Report. Washington DC: International City Management Association.
P.L. 101-624. *1990 Farm Bill*.
Reeder, Eric C., and Henry D. Gerhold. 1993. "Municipal Tree Programs in Pennsylvania." *Journal of Arboriculture* 19 (1) (January): 12 – 19.
Ricard, Robert M. 2005. "Shade Trees and Tree Wardens: Revising the History of Urban Forestry." *Journal of Forestry* 103 (5) (July): 230 – 233.
Ries, Paul D., A. Scott Reed, and Sarah J. Kresse. 2007. "The Impact of Statewide Urban Forestry Programs: A Survey of Cities in Oregon, U.S." *Journal of Arboriculture and Urban Forestry* 33 (3) (May): 168 – 175.
Rines, David M. 2007. "A Survey of Tree Wardens to Assess Urban and Community Forestry Performance in Massachusetts (U.S.A.)". M.S. Forestry, Amherst, MA: University of Massachusetts - Amherst.
Rosenzweig, R., and E. Blackmar. 1992. *The Park and the People: A History of Central Park*. 1st ed. Ithaca, NY: Cornell University Press.
Schroeder, Herbert W., Thomas L. Green, and Timothy J. Howe. 2003. "Community Tree Programs in Illinois, U.S.: A Statewide Survey and Assessment." *Journal of Arboriculture and Urban Forestry* 29 (4) (July): 218 – 225.
Shields, Patricia M. 1998. "Pragmatism as Philosophy of Science: A Tool for Public Administration." *Research in Public Administration* 4: 195 – 225.
Shields, Patricia M., and Nandhini Rangarajan. 2013. "A Playbook for Research Methods: Integrating Conceptual Frameworks and Project Management Skills."
Shields, Patricia M., and Hassan Tajalli. 2006. "Intermediate Theory: The Missing Link in Successful Student Scholarship." *Journal of Public Affairs Education* 12 (3): 313 – 334.
Society of American Foresters. 2012. "Definition of Urban Forestry." *The Dictionary of Forestry*. Accessed September 30. http://dictionaryofforestry.org/dict/term/urban_forestry.
Steiner, K. C. 1980. "Developing Tree Varietie for Urban Soil Stresses." *School of Forest Resources. The Pennsylvania State University. Alliance (METRIA) Proc*.
Thompson, R., N. H Pillsbury, R. J Hanna, and San Luis Obispo. Urban Forest Ecosystems Institute California Polytechnic State University. 1994. "The Elements of Sustainabilìty in Urban Forestry."
Treiman, T., and J. Gartner. 2004. "Community Forestry in Missouri, U.S.: Attitudes and Knowledge of Local Officials." *Journal of Arboriculture* 30 (4) (July): 205 – 213.
Tschantz, B.A., and P.L. Sacamano. 1995. "Municipal Tree Management in the United States." In *Proceedings of the 7th National Urban Forest Conference*. New York, N.Y.

Ulrich, R. 1984. “View through a Window May Influence Recovery from Surgery.” *Science* 224 (4647) (April 27): 420–421. doi:10.1126/science.6143402.
Weeks, John W. *Weeks Act of 1911*.
Wolf, Kathleen L. 2004. “Nature in the Retail Environment: Comparing Consumer and Business Response to Urban Forest Conditions.” *Landscape Journal* 23 (1-04): 40 – 51.
Yoe, Charles. 2013. *Introduction to Natural Resource Planning*. 1st ed. Boca Raton, FL: CRC Press.

Appendix A

Human Subjects Protection

From: "Northcut, Becky" <bnorthcut@txstate.edu>
Subject: Keith O'Herrin Exemption Request EXP2013Man0215 approved
Date: February 19, 2013 4:09:23 PM CST
To: "O'Herrin, Keith" <koherrin@gmail.com>

The exemption request submitted by Keith O'Herrin 2/11/13 has been been approved, effective 2/15/13.

Due to technical problems, Mr. O'Herrin's application was processed manually via email.

Becky Northcut
Director, Research Integrity & Compliance
Texas State University-San Marcos
601 University Drive, JCK 489
512.245.2314

--