Measuring urban forestry performance and demographic associations in Massachusetts, USA

David Rines, Brian Kane*, David B. Kittredge, H. Dennis P. Ryan, Brett Butler

Department of Environmental Conservation, University of Massachusetts, 160 Holdsworth Way, Amherst, MA 01003, United States

ARTICLE INFO

Keywords:
Community Accomplishment Reporting Systems (CARS)
Tree warden
Urban forest

ABSTRACT

The United States Forest Service measures successful management of the urban forest by the number of communities that have achieved some or all of four parameters described by the Community Accomplishment Reporting System. The four parameters address whether a community has: (1) a management plan, (2) professional staff, (3) urban forestry ordinances/policies, and (4) an advocacy/advisory organization. We surveyed tree wardens in the Massachusetts' communities to determine how many communities met each parameter, as well as other indicators of urban forest management. Nearly all responding communities met 1 performance parameter, but only 15% met all 4 parameters. Communities with greater population were more successful in achieving the parameters than those with smaller population.

© 2011 Elsevier GmbH. All rights reserved.

Introduction

In 2006, the United States Department of Agriculture (USDA) Forest Service (FS) decided to measure management of the urban forest in communities in the United States (USDA Forest Service, n.d.). To do so, the FS developed four performance measures related to aspects of urban forest management. Success is measured by the number of communities in a state that have achieved some or all of the four parameters described by the FS Community Accomplishment Reporting System (CARS) (FS, 2007). The four parameters follow.

1. Management plans: A document or set of documents, currently in use, developed from professionally based inventories/resource assessments, which outline(s) the future management of the community’s trees and forests.
2. Professional staff: Individuals who have either of the following: a degree in urban forestry or a closely related field or International Society of Arboriculture (ISA) certification (or an equivalent certification); and whom a community retains to assist in the development or management of an urban forestry program
3. Ordinances/policies: Statutes or regulations pertinent to the planting, protection and maintenance of urban trees and forests.
4. Advocacy organization: An organization that advises on or advocates for the planting, protection and maintenance of trees and forests in the community.

In the state of Massachusetts, the Department of Conservation and Recreation (DCR) administers the urban and community forest program. DCR measures community performance with respect to urban forest management according to six parameters: the four from the CARS initiative, as well as inter-departmental communication within the municipal bureaucracy, and whether a community has achieved Tree City USA status. The latter parameter is largely redundant with the CARS parameters, but the former parameter is presumably important in situations when municipal agencies undermined an urban forester’s good intentions. An urban forester’s efforts would be most effective if, in addition to relying on ordinances, he or she regularly communicated with other municipal agencies such as the highway and engineering departments (E. Seaborn, pers. comm.). Such interaction might proactively address issues such as construction damage of trees. Throughout the manuscript, we refer to the CARS parameters, components thereof, and inter-agency communication, collectively as “performance parameters”.

To measure urban forestry performance, surveys have been undertaken in other states (Thompson, 2006; Ries et al., 2007), and demographic measures (e.g., population) have been shown to improve the likelihood that communities have formal urban forest management approaches in place (Miller and Bates, 1978; Schroeder et al., 2003; Treiman and Gartner, 2004; Kuhns et al., 2005). Since a better understanding of the current status of urban and community forest management performance was the first step to developing programs that effectively targeted municipal assistance needs (Treiman and Gartner, 2004), we surveyed tree wardens (individuals responsible for maintaining municipal trees) in Massachusetts. Our objectives were to determine how
many communities in Massachusetts had attained the performance parameters and whether attaining them was associated with community demographics and disbursement of grants by DCR.

Methods

In June 2006, we mailed a survey to tree wardens in all 351 towns/cities in Massachusetts. The survey followed the method described by Dillman (2000), including a pre-notice letter, cover letter and questionnaire, and a second cover letter and questionnaire at specified intervals. After one month, we emailed and telephoned non-respondents to encourage them to complete the survey. Despite repeated attempts to contact non-respondents, we were not able to improve our response rate. As an incentive to increase the response rate we entered responding tree wardens in a lottery to win $3000 worth of plant material.

The survey included mostly closed-ended questions regarding attainment of the performance parameters. Answer choices included, “Check One” and “Check All That Apply” (Appendix A). We formatted the survey into an 8.5′′ × 11′′ booklet with four double-sided pages and pre-tested it with ten tree wardens. Upon receiving completed surveys, we coded responses numerically (e.g. “Yes” = 1, “No” = 2, and “Routinely” = 1, “Periodically” = 2, “Seldom” = 3 and, “Never” = 4). We coded questions that were left blank or contained a response of “Not Applicable” or “Don’t Know” as 9. We entered data from the questionnaires into Microsoft ExcelTM and randomly checked entries twice for accuracy.

We examined DCR’s disbursement records from 2001 to 2008 to compile the number and amount of grants received by any communities that responded to the survey. For all communities in Massachusetts, we compiled demographic data (population, population density, population growth, annual median household income, land area, and percent of population with a college degree) from the 2000 census (U.S. Census Bureau, 2007). We used the Kruskal–Wallis test to compare (1) CARS score and (2) demographic data between communities that did and did not respond to all communities in Massachusetts. The results of these tests determined whether responding tree wardens represented a biased sample. We used the Spearman Rank-Order correlation matrix to investigate the degree and direction of associations between survey responses and demographics. We attempted to use ordered logistic regression to examine associations between CARS score and multiple predictors (demographic measures and performance parameters).

The analysis revealed issues of multicollinearity, primarily between individual performance parameters, and explained only 43% of the residual deviance of the model. Consequently, we have not included that analysis. A 90% confidence interval was used to determine significance for all analyses. Data were analyzed using SAS version 9.2 (SAS Institute, Cary, NC) and Minitab version 14 (Mintab, Inc., State College, PA).

Results

Individuals from 143 communities responded to the survey (a 41% response rate). Communities from which we received a response represented half of all Massachusetts residents. Every returned survey was usable and the number of unusable responses per survey was less than 8% for nearly all questions. Communities from which we received a response were distributed throughout the Commonwealth, but there appeared to be a distinct cluster around city of Boston (Fig. 1). At least one response was received from every county, except Nantucket (Fig. 1). Respondents tended to come from communities with greater population, population density, and annual median household income, compared to all Massachusetts communities (Table 1). Importantly, respondents also came from communities that, on average, met an additional CARS parameter (Table 1). Together, these differences do not allow us to predict urban forestry performance for all communities in Massachusetts, only for respondents. Nearly all of the respondents were tree wardens (92%), with the remainder including surrogates, a member of a committee that replaced the tree warden, and a person actively involved in urban forest management.

Massachusetts communities and performance parameters

All but one community met at least one CARS parameter, but only 15% of communities achieved all 4 parameters (Fig. 2). An approximately equal number of communities achieved 1 (27%), 2 (31%), or 3 (26%) parameters (Fig. 2). All communities met the CARS parameter for having an ordinance (although two respondents left the question blank) by virtue of Chapter 87 of Massachusetts General Law (Chapter 87), which promulgates the position of tree warden and his/her responsibility to maintain a community’s trees (MGL 87). Enforcement of Chapter 87 varied slightly, but most respondents reported “Routine” or “Periodic” enforcement (Table 2a). Many communities supplemented Chapter 87 with a
Table 1
Means for demographic measures and CARS score for all communities in Massachusetts ("All" N = 351) compared to (a) communities that responded ("Respondents" N = 143) and (b) communities that did not respond ("Non-Respondents" N = 208). The p- and χ² values reflect the comparison between means using the Kruskal–Wallis test.

<table>
<thead>
<tr>
<th>Measure</th>
<th>All</th>
<th>Respondents</th>
<th>p &gt; χ²</th>
<th>Non-respondents</th>
<th>χ²</th>
<th>p &gt; χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>18,089</td>
<td>22,234</td>
<td>7.7539</td>
<td>0.0054</td>
<td>15,272</td>
<td>2.0071</td>
</tr>
<tr>
<td>Population per square mile</td>
<td>1264</td>
<td>1430</td>
<td>4.649</td>
<td>0.0311</td>
<td>1150</td>
<td>1.1911</td>
</tr>
<tr>
<td>Land area (square miles)</td>
<td>22.3</td>
<td>22.9</td>
<td>0.316</td>
<td>0.574</td>
<td>21.9</td>
<td>0.0740</td>
</tr>
<tr>
<td>% of population with college degree</td>
<td>29%</td>
<td>30%</td>
<td>1.3959</td>
<td>0.2374</td>
<td>0.14</td>
<td>0.1907</td>
</tr>
<tr>
<td>Annual median household income</td>
<td>$58,315</td>
<td>$59,568</td>
<td>3.8195</td>
<td>0.0507</td>
<td>$57,453</td>
<td>0.9781</td>
</tr>
<tr>
<td>Population growth (1990–2000)</td>
<td>9.24%</td>
<td>8.46%</td>
<td>0.1057</td>
<td>0.7451</td>
<td>9.77%</td>
<td>0.0304</td>
</tr>
<tr>
<td>CARS score</td>
<td>1.31</td>
<td>2.29</td>
<td>5.0602</td>
<td>&lt;0.0001</td>
<td>0.64</td>
<td>15.834</td>
</tr>
</tbody>
</table>

Fig. 2. Percentage of responding communities that achieved 0–4 performance parameters (columns), including the cumulative percentage (line).

local ordinance (Table 2a). Supplemental local ordinances typically required planting replacement trees after (81%) or protecting existing trees during (69%) development, which Chapter 87 does not address. Fewer communities met the parameters for an advocacy/advisory organization or a management plan than met other performance parameters (Table 2a). Although less than half of the communities had a qualified tree warden, some communities had other qualified staff (or contractors), which increased the percentage of communities with qualified staff (Table 2a). The most common qualification for tree wardens was having an appropriate university degree (arboriculture, forestry, horticulture) (29%), followed by the completion of professional development training (21%), and Massachusetts (16%) or ISA (10%) arborist certification. More communities had an inventory than a management plan (Table 2a). Nearly all respondents reported inter-departmental communication (Table 2a), and “Routine” or “Periodic” communication was more common in communities that had tree protection regulations as part of a supplemental local ordinance ($r = 0.2889$, $p = 0.0005$). Communities that achieved a higher CARS score were more likely to have met individual performance parameters, including parameters other than CARS parameters (e.g., receiving a DCR grant) (Table 2b).

The positive associations between CARS score and population (Table 3a), annual median household income (Table 3b), and percentage of residents with a college degree (Table 3c) held regardless of whether we considered (1) responding communities, (2) non-responding communities, and (3) all communities in Massachusetts. For respondents, the percentage of communities that met individual performance parameters was more closely associated with population than the other demographic measures. As the population of a community increased, so did the likelihood of achieving all nine performance parameters listed in Table 3. A similar effect was not observed regarding increases in annual median household income and the percentage of a community’s residents with a college degree. Increases in the latter two demographic measures were only significantly associated with five of the nine performance parameters listed in Table 3.

Funding

Less than half of responding communities had received a DCR grant since 2001 (Table 2a), but several communities received multiple grants. Communities that achieved higher
CARS scores typically received more funding from DCR grants (Table 2b). Communities with an advocacy/advisory organization ($r = 0.3259, p < 0.0001$) and a qualified tree warden ($r = 0.1923, p = 0.0214$) also received more funding from DCR grants. The amount of funding received from DCR grants increased with increased population, but not with annual median household income nor percentage of residents with a college degree (Table 3a).

**Discussion**

Our results overstated the actual performance of communities in Massachusetts because the mean CARS score for responding communities was greater than that for all communities in Massachusetts. However, despite the fact that respondents came from communities with greater population and median income (both of which were positively associated with CARS score), associations between CARS score and demographics were similar for responding communities, non-responding communities, and all communities in Massachusetts (Table 3). Our discussion contains the important caveat that our results do not reflect the performance of all communities in Massachusetts.

Nationwide (Kielbaso, 1990), as well as in many states (Elmendorf et al., 2003; Schroeder et al., 2003; Treiman and Gartner, 2004; Kuhns et al., 2005; Ricard, 2005a; Ries et al., 2007; Stevenson et al., 2008), no studies have reported more than 78% of communities having a tree ordinance; typically, fewer than half of the surveyed communities have an ordinance. With the exception of other states in New England, no studies (Schroeder et al., 2003; Treiman and Gartner, 2004; Kuhns et al., 2005; Ries et al., 2007; Stevenson et al., 2008) have reported more than 62% of communities with a management plan. In personal correspondence, some tree wardens expressed frustration with the time and effort expended to develop management plans in smaller communities, where tree wardens were primarily concerned with removals (Rines et al., 2010), an inventory would be less valuable since hazardous trees can be identified in windshield surveys (Rooney et al., 2005). Practical and/or financial constraints may limit the utility of a management plan. In personal correspondence, some tree wardens expressed frustration with the time and effort expended to develop management plans that were never used; others noted that their community’s budget precluded proactive management. Despite these frustrations, the percentage of communities in Massachusetts with a management plan has more than doubled in less than a decade (Doherty et al., 2000).

Consonant with previous studies (Reeder and Gerhold, 1993; Dickerson et al., 2001; Schroeder et al., 2003; Kuhns et al., 2005; Ries et al., 2007), population had the strongest associations with attainment of performance parameters. One explanation for these findings is that communities with greater populations would have increased tax revenue available to fund urban forest management (Miller and Bates, 1978) because the fixed cost of a tree mainte-

### Table 3

<table>
<thead>
<tr>
<th></th>
<th>(a) Population</th>
<th>(b) Income</th>
<th>(c) College degree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CARS score respondents</strong></td>
<td>0.3015 0.0003</td>
<td>0.1935 0.0206</td>
<td>0.2714 0.0010</td>
</tr>
<tr>
<td><strong>CARS score non-respondents</strong></td>
<td>0.2442 0.0033</td>
<td>0.2183 0.0088</td>
<td>0.2476 0.0029</td>
</tr>
<tr>
<td><strong>CARS score All</strong></td>
<td>0.4518 &lt;0.0001</td>
<td>0.1253 0.0189</td>
<td>0.1625 0.0023</td>
</tr>
<tr>
<td><strong>Performance parameters</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advocacy/Advisory organization</td>
<td>0.2729 0.0010</td>
<td>0.2546 0.0021</td>
<td>0.2382 0.0042</td>
</tr>
<tr>
<td>DCR grants</td>
<td>0.4051 &lt;0.0001</td>
<td>0.1131 0.1785</td>
<td>0.0961 0.2538</td>
</tr>
<tr>
<td>Inter-departmental communication</td>
<td>0.2521 0.0024</td>
<td>0.1913 0.0221</td>
<td>0.1242 0.1395</td>
</tr>
<tr>
<td>Supplemental local ordinance</td>
<td>0.3993 &lt;0.0001</td>
<td>0.2020 0.0156</td>
<td>0.4292 &lt;0.0001</td>
</tr>
<tr>
<td>Management plan</td>
<td>0.1756 0.0360</td>
<td>0.0560 0.5065</td>
<td>0.0426 0.6131</td>
</tr>
<tr>
<td>Qualified staff</td>
<td>0.1574 0.0605</td>
<td>0.1873 0.0251</td>
<td>0.3756 &lt;0.0001</td>
</tr>
<tr>
<td>Qualified tree warden</td>
<td>0.2283 0.0059</td>
<td>0.1300 0.1789</td>
<td>0.3085 0.0002</td>
</tr>
<tr>
<td>Routine/Periodic enforcement of chapter 87</td>
<td>0.2696 0.0012</td>
<td>0.2133 0.0111</td>
<td>0.2116 0.0210</td>
</tr>
<tr>
<td>Tree inventory</td>
<td>0.2806 0.0007</td>
<td>0.0580 0.4914</td>
<td>0.0192 0.8197</td>
</tr>
</tbody>
</table>

*p* See note for Table 2.
nance program would consume less of the budget (Groninger et al., 2002). However, communities with greater populations typically offer more, and experience a greater demand on, public services, so it is not necessarily true that more funding for urban forest management is available per capita (Kuhns et al., 2005). Other explanations are more persuasive.

Residents in more populous communities tended to be proactive about urban forest management because they were usually more politically active, better informed, and had higher expectations of municipal services (Treiman and Gartner, 2005). Full-time tree wardens, who were more commonly employed in communities with greater population, emphasized public education and outreach (Rines et al., 2010), which presumably would raise awareness of the value of and benefits provided by trees. Recognition of the benefits that trees provide, which was more common in urban areas (Lohr et al., 2004; Grado et al., 2006; Stevenson et al., 2008), may translate into citizen advocacy for additional funding for urban forest management, which was also more common in urban areas (Elmendorf et al., 2003; Treiman and Gartner, 2005). Advocacy may be integral to raising awareness of residents’ attitudes among public officials, since fewer than 10% of officials in Pennsylvania believed that residents would be willing to pay higher taxes for better tree care (Stevenson et al., 2008), even though residents have expressed opinions to the contrary (Lorenzo et al., 2000; Treiman and Gartner, 2005).

Communities with greater population were also more likely to take advantage of external funding (Grado et al., 2006; Ries et al., 2007), which helps support urban forestry programs (Elmendorf et al., 2003; Schroeder et al., 2003; Kuhns et al., 2005; Ries et al., 2007). Schroeder et al. (2003) reported that many less populated communities in Illinois desired help in soliciting external funding for urban forest management. Extramural funding may be critical because adequate funding from a municipality’s general fund is rarely sufficient for good urban forest management (Elmendorf et al., 2003). In Massachusetts, DCR grants were more commonly obtained by communities with greater population, perhaps in part because such communities were more likely to have an advocacy/advisory organization that could better negotiate the application process.

It was not surprising that inter-departmental communication was the performance parameter most commonly achieved by tree wardens in Massachusetts (and least associated with CARS score), since the parameter is often emphasized at professional meetings (Rines et al., 2010). This result was also consistent with the findings that (a) most tree wardens routinely or periodically enforced Chapter 87 and (b) more tree wardens from communities with supplemental local ordinances designed to protect trees during development routinely or periodically communicated with other municipal departments. This suggests that tree wardens would need to communicate with other departments when trees were in proximity to construction or repair projects. It is not clear, however, whether such communication preserves or protects trees, as communication might simply involve approval of tree removal. Tree wardens did feel, however, that inter-departmental communication, more than any other performance parameter, was important to successful urban forest management (Rines et al., 2010).

Conclusions

Many communities in Massachusetts met multiple performance parameters, although some parameters (e.g., management plans and advocacy groups) were not as commonly achieved. Attainment of performance parameters was most closely associated with population, consistent with many previous studies. Importantly, advocacy groups were more common in communities with greater population, and communities with an advocacy group were more likely to have received extramural funding to support the urban forestry program. Some CARS parameters appear to have merit with respect to indicating good urban forest management (e.g., advocacy groups), but the relative merit of others (e.g., management plans) is questionable. Part of this may be due to attitudes of tree wardens, who were frustrated with the effort to create a plan, only to have it remain unused. In some communities (particularly those with fewer residents), management priorities are almost exclusively reactive (Rines et al., 2010). Future research should consider similar questions in other states, as well as improving response rates in states where similar surveys have already been undertaken.

Acknowledgments

We thank Eric Seaborn, Paul Jahnige, and Alan Snow of the Massachusetts Department of Conservation and Recreation; and John Parry of the USDA Forest Service. We also acknowledge the many helpful suggestions from four anonymous reviewers on previous versions of this manuscript.

Appendix A

Q1. Which of the following best describes your role? (Check only one):

<table>
<thead>
<tr>
<th>Your role</th>
<th>Check only one</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am the tree warden for my community</td>
<td>☐</td>
</tr>
<tr>
<td>I am acting tree warden for my community – the position of tree warden is currently open</td>
<td>☐</td>
</tr>
<tr>
<td>I am not the tree warden but am actively involved with urban &amp; community tree management and can answer questions on the tree warden’s behalf: Please give your title:__________________________</td>
<td>☐</td>
</tr>
<tr>
<td>I am a member of a town committee that handles tree warden duties for my community Other (Please specify):__________________________</td>
<td>☐</td>
</tr>
<tr>
<td>I am not the tree warden or acting tree warden, nor can I answer questions on the tree warden’s behalf</td>
<td>☐</td>
</tr>
</tbody>
</table>

Q2. In which municipal department or agency does the role of tree warden reside?

Name of Department or Agency:__________________________

Q3. Does the tree warden currently have any of the following degrees and/or certifications? (Check all that apply): (If tree warden duties are represented by committee, please indicate if committee members have any of the following degrees and/or certifications).

<table>
<thead>
<tr>
<th>Tree warden degrees and certifications</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Society of Arboriculture (ISA) Certified Arborist</td>
<td>☐</td>
</tr>
<tr>
<td>Massachusetts Certified Arborist (MCA)</td>
<td>☐</td>
</tr>
<tr>
<td>Associates, Bachelor’s or Master’s degree from an accredited college or university in a natural resources field, such as Park Management, Arboriculture, Urban forestry, Landscape Design, or Horticulture, other</td>
<td>☐</td>
</tr>
<tr>
<td>Completed professional courses, such as MAA Tree School, UMass Extension Green School, MTWFA Professional Development Series (PDS) courses</td>
<td>☐</td>
</tr>
<tr>
<td>No degrees at this time</td>
<td>☐</td>
</tr>
<tr>
<td>Other (Please Specify):__________________________</td>
<td>☐</td>
</tr>
</tbody>
</table>
Q4. How would you best describe the frequency of communication between your department and other municipal agencies and departments regarding the planting, protection and or maintenance of your urban & community trees and forests?

<table>
<thead>
<tr>
<th>Communication with Agencies and municipal departments</th>
<th>Routinely</th>
<th>Periodically</th>
<th>Seldom</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department/DPW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parks/Cemeteries</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board/Department</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree Department</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City/Town leaders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Company</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City/Town Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings Department</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conservation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commission</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q5. Has your community completed any of the following types of tree assessments/inventories? Check (a) for each type your community has completed, (b) whether or not it is in active use, and (c) the month and year it was last updated.

<table>
<thead>
<tr>
<th>Tree assessment/inventory type</th>
<th>Completed?</th>
<th>Currently in active use?</th>
<th>Last updated: month/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete tree inventory</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Partial tree inventory</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Site specific tree inventory</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Windshield tree survey</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Open space survey</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>GIS analysis</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Satellite analysis</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Statistical sample summary</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Other (specify):</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
</tbody>
</table>

Q6. Does your community have its own local ordinances, sub-division regulations and/or written policies that pertain to the planting, maintenance and protection of trees? (Check all that apply):-

<table>
<thead>
<tr>
<th>Ordinances, sub-division regulations, written policies</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local tree ordinance</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Regulations requiring the planting of new trees during development</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Regulations that protect existing trees during development</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Written policies pertaining to tree planting, protection and maintenance</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Other</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

References


