

ABSTRACT: Since 1978, Connecticut state law has required the appointment of a tree warden who assumes responsibility for public trees in that municipality. A major, if not the primary, responsibility of municipal government is public safety and yet local government is also charged with protecting and enhancing the economic, social, and environmental well-being of the community. As a result, the tree warden has to balance public safety and conservation. This is only possible when tree wardens are well trained. However, state statutes do not require a tree warden to possess any relevant qualifications or to participate in continuing education. Following a 1991 needs assessment, several educational initiatives were started to increase tree warden knowledge. To increase tree warden participation, two approaches were considered. One was to amend existing state law to mandate training. A second was to encourage participation in educational programs through voluntary certification. The second approach was taken when a Tree Warden School and Tree Warden Certification Program was initiated in 1998. Results from a statewide needs assessment found that tree wardens participated in more continuing education opportunities in 2001 than they did in 1991, with a large percentage becoming Connecticut Certified Tree Wardens. North. J. Appl. For. 22(4):248–253.

Key Words: Continuing education, law, public policy, tree warden, urban forestry.

In 1991, a needs assessment was conducted by the University of Connecticut Cooperative Extension System to determine what qualifications tree wardens in Connecticut possessed, what training and education they might need, and what urban forestry tasks they most frequently performed (Ricard 1991). With information garnered from this survey, several outreach educational approaches were taken to increase tree wardens’ knowledge and skills (Ricard and Alexopoulos 1998). These were: (1) creation and incorporation of a statewide Tree Wardens’ Association of Connecticut, Inc.; (2) writing, printing, and distribution of a tree warden manual; (3) development of workshops and field days; and (4) development of the Tree Warden School and voluntary certification program. This paper reports a 10-year, follow-up assessment, which evaluated the results of these efforts.

Tree Wardens and Urban Forestry

Public tree protection first began at the municipal level (Egleston 1878, Phillips 1993, Campanella 2003). For example, in 1636—only 16 years after the English Puritans (Pilgrims) arrived in Massachusetts Bay Colony—the Town of Boston issued an order “to prevent the trees being planted in the settlement from being spoiled” (Favretti 1982). The first community-based forest conservation group was founded in 1846 in Keene, New Hampshire, “to see if the town will permit the Forest Tree Society to fence in and ornament with trees a small portion of the Common” (Farwell 1913).

Recognition of public tree protection by state government, however, did not appear until later (Favretti 1982). As one example, New Jersey passed a statewide urban forestry statute in 1893, enabling cities and towns to create shade tree commissions (Solotaroff 1911). In 1896, Massachusetts passed the first tree warden statute with the other five New England states following suit (Ricard 1997). The New Jersey law and tree warden legislation enacted during this
period are outcomes of the first conservation movement when scientific forest management was firmly taking root in America. These statutes required (or enabled) local municipalities to appoint tree wardens (Hays 1959, Foster 1998).

It has been nearly 100 years since these laws were passed and since then the age, size, and condition of forests and trees have changed (Thompson 1958, Irland 1982). In Connecticut, for example, about 39% of the state was forested (with most forest stands in sapling and pole stages of growth) in 1900, and by 2000, 60% of the state was forested with predominately mature stands. At the same time the state population grew; in 1900 there were 908,420 people which increased to 3,450,565 by 2000 (Carey et al. 2001). More roads, development, pollution, and other factors detrimental to tree health and survival exist today than in 1900.

Our society is also now more litigious than when tree warden laws were passed. Public safety and tree conservation need to be the priorities of tree wardens in the modern era (Ricard 1997). They must balance the need to identify, then remove, high-risk trees and the need to maintain a canopy of public trees that enhance community well-being (Carey et al. 2001).

**Methods**

Ten years after the first tree warden needs assessment was completed (Ricard 1991), it was appropriate to examine what, if any, gains had been made in skills and education, and what additional requirements were needed to improve tree warden skills and education. Therefore, questions from the 1991 survey were repeated in the 2001 survey, allowing differences to be identified. Several new questions were also added. The goals of the study were the same in 2001 as they were in 1991:

1. Establish a broad base of information on the skill, training, education, activities, and interest level of Connecticut tree wardens.
2. Gather information that would help guide urban forestry educators in developing training programs and print materials for tree wardens.
3. Justify University of Connecticut Cooperative Extension System assistance to tree warden educational programs expenditures and efforts based on empirical data.
4. Act on recommendations.

There were four mailings sent to each of the 169 Connecticut tree wardens. The first mailing contained a packet of material that included a cover letter, a four-page survey form, and a self-addressed, stamped return envelope. Each returned envelope was coded so that a tree warden who had completed and returned a survey was removed from subsequent mailings. A reminder postcard was mailed 10 days later. A second survey packet was mailed 10 days later followed again by another postcard reminding delinquent tree wardens.

Surveys were self-returned to the University of Connecticut. All questions resulted in categorical data and required only descriptive statistical analysis. Data was entered and analyzed using Microsoft Excel statistical software. Of the 169 surveys mailed, 97 were completed and returned, yielding a 57% return rate.

**Results of the 2001 Needs Assessment**

**Tree Warden Profile**

Most tree wardens (68%) were municipal employees in the communities they serve (Figure 1). The average number of years tree wardens served was 10.5 with one individual reporting being appointed 31 years ago (the high) and 11 tree wardens reporting being appointed in 2001 (the low). More than half of the respondents (61%) had been appointed within the last 10 years.

![Figure 1. Job titles for the 56 responding tree wardens who were municipal employees.](image-url)
Of those tree wardens who were municipal employees, director of public works was the job title for nearly half (46%) (Figure 1). Road foreman was second (19%), tree warden was third (12%), followed by other job titles.

Most tree wardens who were not municipal employees (Figure 2) were unpaid volunteers (26%). Many reported that they were retired (22%). Of those working in a green industry or natural resource discipline, 13% were arborists, 13% were landscape architects, 9% were nurserymen, and 4% were foresters.

Sixty percent of the responding tree wardens possessed a college degree while 40% did not. Fifty-seven percent possessed professional certificates and/or licenses. These included Connecticut arborist license (27%), registered landscape architect (4%), custom grounds license (9%), certified forester practitioner (2%), International Society of Arboriculture certification (4%), certified leisure protection (1%), University of Connecticut Road Master (1%), and Massachusetts Certified Arborist (1%). Slightly more than half of the respondents belonged to professional organizations other than the Tree Wardens’ Association of Connecticut, Inc. For example, 26% reported being members of the Connecticut Tree Protective Association, Inc. which is a statewide organization dedicated to arborist education and support.

Urban Forestry Programs

Another series of questions were used to learn what urban forestry management activities tree wardens engaged in. Less than 37% of the communities with responding tree wardens have shade tree ordinances. Forty-five percent of the tree wardens responding (n = 91) said that their community had a tree replacement program. Of those communities with a program, the range of annual expenditures was a $200 to $112,500, with an average of $17,544. Exactly 50% (44 respondents) stated that they had received either grant or private contributions for tree replacement. Twenty-two percent of the responding tree wardens stated that their communities had tree inventories.

Of the 89 tree wardens responding, 64% stated that their crews were not trained in tree care, while 36% were, however, and most importantly, 51 out of 61 (84%) respondents stated they would welcome tree care training opportunities for their crews. Responding tree wardens were generally satisfied (78%) with utility line tree maintenance performed in their community.

More than half (63%) of the responding tree wardens (n = 90) stated that they routinely supervised and/or inspected utility tree maintenance crews when such crews were operating in their communities. Less than half (35%) of the responding tree wardens (n = 94) stated that they have a tree-related citizen organization in their community. Such organizations included a tree committee (1), green preservation associations (2), garden clubs (6), Knox Park Foundation (1), land trust (1), millennium trees (1), and a neighborhood organization (1). The majority (93%, n = 29) had a favorable working relationship with the citizen tree organization. Two respondents reported that they had a poor working relationship with their citizen organization.

Tree Warden Responsibilities

Risk tree assessment was considered the most important responsibility by 60% of the respondents (Figure 3) in 2001. Nineteen percent considered tree removal to be the most important responsibility and public safety, a responsibility that might include risk tree and/or road sight-line management, was considered most important by 10% of the respondents.

Of the responsibilities considered to be the second most important by responding tree wardens, three were of nearly equal importance to 68% of the respondents (Figure 4); tree removal (27%), responding to complaints (21%), and public safety (20%).

What respondents considered to be the most important tree warden responsibilities was contrasted with what tasks they actually performed in their operations (Figure 5). Addressing concerns regarding tree risk seemed to be of great importance: risk tree assessment was performed by 39% of the respondents, followed by tree removal (28%), combining for 67% of the total. Fielding of questions (15%) is the third most frequently performed task.
Connecticut state law mandates that tree wardens must post public trees 10 days prior to removal or pruning. The legislative intent clearly is to allow direct public participation in municipal tree care decision-making. Ninety-three percent of the respondents stated that they post trees prior to pruning and/or removal while 7% did not (n = 84).

A request for a public hearing may be made to a tree warden by any person in the state. The person requesting the hearing must ask for the public hearing in writing within the 10-day posted period. The tree warden shall then hold a public hearing at a reasonable time. Public tree hearings have been conducted by 50% of the respondents (n = 88).

**Tree Wardens' Association of Connecticut, Inc.**

In the 1991 needs assessment, 87% of the respondents thought it would be beneficial if a tree warden association was created. The Tree Wardens' Association of Connecticut, Inc. was formed in 1992 to provide education and support to tree wardens through their peers. It is a 501(c)(3) membership organization composed of a volunteer board of
tree wardens. Of 83 tree wardens responding in the 2001 needs assessment, 82% were members of the association. Of these, 57 stated that they were generally satisfied with what the organization had done since it was founded in 1992 while two respondents were not. Reasons for not joining were not interested (2), not enough time (2), and never thought of it (1).

**Tree Warden Continuing Education**

Do tree wardens participate in continuing education activities? If so, how often, what are they, and where do they go to participate in them? And, most importantly, what motivates them to participate in continuing education activities?

The Tree Wardens' Association of Connecticut, Inc. and the University of Connecticut Cooperative Extension System founded the Tree Warden School and Certification Program with the first class (30 participants) held in the fall of 1998. The course consisted of five classes covering topics including tree biology, tree identification, insects and disease, risk tree assessment, tree law, tree warden duties and responsibilities, public relations, and meeting management. The intent was to create a cadre of tree wardens who had at least a base-line education to support their roles and responsibilities and from which they could proceed to seek additional, more advanced training. All participants passed the final exam given on the last day with a minimum grade of 70%. Graduates were then designated Certified Tree Wardens. Certified Tree Wardens are required to obtain at least 15 continuing education credits in a 3-year period to maintain certification.

By the time the needs assessment was conducted in 2001, four sets of Tree Warden School participants had graduated. Of the 96 tree wardens responding, half (51%) stated that they were Certified Tree Wardens. Fifty-nine percent (n = 90) of the tree wardens stated that they had attended a Tree Wardens' Association of Connecticut-sponsored workshop in the past 3 years. Of these, 93% stated that the workshops increased their skills and knowledge. Sixty-four percent of the tree wardens responding (n = 94) have also attended other workshops with the tree wardens having increased their knowledge and skills (94%) at these as well. Seventy-nine percent stated that they had received training in risk tree assessment.

**Connecticut Tree Law**

When asked if they believed existing state laws were adequate in helping protect, care for, and maintain the public trees in their community while providing for public safety, 84% of respondents said yes (n = 89) while 16% answered no. Sixty-nine percent stated that they would like to see the state statutes changed to require continuing education for tree wardens (n = 89) while 62% favor professional accreditation for and/or licensure of tree wardens. Half indicated that they preferred that certification remain voluntary.

**Comparisons with a 1991 Needs Assessment**

This section compares responses to comparable questions asked in both the 1991 and 2001 needs assessment, and these are presented in Table 1 and discussed further here. In 1991, more than half (66%) of the tree wardens reported that they were municipal employees and this remained about the same (68%) in 2001. In 1991, 67% reported possessing college degrees and in 2001 the percentage was about the same. Regarding tree wardens who reported having certificates (other than Tree Warden School certificates), the percentage was about the same (around half) in both years.

A major difference between the two surveys was that the percentage of tree wardens reporting risk tree assessment to be their most important responsibility: in 2001 it was 60% while in 1991 it was only 27%. The importance of tree removal, the second most important responsibility, increased from 10% in 1991 to 27% in 2001. However, when asked what they spend their time doing (what responsibilities they performed most regularly), risk tree assessment was about the same (39%, 2001; 33%, 1991). While it appears that during the 10 years between the two needs assessments, awareness of the importance of risk tree assessment had increased, but actually performing tree risk assessments and then mitigating risk was another matter. In

### Table 1. Comparisons of tree warden responses by year in percent.

<table>
<thead>
<tr>
<th>Response to survey question</th>
<th>1991 (%)</th>
<th>2001 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed by the municipality</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td>Possessed college degrees</td>
<td>67</td>
<td>68</td>
</tr>
<tr>
<td>Possessed professional certificates</td>
<td>49</td>
<td>52</td>
</tr>
<tr>
<td>Considered risk tree assessment to be most important responsibility</td>
<td>27</td>
<td>60</td>
</tr>
<tr>
<td>Considered tree removal to be second most important responsibility</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>Considered risk tree assessment to be the responsibility that they spent most time working on</td>
<td>33</td>
<td>39</td>
</tr>
<tr>
<td>Attended workshops sponsored by the Tree Wardens' Association of Connecticut, Inc.</td>
<td>NA</td>
<td>52</td>
</tr>
<tr>
<td>Attended workshops sponsored by other associated organizations or agencies</td>
<td>47</td>
<td>63</td>
</tr>
<tr>
<td>Considered continuing education to be worthwhile</td>
<td>85</td>
<td>91</td>
</tr>
<tr>
<td>Worked in communities that had shade tree ordinances</td>
<td>23</td>
<td>37</td>
</tr>
<tr>
<td>Worked in communities that had tree replacement programs</td>
<td>26</td>
<td>45</td>
</tr>
<tr>
<td>Worked in communities that had tree inventories</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>Worked in communities that had community tree groups</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>Generally satisfied with utility tree trimming and removal practices</td>
<td>81</td>
<td>78</td>
</tr>
<tr>
<td>Considered existing tree warden statutes to be adequate in helping them with their responsibilities</td>
<td>77</td>
<td>84</td>
</tr>
<tr>
<td>Wanted state tree warden law amended to require continuing education</td>
<td>72</td>
<td>69</td>
</tr>
</tbody>
</table>

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the 2001 survey, more than half of the respondents stated that they had attended Tree Wardens' Association of Connecticut, Inc. sponsored workshops. In the 2001 survey, 63% of the respondents stated that they had attended workshops sponsored by other organizations or agencies. This number was up from 47% in 1991. In 2001, 93% of the tree wardens stated that the training was worthwhile, up slightly from 85% in 1991.

Communities with shade tree ordinances increased from 23% in 1991 to 37% in 2001. Tree replacement programs were up from 26% (1991) to 45% (2001). Twelve percent of the communities had some form of tree inventory in 1991, which increased to 22% in 2001. In 1991, less than half (40%) indicated that they had community tree groups in their town. This statistic decreased to 35% in 2001. A large majority of respondents (81%) stated that they were generally satisfied with utility tree trimming and removal practices. This percentage decreased only slightly to 78% in 2001.

In both years, tree wardens felt that existing tree warden state statutes were adequate in helping them protect, care for, and maintain the public trees in the communities. In both years, again, the majority of tree wardens believed that they would like to see that state statutes changed to require continuing education.

Conclusions and Recommendations

Tree wardens in Connecticut are, by state law, the people charged with the greatest responsibility for the care and maintenance of municipally owned, public trees. Because tree wardens work in a social and political environment that requires them to balance conservation and public safety, it is critical that they receive appropriate training through continuing education.

In 2001, a needs assessment was developed and administered by the University of Connecticut Cooperative Extension System. This was done to determine the current status of specific Connecticut tree warden practices, the level of continuing education activities tree wardens participate in, and what changes had occurred since the 1991 tree warden needs assessment.

Based on the results of the 2001 needs assessment, it is evident that tree wardens recognize that public safety, as exhibited by the acknowledgment of risk tree assessment and tree removal as their primary work roles, is their most important responsibility. It is important to note that the coursework in the Tree Warden School does emphasize this part of urban forestry. The low percentage of tree wardens working in communities with no or limited tree replacement programs, however, is one indicator that other urban forestry practices may not be receiving the same level of attention as hazard tree work. Other factors limiting urban forestry activities, however, may be due to low operating budgets and/or a shortage of people to do all the work required.

Clearly, many tree wardens did seek out and participate in continuing education activities and recognized that this is important for their work. Of those reporting, the Tree Warden School and voluntary certification program has provided additional continuing education opportunities and at a high satisfaction level. Participation in other continuing education opportunities is high as well. The need to expand other urban forestry practices, such as tree planting and public participation at the municipal level, should be emphasized more in subsequent tree warden continuing education efforts. While it is both good and necessary that the public safety portion of urban forestry has been addressed by Connecticut’s tree wardens, the tree conservation portion still needs attention.

Literature Cited


