

WORCESTER POLYTECHNIC INSTITUTE

Evaluating the Public's Perception of Urban Trees: The case of Greendale and Burncoat
Neighborhoods of Worcester, Massachusetts Value Trees

An Interactive Qualifying Project Report Submitted to the Faculty of the WORCESTER
POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of
Science

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Environmental, economic, social, and health-related benefits associated with urban trees. This study focused on the trees in the Greendale and Burncoat neighborhoods of Worcester, Massachusetts that were infested and eventually removed as a result of the Asian Longhorn Beetle. This project explores the public perception of urban trees in Worcester, Massachusetts. The team employed the use of four data collection methods including a content analysis, questionnaires, focus groups, and Q-methodology to gather data on the economic,

Introduction

This study is phase-one of a multi-phase research project aimed at better understanding how the public values trees. Phase-one, completed from August – December 2009, examined the Greendale and Burncoat neighborhoods of Worcester, Massachusetts; an area that recently lost over 25,000 trees in a two-mile radius as a result of the 2008 ice storm and the Asian longhorn beetle infestation. Phase-two will probe the opinions of residents in the quarantined zone who have not lost their trees. Phase-three will further explore neighborhoods outside the quarantine zone.

In phase-one, the research team explored how residents in the Greendale and Burncoat neighborhoods of Worcester, Massachusetts value the trees in their neighborhoods. Four data collection methods were employed in these neighborhoods including: two focus groups with residents, twenty-five questionnaires with residents, a content analysis on the Worcester Telegram and Gazette, and lastly, q-sorts with residents. The data collected through these methods provided evidence to support the benefits of trees that had been previously documented by experts, and also expanded upon them.

The immense tree loss in these neighborhoods presented the team a unique opportunity to understand how the public values trees. These opinions were more easily expressed as a result of deforestation that affected and altered the neighborhood so greatly. The forestry literature provided expert opinions of the benefits of trees, but no systematic study has been done to gauge the public perception of trees.

The proportion of people living in urban areas in the US continues to grow and cities consume vast amounts of energy and natural resources. Presently, forty-three percent of Americans live in cities of at least 25,000 people (Birch, 2009). Urban trees are an essential component of the world's urban ecosystems and provide a broad range of benefits to support, maintain, and improve quality of life. In recent years, scholars in environmental and ecological economics have attempted to identify and quantify the value of natural services earth provides. In 1997,

environmental economist and chief authority on the value of earth's ecosystems, Robert Costanza, published an article in the British journal *Nature* estimating the total value of U.S ecosystem services at \$33 trillion dollars annually in economic value. This number is equivalent to more than twofold the GNP of every country in the world put together (Costanza, 1997).

Although trees have always been a valued amenity in U.S cities; academics, policy makers, and politicians are becoming aware of how trees benefit people in urban ecosystems and the services they provide (Wolf, 2004). For example, trees not only provide aesthetic value, but also contribute on an economic scale. Wolf (1998) reported that a twenty-five foot tree has the capability of reducing annual heating and cooling costs by eight to twelve percent in households. Benedict and McMahon, 2002, mention a 1990's study in New York, which concluded that by purchasing and protecting watershed land in the Catskill Mountains, the city saved approximately 5 billion dollars on filtration and treatment plants.

This study has explored the benefits of trees in an urban environment. Experts have outlined a broad array of benefits that trees provide, but the team felt that more could be done to communicate the public's perception of trees to policy makers who may be willing to acknowledge the opinions of residents.

This document contains three separate papers; the first is the focus group paper, the second is the questionnaire paper, and the third is the content analysis paper. Due to time constraints and a lack of diversity in the results of the q-sorts, the paper detailing this method will be delayed and be reported on after stage-two and stage- three of the project has been completed. The q-sorts from this specific area will be analyzed and compared with q-sorts gathered from an area which has not lost its trees. Each method will be described and analyzed in a paper designated to each.



Project Number:

Focus Group Report:

An Interactive Qualifying Project Report Submitted to the Faculty of the WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of Science by:

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Evaluating the Public's Perception of Trees: Understanding the nuances of expert and public views of urban trees

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Abstract

Research in forestry has revealed a broad spectrum of expert opinion detailing the benefits of urban trees. No study has examined the public's perception; however, the research reported here describes how the public's opinions relate to expert categories. The team held two focus groups in an effort to better understand how the public values the trees in their neighborhoods. A multi-method approach gave the team a better understanding of how residents in Greendale and Burncoat experience their trees. Recent events have resulted in the deforestation of 25,000 trees, allowing residents to more easily communicate how they value their trees.

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Executive summary

The 2008 ice storm followed by the Asia longhorn beetle infestation in Worcester, Massachusetts presented the team with a unique opportunity to conduct a systematic study to gauge the public's perceptions of urban forests. The project team has completed phase-one of a multi-phase study with the goal of researching and analyzing the public perception of urban trees in an effort to better communicate how residence value and experience the trees in their neighborhoods. Forestry literature has revealed a host of benefits associated with urban trees; the team will connect these expert opinions with the outlook of residents to create a united message to policy makers in the future.

The project team used a multi-method approach in our study which consisted of: a content analysis on the Worcester Telegram and Gazette; questionnaires keyed on describing how residents experience their trees; focus groups aimed at drawing out a broad list of benefits associated with urban trees, and q sorts to quantify qualitative data and compare how strongly residents rate some of the benefits and how they relate to each other. This paper details the focus group method.

Two focus groups were completed with residents in the Greendale and Burncoat neighborhoods of Worcester, MA. The focus groups were used to broaden the spectrum of benefits previously documented by forestry and academic literature. Several themes emerged in the focus groups that supported environmental, economic, and social benefits of urban trees. These themes include: Trees affect privacy and visibility, trees provide shelter from the noise in the bustling city, trees are a major factor in choice of residence and add to property value within a neighborhood, trees protect the neighborhood from the wind, trees provide shade and microclimate regulation, trees provide a habitat for wildlife, trees add aesthetic value to a neighborhood, trees serve as landmarks that contribute to the neighborhood image and a sense of community, residents have an emotional attachment to the trees in their neighborhoods, trees help create a country feel in the otherwise typical unappealing urban city.

Interestingly, the themes that emerged in the focus groups were very similar to those that were highlighted in forestry and academic literature; however, the focus groups were able to draw out some interesting themes and provide evidence to support them. Some examples of benefits that experts were not able to identify were: trees contribute to a sense of community, provide a neighborhood image, and hold emotional ties to residents. The team has the opportunity to better understand and further communicate those benefits that may not be easily quantified. Experts have reiterated the scientific benefit of urban trees highlighting the ecological and

economic services they provide; yet only residents can provide deeper meaning to the value of trees and why people feel such a deep emotional attachment to the trees around them.

Introduction

The goal of this study was to identify the differences in opinion amongst residents and experts on the benefits of urban trees. The team used a multi-methods approach to research and analyze the public's perception of urban tree cover, in an effort to more effectively communicate the residents' perspectives to foresters and policy makers at all scales of government. Forestry and academic research revealed a broad spectrum of expert opinion detailing the benefits of urban trees; the focus groups allowed the team to expand upon the four dimensions (economic, environmental, social, and health-related) that experts had discussed. The focus group dynamic was successful in enriching these concepts and expanding upon the scope of issues surrounding the trees. The focus groups also illuminated differences in opinion within and between the two focus groups.

It is a common trend for society to take trees and the benefits they provide for granted; and often times, losing something is the only way one realizes how valuable that amenity was to them. In December of 2008 a severe ice storm swept through New England pummeling the Greendale and Burncoat neighborhoods of Worcester, MA. Later that year the Asian Longhorn Beetle infested the trees in these same neighborhoods, resulting in an eradication process that deforested nearly 25,000 trees including oaks, maples, and several other vulnerable species in these neighborhoods alone (2 square mile zone). Residents have experienced a flush of events that have greatly impacted the neighborhoods character and changed its landscape dramatically. The research team has taken this unique set of circumstances in Worcester, MA to undergo a complex social science research project with the goal of better understanding how residents value their trees and the services they provide, and communicating those benefits to policy makers on all levels of government.

After completing a content analysis on the Worcester Telegram and Gazette, the team began the next objectives of the research process; focus groups, questionnaires, and q sorts. Because the project team was constrained to a seven-week period for data collection, the number of focus groups was limited to two.

Extensive research has revealed expert opinion on a host of benefits associated with urban trees. While these are helpful in providing baseline knowledge on the subject, the focus of our study was to better understand how residents value the trees in their neighborhood. The team began by identifying a broad set of benefits that have been introduced and examined by experts through forestry and academic literature. Afterward, the team developed a focus group

instrument (see appendix) and held two focus groups in an effort to expand upon the knowledge of experts and develop a spectrum of benefits that residents associated with trees. After organization and analysis, the group confirmed lots of overlap between expert and resident opinions. The project team will attempt to link these two perspectives to build a joint message for policy makers in the future.

The focus groups were successful in expanding upon the economic, environmental, and social services provided by trees. The data extracted supported what experts had mentioned, but expanded upon those benefits providing specific examples, and even revealing new benefits. Although experts and local newspapers had identified a correlation between the presence of trees and healthier lives, the focus groups did not reveal anything supporting or opposing those claims.

Literature Review

The urban forestry literature has expressed expert opinion on the benefits that urban trees provide. Expert opinions were valuable in providing a baseline of knowledge that the team was able to build off and expand upon through a multi-method approach. In addition, academics provided us the opportunity to evaluate the differences and similarities amongst expert and resident opinions on the benefits of urban trees. Experts revealed valuable insight; however, often times these opinions were completely scientific lacking support in the form of experience and resident credibility. By compiling forestry and academic literature, the team was able to construct questionnaire and focus group instruments that were helpful in the data collection process.

Trees provide shade and microclimate regulation

The literature provided statistical evidence that the shade provided by trees contributes to microclimate regulation. This evidence was further supported in the data we collected throughout the two focus groups. Heisler (1986) documented that the shade provided by trees reduces summer energy use by 20-25%. McPherson (1997) supported this argument suggesting trees reduce the need for air conditioning. Akabari (2001) stated that trees account for a 5 degree Celsius reduction of city temperatures, and are involved in transpirational cooling which reduces solar heating of dark surfaces. Akabari continued that the existence of 10 million residential trees is responsible for \$2 billion annually in energy reduction and that urban tree planting can account for 25% reduction in net cooling and heating energy usage in an urban landscape. Because of a cooler summer in 2009, residents said they were unsure of whether the loss of trees had a definite effect on energy costs; however, most confirmed they were very concerned about this issue in the future. Residents however did notice a great depletion in the

amount of shade on their property and discussed several behavioral changes they were forced to make as a result of the loss. Many individuals said that they were no longer able to read and relax on the front porch because it was too hot, others said that they had to move their garden contents around to account for increased sunlight.

Trees provide shelter from the noise in the bustling city

Another major benefit provided by trees is their ability to reduce urban noise levels. Aylor (1972) stated that leaves and stems scatter sound and the ground absorbs it. Later, Cook (1978) wrote that trees are significant in providing a buffer to aid in noise control. Reethof and McDaniel (1978) agreed adding that a tree line accompanied by shrubbery could result in a 3-5 decibel noise reduction. Bolund and Hunhammer (1999) stated that evergreens are the prominent tree for noise reduction, but oaks, maples, and even vegetation can decrease noise levels as well. The two focus groups supported the opinions above and mentioned that the loss of trees has left them vulnerable to highway noise from 190 as well as sirens, dogs barking, and general neighborhood noise levels.

Trees are a major factor in choice of residence and add to property value within a neighborhood

A major theme developed by the experts and prominent in our focus groups was; trees have a significant effect on choice of residence and property value. Dombrow (2000) stated that the presence of trees is attributable to a 2% increase in home value; Cordell (1985, 1988) supported this determining that the presence of trees increased property value 3-5%. Rodriguez and Sirmans (1994) affirmed that a good view of park increases single-family home value by 8% and Crompton (2001, 2004) added that residence in proximity of a park increases home value (8-20%). Thompson (1999) concurred stating that trees result in a 5-20% increase depending on health of forests nearby. Each of our focus groups sparked deep conversation on the topic of property value and it was a common concern that the tree loss had resulted in a large decrease in property value. Most residents also agreed that although they may not have bought their house specifically for the trees, the neighborhood selection and country feel subconsciously played a large part in their decisions. Many residents talked about neighborhood image, streets lined with big maple trees that created a beautiful canopy. Others spoke of the country feel within the neighborhood despite its location in a city. When the trees were removed, residents felt as though their homes were all stuck together as if one house were glued to the next. The majority of residents were extremely dissatisfied with the look of the neighborhoods, some even mentioned that they had considered moving. Some residents felt that they should get a tax incentive from the government for their losses.

Trees provide a habitat for wildlife

Expert opinions were supported throughout our focus groups that trees provide a habitat for urban wildlife. Johnson (1998) stated that trees provide habitat that improves the biodiversity in a given ecosystem. Van Druff (1995) supported this adding that the birdfeeder industry is a direct biological indicator of area ecosystem health. Several residents who participated in the study mentioned a major decline in squirrels, rabbits, and bird populations in their neighborhood. A number of residents also mentioned that because so many trees were lost in such a short period of time, the rapid change disrupted the ecosystem. For example, the loss of tree canopy resulted in a larger site path for birds of prey to feed on vulnerable mammals and rodents. Others mentioned squirrels resorting to nesting in houses and attics because there were no trees to foster a home.

Residents have an emotional attachment to the trees in their neighborhoods.

After completing two focus groups, it was clear that residents in the Greendale and Burncoat neighborhoods displayed a strong emotional attachment to their trees. Evidence from experts was defended by the data the team collected and stood out as a major theme in conversation. Chenoweth and Gobster (1990) allege that trees foster strong attachment to community. Dwyer (1991) confirmed stating that residents have emotional ties to trees and connection to community. Schroeder (2004) validates this evidence stating that trees provide an experience that fosters spiritual and cultural attachment.

Trees add aesthetic value to a neighborhood

Perhaps the most significant and maybe the most obvious theme documented by experts and supported by residents is that trees provide aesthetic value and beauty to the neighborhoods. The aesthetics and sense of community were the primary topic of concern from residents in the Greendale and Burncoat neighborhoods. A study by Schroeder (1989) concluded that residents credit trees as most important feature to aesthetic quality of community, correlating beauty to an increase in property value. Several residents discussed the value of trees in connection with neighborhood beauty, and how trees made their neighborhood gave a 'country feel' in the city, and also how the loss of trees has transformed the neighborhood image into an 'industrial park'.

Trees control rainfall runoff and flooding therefore stabilizing soils and reducing erosion

Despite being heavily documented by experts, this perceived benefit of trees failed to emerge in the focus groups. The hydrologic processes that trees provide are less noticeable to the average resident. It is probable that weather could also control the noticeability of flooding in

lawns or streets. Sanders (1986) stated that the presence of trees reduces the amount of money spent on improving groundwater recharge, and points out that canopy coverage reduces water runoff from 7-12%. Haughton and Hunter (1994) added that trees help to absorb rain water into the soil decreasing runoff.

Health benefits

The health-related benefits documented by experts below were non-existent in the conversations in either of the focus groups. Heisler (1995) stated that the shade trees provide reduces ultra violet radiation, cancer, and cataracts. Ulrich (1984) alleged that a view of trees in hospital window reduce patients recovery time, reduce the need for medicine, and improve moods and attitudes throughout the hospitals. The study went further to conclude that exposure to urban environments increase stress while exposure to green spaces reduces stress. Some resident discussed how distraught they were after the trees had been removed, but no where did they mention that the trees affected their health in any way. Although the conversation was not directed toward health-related issues, the expert opinions on health related benefits of trees were not supported in either of the focus groups, nor were any surfaced by participants.

Social benefits

A key dimension that emerged in the focus groups was that trees provide a variety of social benefits to a community. Wells (2000) and Taylor, Kuo, and Sullivan (2001) both documented that the use of outside space near trees was greater than the use of areas not near trees, and that trees resulted in better behavior from children. Interestingly, our focus groups supported these claims as residents discussed the amount of time spent working and recreating in their yards had decreased since the deforestation. Kuo and Sullivan (2001) and Dwyer (1992) allude to a case study in Chicago stating that trees alleviate the hardships of life and result in less crime and healthier relationships. Kuo (1996) states that trees results in stronger ties to neighbors, a sense of safety, healthy pattern of play, use of neighborhood common space, fewer incivilities, fewer property crimes, less graffiti, fewer violent crimes, and better coping skills. The social benefits in which trees contribute were heavily supported in our focus groups. Residents discussed how trees affected privacy in the neighborhood, contributed to a sense of community, add to the aesthetics within the community, and serve as valuable landmarks. Participants discussed how trees that once added privacy to the community were gone leaving resident vulnerable. In some cases, residents discussed purchasing fences, and blinds to add privacy. One participant even mentioned having to buy a bathrobe because there were no longer trees to block the view into the bathroom window. There were also a few statements and some discussion relating to the use of property and the social changes that were

attributable to the trees. Some residents discussed a change in their relationship with their neighbors both positively and negatively. Others discussed a change in the amount of children playing outside which they believed may have been in correlation with the loss of trees.

Methodology

This section describes the process we engaged to design and implement our focus groups. We begin with our sampling criteria and then describe our focus group design.

Selecting Participants

In a study that focuses on the public perception of tree loss in a 2-mile radius zone, the comparison amongst demographics was not a major concern to the team. The group felt it would be sufficient to collect a sample from that population large enough to represent that population. Given that the specified area is so precise, it can be presumed that the demographics within these suburban neighborhoods are not especially diverse. This assumption is supported by the data collected by the government census bureau in 2000 (See appendix government census).

The demographics within our focus groups reflected the demographics within Greendale and Burncoat (mostly middle aged to elderly Caucasian). After we conducted these groups, it was essential to determine if we had reached saturation, meaning that we felt as though we have gathered a sufficient range of information to a point where nothing new was arising (Krueger, 2000).

The first focus group was completed on November 17, 2009 made up of five participants (4 women and 1 man). The second focus group was completed on November 21, 2009 made up of six participants (4 woman and 2 men). The research team provided the food and refreshments available at the focus group and the focus groups were held at the residence of one individual from each of the focus groups respectfully.

The participants in our focus groups were gathered using a method of social networking. Project advisor and WPI professor Rob Krueger spoke with friends, associates, and acquaintances living in the Greendale and Burncoat neighborhoods. He asked if they were willing to serve as participants in our research and if they could gather a few other neighbors to volunteer as participants. Professor Krueger was successful in contacting a friend that was able to gather four other neighbors to meet in a focus group setting in that individual's home on Tuesday November 17th. Another contact was successful in gathering five other neighbors to meet in a focus group setting at that individual's residence on Saturday November 21st. The individuals in the two focus groups totaled eleven participants.

One goal of the research team was to determine whether the experts perception of the benefits associated with urban trees, matched the data gathered in the focus group setting. In other words, did the opinions of residents offer any valuable information that experts could not?

Focus Groups

A major objective of the project team was to assemble, conduct, and analyze focus groups. A focus group is a specially designed group of six to eight individuals selected because they share certain characteristics that relate directly to the topic, issue, product, or service being addressed (Krueger, 2000). The project team used focus groups in addition to interviews because a focus group creates a more natural environment in which people are more apt to influence, and be influenced by others (Krueger, 2000). Focus groups allow researchers to gather a large amount of data, enrich concepts, and give residents the opportunity to reflect upon their relationship with trees and how the deforestation affects them (Krueger, 2000). Additionally, focus group dynamics encourage collective opinions, self-expression, and help to illuminate differences in perception.

The individual in charge of leading the focus groups, or moderator, must have sufficient group process skills in order for the group to accomplish its objectives (Krueger, 2000). He or she must create a nonjudgmental environment that promotes participants to share outlook, but reframe from persuading or influencing other participants (Krueger, 2000). In addition, the moderator must be sensitive to soft-spoken individuals while simultaneously creating a trust that will allow for comfortable expression. Rob Krueger was the moderator for the first focus group, and Gretchen Folk led the second focus group.

Two audio recorders were used in each focus group to give all team members access to the conversation. The recording was then used to transcribe the conversations, which were then typed into two text documents, and used for analysis (see appendix). The analysis was completed by means of selecting themes that arose throughout the two focus groups, and using statements from the participants, as well as quotes, to support those themes (Krueger, 2000).

The purpose of our focus groups was to better understand the attitudes and behaviors of residents living in Greendale and Burncoat. The project team conducted two focus groups in an attempt to flesh out a broad spectrum of resident opinions and to better understand services trees provide. Given the recent tree loss as a result of the ice storm and the Asian long horned beetle which had affected so many people, we felt that these feelings and behaviors may be better expressed. Understanding the public perception of trees has enabled our team to better understand the value of trees in a community.

Each focus group was made up of five to six residents who gathered in a location with an assigned moderator from the research team. They engaged in a conversation guided by a focus group instrument (attached in appendix 1) which looked to surface an array of issues relating to the benefits of urban trees that had been documented in forestry literature. The use of focus groups was particularly valuable in this project because it gave the researchers an opportunity to experience the neighborhood response on a more personal, conversational level. To the knowledge of the group, there is no systematic study of this kind investigating the public perception of trees within a community that has recently been deforested; therefore, there was a great opportunity for innovative knowledge to be surfaced.

The Focus Group Instrument

The focus group instrument, which was developed by the research team, is a set of unbiased open response questions intended to direct the conversation on issues pertaining to our goals. The questions were prearranged, articulated, and sequenced so they were easy to understand and interpret (Krueger, 2000). The instrument was comprised of six questions and several probing questions, which provided enough conversation for forty-five minute to one-hour discussions (Krueger, 2000). The questions were divided into two sets: set one, focusing on neighborhood and community, and set two, focusing on family. In a group setting, individuals are able to feed ideas off one another sparking new ideas, and exploring a large topical area (Krueger, 2000). It was important that we allowed the participants to expand upon issues and elaborate their true feelings and emotions about the tree loss, as this may have been more valuable than any question we could derive. We were also prepared to anticipate the direction of the conversation and ensure questions to get back on track.

The moderator must attempt to gather the attention of all participants and encourage contributing to the conversation (Krueger, 2000). The first question was not intended to gather deep thought provoking information, but rather grab the attention of the participants. This question was easily answered by the participants in our study and generated conversation that created a comfortable atmosphere for all participants.

1. How do you feel that trees affect the beauty or character of your neighborhood?

Probe: When you chose your residence, did the trees factor into your decision?

While an interview instrument guides participants toward responding to specific types of questions, the focus group instrument allowed participants to control the conversation. The

moderator presented the group with questions only to guide the conversation towards issues relating to our study, and to keep all the participants involved. Because the participants in each group differ, one groups required more involvement, structure, and questions from the moderator than the other.

Confidentiality

The data collected was analyzed and used for the sole purpose of our research. The final IQP project including all results will be available on the WPI website. The attendees were guaranteed privacy and confidentiality and were advised to participate with attention to ethics and sensitivity toward the opinions of others. They received, and were asked to sign a confidentiality statement reiterating the purpose of the project team's research.

When the focus group adjourned, the project team used the recorded conversation along with notes to analyze the responses through a data analysis. The analysis did not use names of the participants or identify individuals as male or female. The information gathered was locked in a filing cabinet available only to the researchers involved with this study.

Data Collection

The first focus group, five individuals moderated by Rob Krueger and observed and recorded by the research team, were representative of a group that was able to control the conversation. The second focus group, moderated by Gretchen Folk and observed and recorded by the research team, demanded more instruction. More questions were asked by the moderator to generate conversation on topics surrounding trees, and to guide the conversation toward issues of interest rather than sidetracking toward governmental issues surrounding the eradication efforts. There were several themes that the group identified throughout the two focus groups. These themes were topics of conversation that sparked a great deal of popularity within the group and between the two groups.

The analysis below is a summary of the results collected in the two focus groups. There were ten themes that surfaced and evidence is given in the form of statements and or quotes to defend each theme. The numbers beside each statement represent the individual who made the comment, numbers (1-5) are participants in focus group one, and numbers (6-11) represent individuals in focus group two.

Respondents in the two focus groups provided supportive evidence to suggest the economic services provided by trees received the greatest awareness and concern of the resident's living in Greendale and Burncoat. The economic value trees provide is highlighted by the avoided costs associated with their existence. Some examples of the economic benefits either outlined in the literature or emerging in our focus groups were: Trees protect the neighborhood from

the wind, trees provide shade and microclimate regulation, trees affect privacy and visibility, trees provide shelter from the noise in the bustling city, and trees are a major factor in choice of residence and add to property value within a neighborhood. The focus groups exposed numerous situations where residents were forced to either change their behavior, sacrifice pleasure and leisure, and even spend money to buy things like fences, plants, blinds, curtains, umbrellas, bathrobes, etc. all costs that could be avoided with the presence of trees.

Residents who had lost their trees became highly aware of an array of environmental, economic, and social services provided by trees as well as the behavioral changes they made to adapt to life without trees. Residents began to touch on some of the ecological services such as wildlife habitat. They also identified some economic services that trees provide in a community at no cost; for example, shade to regulate temperature, privacy from neighbors, and protection from wind. When the trees were cut, there was a common awareness of the monetary value that these services represented and the avoided costs that trees represented. The team feels that there is a great amount to be learned from resident's opinions and that communication of these opinions is vital to foresters and policy makers in the future.

The focus groups conversation revolved around some environmental issues associated with trees as well as some social issues. Environmental issues that were prominent in the focus groups were the same issues that appeared in the forestry literature; however, the focus groups were able to flesh out specific examples and enrich these concepts so they may be better communicated to policy makers who may be able to better preserve Worcester's urban forests. Experts stated that trees provide a home for wildlife but it was the focus groups revealing that squirrels had nowhere to live and that they were resorting to nesting in resident's houses. The residents also expressed a major decline in the bird population in these neighborhoods. Residents were also able to describe the direct impact that trees play in an ecosystems health.

Contrary to expert opinion, trees effect on health was not a great concern to residents, and hardly noticeable to the sample of residents in these neighborhoods. Although the moderator did not use health as a probe in the focus group guide, issues will often arise if residents feel strongly about them; health failed to surface in either of the two focus groups.

Are there any benefits to the tree removal?

Interestingly the most common positive opinions of the removal were: the eradication of the ALB, minimized raking, safety, and more sunlight for landscaping and gardens. Several residents

discussed how their lawns and gardens flourished this year with the increased sunlight due to tree cutting.

Themes that emerged from the focus groups

There were several themes that were prominent in the focus groups, but were not extensively documented by experts in the literature we viewed. Some of these benefits included added privacy and decreased visibility, wind protection, presence as landmarks, and the creation of a country feel in the city. Experts were not able to communicate the extent to which trees add privacy to a neighborhood, something that residents experiencing this loss were very in tune with. Also, residents could not quantify the extent at which the trees served as wind barriers adding protection from wind that damaged siding and aged paint on houses and barns. Another interesting benefit that experts were unable to identify, but one that residents felt strongly about was that trees serve as landmarks in a neighborhood that contribute to the sense of community. Residents talked about missing turns and a lack of recognition after the trees were no longer there. They discussed how the trees provided a sense of place in the neighborhood that provided a comfortable and homey environment.

The ten themes identified by the team and the number of mentions they received in the two focus groups are displayed in Figure 1.

Figure 1

Theme	Mentions
Trees affect privacy and visibility.	8
Trees provide shelter from the noise in the bustling city.	11
Trees are a major factor in choice of residence and add to property value within a neighborhood.	7
Trees protect the neighborhood from the wind.	7
Trees provide shade and microclimate regulation.	12
Trees provide a habitat for wildlife.	6
Trees add aesthetic value to a neighborhood.	6
Trees serve as landmarks that contribute to the neighborhood image and a sense of community.	8
Residents have an emotional attachment to the trees in their neighborhoods.	6
Trees help create a country feel in the otherwise typical unappealing urban city.	4

Figure 2 outlines statements and quotes directly from the focus group conversations that provide evidence to support and validate these ten themes.

Figure 2

Trees affect privacy and visibility.	
	<p>4: When all the trees were there it was like sitting in a tree house we would sit there and hardly even see the road. We would just be sitting with leaves all around on it was my favorite place to be.</p> <p>11: "Now the lights from the fire truck are far more visible, were on a fire truck route."</p> <p>2: "Well it seemed like it made things much closer together."</p> <p>1: "We can see Mount Wachusett and Indian Lake and the Norton Company."</p> <p>5: "Without the trees it shows us what houses need major repairs. All the flaws are out there in the open."</p> <p>1: "Now everything feels bigger because of the noise level and a lot of it doesn't feel as private and secluded as it did either."</p> <p>9: "Loss of privacy is a big one, you can see through everybody's window... and the noise level has increased (wind)...The trees were a wind barrier."</p> <p>4: "Loss of privacy"</p>

Trees help to shelter neighborhoods from noise.	
	<p>7: "You can hear people just in general from yards over. You could hear things you wouldn't have heard before. You could always hear the highway down here, but you could really hear it now.</p> <p>7: "I can hear sometimes the hum on 190 and 290."</p> <p>8: "The train down there seems loud."</p> <p>8: "And dogs you can hear dogs barking."</p> <p>8: "I can hear the fire truck sirens much louder now"</p> <p>7: "We always hear the train."</p> <p>1: "Now everything feels bigger because of the noise level and a lot of it doesn't feel as private and secluded as it did either."</p> <p>2: "The noise level is certainly something we've noticed a lot."</p> <p>2, 1, and 5: "Sound from the highway is what I noticed."</p>
Trees are a major factor in choice of residence and add to property value within a neighborhood.	
	<p>4: "When we chose to live in our house a big part of that decision was... this is a neighborhood that's interesting and it feels like a neighborhood, it was a lot about the trees that were in the neighborhood."</p> <p>10: "One of the reasons I brought my home was... I parked down Dorothy Ave and saw that all of the trees were at least fifty years old at least, and it was a very stately street as you looked up. And as I told you before I had three very beautiful maple trees in front of my home."</p> <p>4: "It just looked like all of a sudden it looked like a neighborhood that I wouldn't have wanted to live in and then yeah sort of overnight."</p> <p>1: "Well it would be visual to come into a neighborhood and you might not think of what is so attractive here and the houses are um a good vintage style of ours and the trees were just natural things to look at all those trees."</p> <p>4: "I didn't choose to live in Montana. I live in Massachusetts. I like my trees."</p> <p>5: "We haven't been trying to sell our house but were sure people that have been trying been trying to figure out what to do with it. Is it a ten thousand dollar cut, you take it or you can't sell."</p>

	10: "Well, all we are all very concerned about the value of our property and our homes."
Trees provide protection from wind.	
	<p>6: "Our porch furniture blows around all the time."</p> <p>2: "It's definitely windier. There's nothing to break the wind. Now particularly being up as high as we are the second highest spot in Worcester."</p> <p>1,2,3,4: It's definitely windier</p> <p>2: "West prevailing winds hit that side of the house and we haven't heard it really yet but we will hear it this winter and it will be whistling. I could hear it because we had a couple of windy nights."</p>
Trees provide shade and microclimate regulation.	
	<p>5: "This was like our extra room in the summer time and this summer we pretty much didn't use it. We bought shades but it's not the same."</p> <p>4: "It's too hot and sunny to sit on the porch."</p> <p>5: "It's pretty much; we are not able to use our front porch."</p> <p>3: "There's no shade."</p> <p>4: "We need to find new places to sit outside where it's not bright and sunny and rearrange the garden specifically shade plants and the sun plants."</p> <p>2: "On a positive note, as far as being a gardener. It's a great summer for the gardens. For the first time I could grow things for the entire season."</p> <p>5: "We had two big trees out here that in the late afternoon and summertime provided shade for this part of the house and it wasn't so much that I really thought about change in electric bill how it will be if we didn't have them."</p> <p>10: "It was horrific; my back porch was 120 in a very confined area. It was 120 in my back porch."</p> <p>3: "I had to buy an outside umbrella for the deck"</p> <p>7, 9, and 10: We brought more umbrellas. We all brought more umbrellas.</p>

Trees provide a habitat for wildlife.	
	<p>4: "I remember sitting there and seeing an owl sitting on the trees and some watching all the birds. It was great."</p> <p>2: "I was actually surprised how many squirrels there were because we were all speculating how many there still were here this summer. Some of them were living in our attic."</p> <p>4: "We have birds trying to nest on our back porch because those poor things didn't have anywhere to go."</p> <p>10: "I noticed the poor squirrels immediately after very confused, they sat on the neighbors deck, looked this way and that way, stood there for at least 15 minutes and you could almost see it thinking 'where did all my nuts go' 'where did my food supply go' and the birds.</p> <p>7: "It's funny you mentioned nature, we had two birds of prey incidents."</p> <p>7: There is such a greater visibility for birds of prey without the trees; many small animals have nowhere to hide."</p>
Trees add aesthetic value to a neighborhood.	
	<p>3: "They said they were just awed by the beauty of these streets with all the trees."</p> <p>3: The beauty of it</p> <p>2: Aesthetics, Aesthetics</p> <p>9: "They definitely enhance the beauty of the neighborhood."</p> <p>5: "That was one of the prettiest parts of the hill, though; going through that canopy under there it was lovely."</p> <p>2: "Because there's nothing to offset that designed structure with something more aesthetic."</p>

Trees serve as landmarks that contribute to the neighborhood image and a sense of community.	
	<p>3: "There was a house and a driveway, a house and a driveway, a house and a driveway"</p> <p>3: "It was just this bunch of houses with a row of driveways coming down the hill...it was plain ugly."</p> <p>1, 5: I missed the turn so many times.</p> <p>3: "I got lost because the landmarks (trees) weren't there anymore."</p> <p>2: "Certainly we like countdown to leaf day"</p> <p>9: "Without the trees it shows us what houses needs major repairs."</p> <p>7: "The trees kind of give you a boundary as well."</p>
Residents have an emotional attachment to the trees in their neighborhoods.	
	<p>1, 4: "I mean the time of the trees getting cut down was a very emotional time in the neighborhood."</p> <p>2, 4: "It was kind of like somebody died. It was like this grieving process people from other neighborhoods who had."</p> <p>2: "also really depressing... It was really hideous."</p> <p>2: "I felt like crying and it just was this really very sort of emotional time kind of the shock of that and then the, yeah, this process of kind of grieving, anger: all those stages of grief."</p>

Trees help create a country feel in the otherwise typical unappealing urban city.	
	<p>1: "All we saw was one house glued to the next house There was no separation, you know, in a neighborhood that doesn't have an acre or so of land and was just ugly."</p> <p>2: "Well it seemed like it made things much closer together."</p> <p>6: "When people would ask where I lived, especially if there not from Worcester they think city and urban, but I always characterize the neighborhood as having a country feel, where every house on the streets is different."</p> <p>3: "I think that people who chose to live here did so because it was a place that felt like... we're in a city, but it really feels like a neighborhood it really feels like a community and we think this little part of our neighborhood is very much a little community and probably because we approach it that way."</p>

Analysis of Findings

Figure 2 displays a summary of the findings the team collected in the two focus groups. The team used expert literature to frame the conversation, but left it open-ended enough for residents to expand upon these benefits and also surface new opinions. Because the focus groups were designed to expand upon the benefits of trees documented by experts, the analysis of the two focus groups conducted in phase-one of the study is thus an analysis of expert opinion on trees that has been expanded upon and examined further by residents. The team selected ten themes from the two focus groups that most effectively expressed the opinions of residents relating to the benefits of urban trees that were documented in forestry literature. Each theme mentioned is supported by statements and or quotes that provide evidence for each theme.

The statements and quotes listed under each theme contain key terms that were used to code responses. The first group of themes in the chart includes: trees affect privacy and visibility, trees provide shelter from the noise in the bustling city, trees are a major factor in choice of residence and add to property value within a neighborhood, trees protect the neighborhood from the wind, trees provide shade and microclimate regulation, and trees provide a habitat for wildlife. The method of coding specific statements and quotes to the themes demanded a thorough analysis of each conversation (focus group 1 and 2). After the ten prominent themes were derived from the conversations the team sifted through the text pulling out statements and quotes that supported each theme. For example, within the theme 'trees affect privacy and visibility', the evidence included statements and quotes mentioning a greater visibility both positively and negatively, mostly directed towards changes in view and scenery both surrounding and within the neighborhoods. Trees that once blocked visibility were gone leaving

behind a scenic view of highway and industrial infrastructure once conveniently shielded by the trees. Statements also discussed residents expressing a loss in privacy, more along the lines of vulnerability to others and invasion of privacy. The next theme the team selected was ‘trees provide shelter from the noise in the bustling city’. Statements and quotes that fell into this theme generally involved trees ability to buffer noise, and the specific noises heightened as a result of tree loss. The theme ‘trees are a major factor in choice of residence and add to property value within a neighborhood’ displayed evidence from the conversations expressing trees role in purchasing property and real estate, and the value of property suffered with tree loss. The fourth theme, ‘trees protect the neighborhood from the wind’ is strait forward, this theme was supported by statements and quotes that discussed trees ability to block wind, as well as an array of affects resulting from increased wind such as wind noise and damage to siding and paint. The theme ‘trees provide shade and microclimate regulation’ was supported by instances where residents expressed the benefits that shade provided such as a cool front porch to read or relax, often highlighting temperature changes. The last theme in this group was ‘trees provide a habitat for wildlife’. Although this is an environmental theme, it is different from the themes discussed above because economic or avoided costs sustained in the presence of wildlife were not addressed by the residents. Residents were very interested in the ecological changes that the tree loss had inflicted within their neighborhood and were able to touch upon several changes in urban wildlife.

The six themes identified above represent economic and environmental benefits. These themes with the exception of ‘trees provide a habitat for wildlife’ supported the ecological and economic services that trees provide at no cost, and express residents concern with real costs. These six themes were also some of the most popular themes discussed in the focus groups, likely because they directly impacted the residents as far as behavioral or physical changes in their lifestyle forced upon by the tree loss.

Residents also expressed great concern with some of the social benefits associated with urban trees. These theme’s included: trees add aesthetic value to a neighborhood; trees serve as landmarks that contribute to the neighborhood image and a sense of community, trees help create a country feel in the otherwise typical unappealing urban city, and residents have an emotional attachment to the trees in their neighborhoods. This group of themes dominated the conversation likely because they are the most obvious impacts as far as visual and landscape changes. The theme ‘trees add aesthetic value to a neighborhood’ was supported by statements and quotes that alluded to the beauty that trees provided in the neighborhood as well as how wonderful the neighborhood looked and how pretty the canopies that lined the streets were. The theme ‘trees serve as landmarks that contribute to the neighborhood image and a sense of community’ demonstrated the significance of trees as landmarks, the benefits those landmarks provided to the neighborhood, and also how the neighborhood image and sense of community were contained within the trees. The theme ‘trees help create a country feel in the otherwise typical unappealing urban city’ was supported by residents reflecting upon their trees and the benefits they provided as far as providing this ‘country feel’ in the city.

Residents felt as though the trees provided separation and a unique feel to each street and house, and how the loss of trees left houses appearing stuck together and as if part of a monopoly board. The last theme in this section was 'residents have an emotional attachment to the trees in their neighborhoods'. This theme was supported by residents expressing a deep connection with the trees in their neighborhoods and their emotional attachment to those trees. Some residents revealed memories associated with particular trees and the attachment they had with the scenery and aesthetics they provided.

This group of themes touched upon several benefits that experts did not. Experts were able to communicate much of the scientific value of trees in a community, but had difficulty describing those benefits that were not easily measurable, things that may only be noticed by those impacted directly. Residents were able to communicate the experiences and value that the trees provided on a more personal level. In a neighborhood that recently lost nearly its entire urban forest, exactly what trees provided to those residents was more easily expressed.

Conclusion

This systematic study gathering the public's perception of urban trees has allowed the team to compare the opinions amongst residents and experts on the benefits of urban trees, and also to give residents an opportunity to expand upon those benefits documented through forestry literature. The data collected throughout this study has been analyzed and compared with expert opinion in an effort to build a united message for policy makers on all scales of government. It is incumbent upon residents in the Greendale and Burncoat neighborhoods to support this research, its continuation, and other researchers who are attempting to communicate the public's experiences to policy makers who may be able to change the policy around Massachusetts' urban forests in the future. Community residents can be proactive in participating in tree initiative activities, volunteering their time to plant trees, and by taking care of our neighborhoods, parks, and communities. The goal of this research is to communicate both resident and expert opinions on the benefits of urban trees to the public and to policy makers who may be able to make changes to preserve, and build upon Massachusetts' urban forests. The research within Greendale and Burncoat is part-one of a multi-phase study on Massachusetts' urban forests. Part-two will follow with a study on neighborhoods in the quarantined zone that have had trees marked for removal, but have yet to be removed. Part- three will center on neighborhoods outside the quarantined zone. The support and participation of residents is vital to this study and is necessary to understanding how the public experiences and values the trees in their communities.

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Project Number:

Questionnaire Report

An Interactive Qualifying Project Report Submitted to the Faculty of the WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of Science by:

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Evaluating the Public Perception of Trees: Data from a survey conducted in the Greendale and Burncoat Neighborhoods of Worcester, Massachusetts

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Date: December 18, 2009

Abstract:

This study is the first in a three-part research project that explores the public's perception of trees in the social, environmental, economic, and health aspects of their lives. Over the course of seven weeks, residents of the Greendale and Burncoat neighborhoods of Worcester were asked to participate in interviews, focus groups, and Q sorts that would help to reveal their views of green urban infrastructure. Our study shows the extents to which

residents of these neighborhoods feel about topics such as wind and noise blockage due to trees, the habitat trees provide for urban wildlife, and the innate privacy afforded by trees.

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Executive Summary

This study explored the public perception of urban green infrastructure in regards to economics, the environment, social life, and health. Much about the benefits of trees has been documented by experts, but dominant themes differ between experts and the general public. This study sought to elicit the full range of public perceptions of urban trees. Through a detailed analysis, complements the scientific findings of experts. This information can then be utilized by policymakers to better formulate public policy to suit the needs of residents.

The data was gathered using four collection methods: content analysis, focus groups, Q sorts, and interviews. An initial content analysis was performed to explore background information, public sentiment regarding the issue, and how the issue was portrayed to the public through the media. Focus groups were then utilized to establish the range of issues plaguing residents of the Greendale and Burncoat neighborhoods of Worcester directly affected by the ALB eradication efforts. This method allows participants to expound upon their views while a moderator intricately weaves a conversation around the topic at hand. The individual views expressed in the focus groups were then explored in detail through the use of interviews. Semi-standardized interviews allow the researchers to investigate a topic quantitatively while allowing some leeway for clarification and elaboration.

This is the first in a three-part study. This part looks at a region in the ALB quarantine zone whose residents have been directly affected by the eradication efforts. The second segment will investigate a region in the ALB quarantine zone as well, though these residents will not have been subjected to the same deforestation as the residents in part one. The ultimate part of the study will consider residents in a region outside the ALB quarantine zone who are in no danger of any drastic clear-cutting. A detailed analysis of the Q sorts will be completed in the final stage of research.

The results of this study indicate that there is much overlap between what experts and the general public believe to be the benefits of urban trees. However, the focus of experts tends to differ in many areas than the focus of the public; where one focus is weak, the other is generally strong. Thus, a combination of the two viewpoints provides a stronger message to policy makers looking to handle the issue of urban green infrastructure in the best way possible.

Introduction

There has been much documented about the benefits provided by trees from experts. The scientific research available on the benefits of trees had been unsuccessful in communicating resident opinions on these benefits. By triangulating the results of three methods of research employed in stage-one, the team identified a set of themes that most appropriately represented the public's opinions on the benefits of trees. By connecting the expert opinion with the public's opinions, a stronger message has been developed effectively communicating the value of trees in an urban community.

In particular, experts are concerned with the scientifically quantifiable contributions that trees provide to an area, such as hydrologic processes, microclimate regulation, and cleaner air and water. Less exists on the health and social benefits. The surveying instruments were developed with the goal of identifying behaviors and attitudes of residents. Attitudes can be described through how the residents feel about their trees, whereas their behavior is what residents have done and are doing because of the trees. The team felt that the recent tree loss in Greendale and Burncoat would allow for stronger expression of these attitudes and behaviors. Together, the two may be used to more accurately describe the public's perception of trees.

The methods used in the study were a content analysis of the Worcester Telegram and Gazette, two focus groups, twenty-five questionnaires, and Q sorts. All but the content analysis was conducted with residents of the Greendale and Burncoat neighborhoods of Worcester, MA. The content analysis provided the team with background knowledge on the issue and a better understanding of how the beetle and its eradication were portrayed to the public. It broadly illustrated the public sentiment regarding the situation, providing the team with an idea of how to approach the subject.

By conducting focus groups, the team broadened the scope resident's opinion on the benefits of urban trees. The group dynamic explores similar experiences and illuminates differences. This paper details the questionnaire method in which provided exploration of the more specific topics discovered through the focus groups. The questionnaire for the interviews created a way to quantify results and through that analysis, provided a synopsis of the public perceptions regarding the benefits of urban trees.

Literature Review

The preliminary research of forestry and academic literature revealed four primary categories in which the benefits would comply: environmental, economic, social, and health-related benefits. Ten of the most common benefits detailed in this literature review are shown in Figure 1.

Figure 1: Dominant Themes from the Literature

Environmental	Moderate Temperatures and Microclimates
	Control Rainfall Runoff and Flooding (Reduction and Stabilization of Erosion)
	Reduce Urban Noise Levels
	Urban Wildlife and Biodiversity
Social	Cultivate Attachment to Place (Emotional and Spiritual)
	Reduce Negative Psychosocial Issues
Economic	Increased Property Value
Health	Reduce Human Stress Levels
	Shade Reduces the Risk of Cancer

Environmental Benefits Afforded by Urban Trees

The most prominent theme to consider when looking into trees is the environmental. The environmental benefits of urban trees are numerous, ranging from producing cleaner and healthier air to their contribution in microclimate regulation. The following are the subthemes most relevant to our study.

Moderate Temperatures, Microclimates, and Wind

A valuable and well studied amenity provided by trees is shade. Shade provided by urban trees has the potential to reduce climate regulation costs by up to 25% (Heisler, 1995). Similarly, Akabari (1988) found that urban trees can reduce overall urban temperature by 5 degrees Celsius simply through transpiration, thus reducing the need for air conditioning (McPherson, 1997). Although this is recognized as an environmental benefit, it has a clear, economic impact on the residents of such a community. In fact, Akabari (1992) found that the presence of 100 million trees in an urban setting can reduce annual energy costs by \$2 billion.

Haughton and Hunter found the presence of trees to reduce solar radiation as much as 20% (1994). Heisler (1995) supports this claim, stating that the potential reduction is as much as 25%. Another point on which Heisler (1995) and Haughton and Hunter (1994) seem to agree is that trees affect wind. Heisler notes that the presence of trees alters both wind speed and direction. Of more concern, however, to the residents of such neighborhoods, is by how much. Haughton and Hunter found the potential decrease in wind speeds created by trees is between 10 – 30%.

Control Rainfall Runoff and Flooding

Another area studied by the experts was trees involvement in controlling erosion in cities. Sanders (1986) found that 22 – 29% canopy coverage provided by urban trees reduces storm water runoff from 7 – 12%. By reducing this runoff, towns and cities need to spend less money on grey infrastructure. This includes things like dams erected to prevent flooding and groundwater filtration systems. Haughton and Hunter (1994) supported the need for urban canopy in finding that surface water runoff pollutes the water supply, thus creating the need for a filtration system. This is an environmental benefit that has financial ramifications.

Reduce Urban Noise Levels

Urban noise can be reduced with the presence of trees. Cook (1978) showed that a thirty-meter-wide stand of tall trees adjacent to soft ground reduces noise levels, by as much as half. Similarly, Reethof and McDaniel (1978) found that a row of shrubbery backed by a row of trees can reduce noise levels from three to five decibels.

Urban Wildlife and Biodiversity

Urban wildlife has been shown to be an actual, biological indicator of the general health of an urban area (Van Druff, 1995) and trees provide habitat for urban wildlife. On a similar note, Johnson (1988) showed that the presence of trees yields a larger biodiversity of wildlife in an area. Brown (1979) showed that people feel good about themselves when they attract wildlife. However, a study by Van Druff (1995) shows that trees attracting wildlife has costs associated with it.

Social Benefits Afforded By Urban Trees

Urban trees play an interesting role in the lives of the residents. Whether that means improving learning and behavior of children or reducing fear and aggression in the general population, it is clear that their presence is influential. The social benefits that trees play into are quite difficult for experts to relate and are often times best communicated through experience.

Cultivate Attachment to Place

Along with the many environmental benefits, trees impact the lives of people by creating a sense of belonging and establishment. Dwyer (1991) established that people develop attachments to places and trees. It has been shown that this attachment is close enough to be considered an emotional one (Schroeder, Barro, Gobster, and Bartram, 1997). Chenoweth and Gobster (1990) demonstrated that the presence of trees in a community fosters an attachment to one's community. Schroeder (2002) found that in much the same way that trees induce attachment to place, they also allow for spiritual and cultural attachment. An interesting point to note is that getting involved in tree care in a community encourages and strengthens bonding. It may be inferred that the more involved one is in their community, the stronger the connection they have with it.

Reduce Negative Psychosocial Issues

Experts found the presence of trees inhibit aggressive behavior and violence. Kuo (1996) found that urban trees contribute to stronger ties between neighbors. This leads naturally to a feeling of security and fewer civility issues in the community. A noticeable difference was that of less graffiti in neighborhoods with more trees. Kuo also found that green space in an urban environment contributes to a healthier person and improved neighborly interactions. A study done in 1992 by Dwyer that suggests that trees help to dampen the effects of inherent hardships common to city living.

Economic Benefits Afforded by Urban Trees

Many of the economic benefits afforded by trees affect residents indirectly, such as through communal filtration systems. This makes it difficult to gain residential perspective on the topic.

Increased Property Value

Research indicates that trees have economic benefits principally on increasing property values. A study by Anderson and Cordell in Athens, Georgia, found that property values increase from 3.5 – 4.5% in the presence of trees. Sydor (2005) attributed an actual average added value of \$296 to a property with trees. Another study by Thompson (1999) stated that the increase depends on the status of the nearby urban forest. Depending on its' condition, values can increase 5 – 20%. Crompton (2001) found that just living in the vicinity of a park increases value anywhere from 8 – 20%. Rodriguez and Sirmans (1994) similarly found that having a good view of a nearby park can increase the property by 8%.

Health Benefits Afforded By Urban Trees

In the preliminary stages of research, the team found several studies conducted to understand the affect trees have on public health. Studies have shown that trees help reduce stress levels and even expedite recovery.

Reduce Human Stress Levels

A study by Ulrich (1984) revealed two things: exposure to urban environments increases stress levels and that for people living in an urban setting, exposure to greenery reduces stress levels.

Reduce the Risk of Cancer

Heisler (1995) did a study on cancerous ultraviolet (UV) rays and found that shade effectively reduces UV radiation. Consequently, this lowers the occurrence of cancer and even cataracts in the community.

Methodology

Instrument Development:

The interviewing process began with the development of the instrument, seen in Appendix A. Questions were carefully devised and worded based on the information provided by the literature review. Forty-two questions were developed in various styles, fill in the blank Likert scales and open ended questions, each used to enhance the ability to understand more fully the respondent's perspective on trees. Broadly speaking, the instrument has three parts: introductory/background, opinion-based (attitude), and behavioral sections. The overall design of the instrument is intended to provide the participant with a clear approach to the subject matter that they are comfortable answering. In some cases the team was able to use the instrument for a one-on-one interview and because of logistics in some cases the respondents used the instrument as a questionnaire, answering it on their own and returning it to the team.

Using benign questions in the Introduction and Background section, the team hoped to ease the respondents into the process. Then the questions shift to more personal ones in the Attitude section. By this time, if the team is performing an interview, the interviewer has had a chance to relate to the participant and establish a comfortable rapport with them. This allows a more fluid facilitation of the process.

The first draft of the instrument was submitted to WPI Professor Dominic Golding for technical editing and revision. A pilot test was then administered. One major revision that took place between the expert administration and the final edition for general use was the transposition of the demographics section from the actual interview instrument to the consent document (see Appendix B). This was an attempt to further ensure the comfort and confidentiality of the participants while gathering potentially sensitive information. The order of several questions was also reconsidered before being administered to the public. Note that in the instrument, there is a section that asks the respondent to mark the locations of the trees they lost. This was omitted in the actual implementation phase of the study because it seemed to add very little to the discussion.

Instrument Implementation

Worcester Polytechnic Institute Professor Robert Krueger, Ph.D., had several contacts in the infested areas he identified during the first several weeks of the study. Many of these contacts were asked to participate in focus groups. Of the focus group members, eleven out of twelve people offered their time to an interview at a later date. Gretchen Folk and WPI student Kyle Diaz contacted nine churches and asked to distribute a flier (see Appendix C) to the members as a community outreach effort to maximize the number of respondents to the study. Of the nine churches, two were able to forward our request for respondents, one required further approval concerning confidentiality, and the rest were unavailable. Nobody responded directly to the fliers distributed by the churches.

The most effective approach used to gather participants was door-to-door solicitation. The research team dispersed down a street at a time wearing identification badges. Each house down a given street was visited. If the house was vacant, a "Sorry We Missed You" flier was placed in a visible location at their house. If the resident answered the door, the interviewee talked briefly about the idea of the study and the importance of residential involvement. A careful approach was crucial to the success of this tactic due to the circumstances. Being that many residents stated that they harbored negative feelings toward the organizations involved with the deforestation efforts, it had to be clarified very quickly that we are doing this research on behalf of WPI and UMass Amherst so as to allay the suspicions of the residents. In some cases the team was able to conduct an interview and in other cases the interview instrument was left behind for the resident to fill out as a questionnaire. The team returned later to those homes and picked up the interview.

Data Analysis

An analysis of the data collected in the interviews reveals a general overlap in the major themes defined during the initial research of expert opinion. The major themes of the residential perspectives are focused primarily on social benefits of trees, though much is also mentioned about economic and environmental values as well. An important distinction is that the public makes no mention of perceived health differences as a result of tree loss in this case. One reason for this is that some of the potential health risks associated with the absence of trees are long-term, meaning that an investigation immediately following such an event is unlikely to yield such perceptions. As previously stated, these risks include exposure to ultraviolet rays and a change in stress levels. In light of this, it is also possible that increased stress levels may easily have been induced by the traumatic event itself, and not just the lack of trees. By attributing the stress to the event, no conclusive data can be drawn to support the expert opinion that the presence of trees helps to reduce stress levels.

Data was collected from twenty-five different residents along sixteen different streets in the Greendale and Burncoat neighborhoods of Worcester. A majority of these people (84%) had trees removed from their property as a result of the ALB eradication program. The significance of this data lies in the fact that it is demonstrative of the residents we sought to

study. Furthermore, it shows that those affected by the tree removals were widespread within the two areas. The majority of these residents (55%) had three or fewer trees cut down and 30% had between four and ten trees cut down. Ninety-five trees were cut down between the interviewed residents. Statistically speaking, the average resident had approximately four trees removed due to the eradication efforts. Taking a look at the data collected concerning remaining trees, we see that thirty seven trees remain. This means that approximately 72% of the trees in the area of concern were removed. This also suggests that the average resident originally had between five and six trees. To begin with five or six trees and have four removed is a dramatic change worth noting.

Connection to Place and Property Value

Of the residents interviewed, a majority either felt no sentimental connection to their trees or did not answer regarding the loss of special trees. Several mentioned economic factors that were significant to them, and others described a more emotional connection to their trees. Below are several quotes that demonstrate this point:

“The frog pond now turns greener much faster.”

“Our daughter’s after-wedding breakfast gathering was by that tree.”

“I planted that willow on Arbor Day.”

This final quote demonstrates the point made by experts that being involved in green care enhances the connection a resident feels to that community, and in this case, the tree (Feldman and Westphal, 1999). It is interesting to note that answers in this category ranged across subthemes, from aesthetics to economics, indicating that although trees mean different things to different people, the degree to which the trees impact them is similar.

When asked how residents feel trees add to the character and aesthetics of the neighborhood, the primary concern was of the contribution to shade. 21% of responses directly mentioned shade and urban canopy. As previously noted, shade can greatly reduce the amount of energy used during the summer (Heisler, 1990). However, during the interviews, many residents were prompted regarding a change in energy bills, and no respondent noticed an increase. Most predicted that a change in energy usage will be noticeable more during the coming winter. This is one area where public opinion tends to have a different focus than that of the experts. Residents tend to care more about what the shade means on a personal level, whereas experts tend to look at the economic aspect. A close 19% of residents felt a great shift in the aesthetic appeal to the areas. The same general sentiment that shows on the topic of shade appears here. In contrast to shade, there is much overlap here between what residents and experts find. The correlation between aesthetics and property value is very strong, with 92% of residents stating that they feel their property has decreased in value since the loss of trees. 12% of residents also felt that both comfort and a sense of establishment were important to the character of the neighborhood.

“Trees make the neighborhood beautiful in every way. They enhance the landscape and character as well as providing shade, privacy, and shelter.”

“Without our trees, our home feels different, foreign, and barren.”

“The trees help define the neighborhood. They provide a sense of establishment that does not exist in newer neighborhoods.”

“We bought our home here due to the overall effect the trees had.”

This final quote makes mention of actually moving here, at least in part, because of the trees. Analysis of the results shows that 68% of residents feel the same way. 12% of residents who did not move here because of the trees already lived here (primarily through the inheritance of their family’s house). It is interesting to note that several residents even stated that they will be leaving because of the tree removal, suggesting that property value plays a role, as shown by experts (Crompton). For those who chose their home because of the trees, aesthetics were the primary reason given for doing so with exactly 50% of residents making that claim. Again, this suggests that people are willing to pay more for their property if trees are present, as shown by Wolf (2003). 25% of residents stated that a sense of establishment was a reason they moved to the area, being that there was a sense of legacy and community.

“We looked at our home in October, the peak of fall. The neighborhood was beautiful with color and splendor. Impossible to resist.”

“We felt like we had a little piece of the country in our back yard with the conveniences offered in a city.”

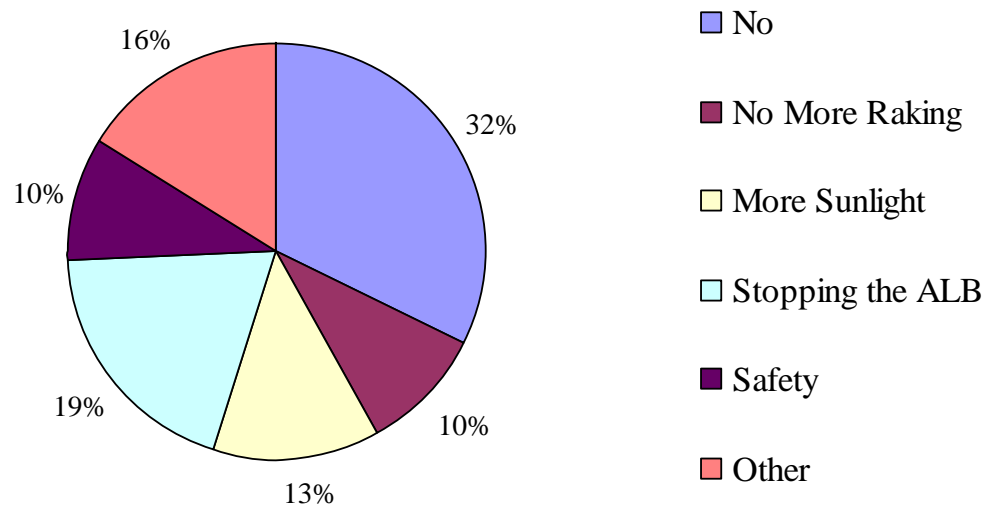
“The neighborhood is about 100 years old, and the trees were an integral part of the established and lived-in feel of the neighborhood.”

Benefits to the Tree Removal

Interestingly, residents were aware of benefits provided by the tree removal. 29% of respondents who stated that there are benefits to the tree removal stated that it would most importantly stop the Asian Longhorn Beetle (ALB). Among other noted benefits, residents noted less raking, more sunlight, and safety as benefits to the removal. However, as shown in Figure 2, 32% of total respondents stated that there was no benefit to the tree removal. This contradicts expert opinion in several ways. Most importantly, there has been no official documentation stating that ALB eradication is a primary benefit to extracting trees. Similarly, Nowak (2004) explored the effect of trees on allergies, noting an increase in areas with more trees. No such concern was evident in the gathered responses of this interview. However, a study done by Van Druff (1995) shows that trees can attract unwanted wildlife. Based on the statistical data gathered here, we know that the attraction of the ALB to certain trees was unwanted by the general public.

Figure 2

Do You See Benefits to the Tree Removal?



Recreation and Work

Looking at Figure 3, it is evident that residents spend a good amount of time either working or recreating in their yard each week. Figure 4 clearly shows that a little more than two thirds of the population at hand spends more than three hours in their yard each week. The range of activities was broad, predominantly gardening, sports and games, planting, eating and mowing. Although residents did not explicitly state any health concerns regarding tree loss, experts note that the absence of green spaces in an urban setting can induce stress (Ulrich, 1991). Given both that residents in these neighborhoods spend many hours outside each week and that the view they have now consists of the city and neighborhood (see Figure 5), it may be expected that these residents will experience increased levels of stress.

Figure 3

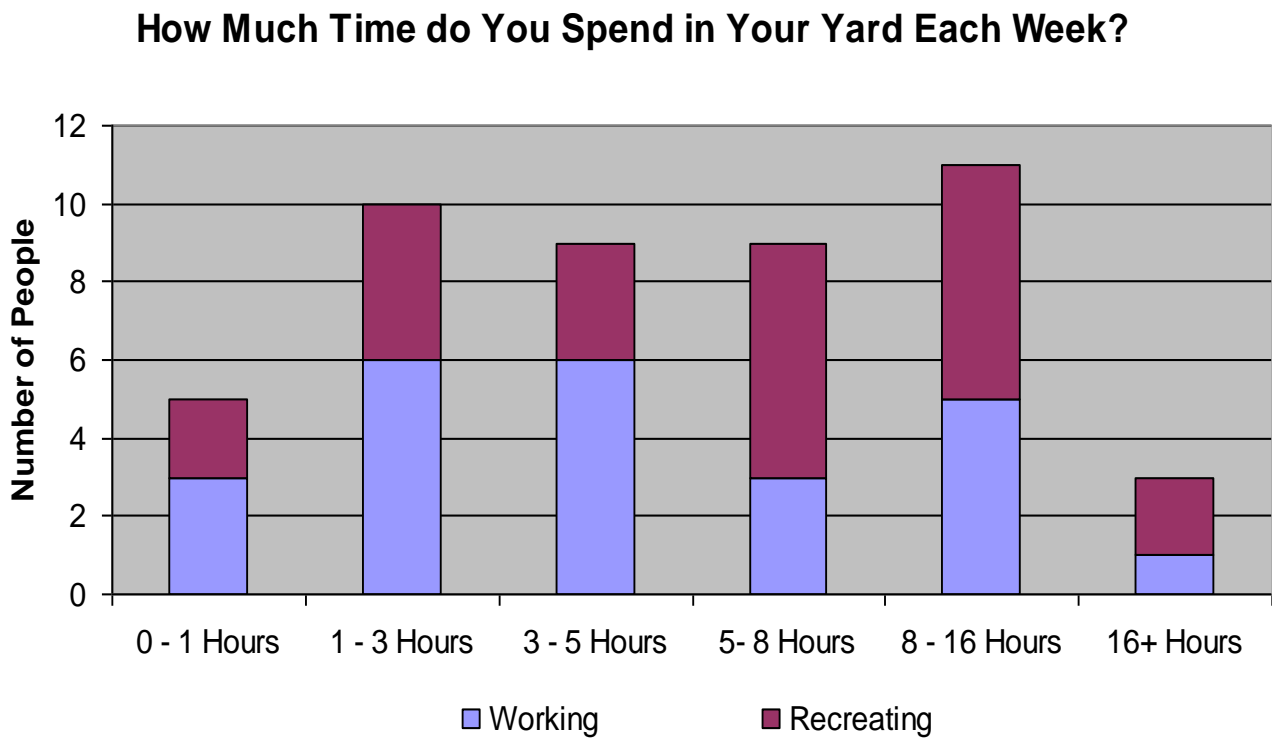
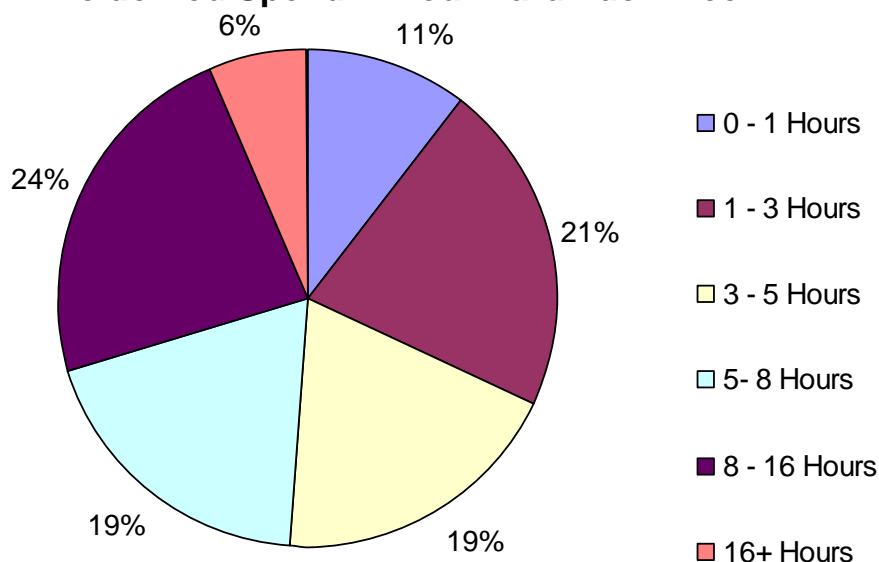


Figure 4

How Much Time do You Spend in Your Yard Each Week?



Shade

Economically speaking, shade was of particular interest to residents, primarily in the sense of compensation. 47% of respondents noted that a loss of shade resulted in hotter temperatures. This had a direct impact on where residents relaxed. Several respondents were unaware of any changes due to shade loss, but 15% noticed a change in the amount of sunlight. In fact, 31% of respondents created shade to make up for the loss of canopy cover. In this context, sunlight was depicted as a bad thing, contributing more to the necessity of shades. It was actually noted that an increase in sunlight worked well for some gardens, but can now be shown to elicit an economic impact on these same residents in a more negative connotation. As shown by Heisler (1990), shade provided by urban canopy can reduce energy costs by 20 – 25%. So although residents could not explicitly state how much they were impacted economically, this research suggests that the change is dramatic. Those who did not mention a direct economic impact did describe a change in behavior to accommodate the difference. 39% of residents mentioned relocating in an attempt to evade the increased sun exposure. The public opinion differs here on why sunlight evasion is important. As previously stated, experts point out that increased UV exposure is detrimental to public health (Heisler, 1995). Respondents, however, avoided sunlight primarily in an effort to remain comfortable in the summer heat.

The front porch on the north side was not usable in the evenings as it previously was. Shades were required and purchased so we could sit out.”

“The sun is so much brighter coming in my slider window to the back yard that it is blinding – especially when I go out on the deck.”

We moved our picnic table to the driveway, so the house would shade us during later day cookouts.”

“We have lived here sixteen years and had to purchase air conditioners because it was unbearable.”

“The front door paint peels from the heat, and the door handle is too hot to touch.”

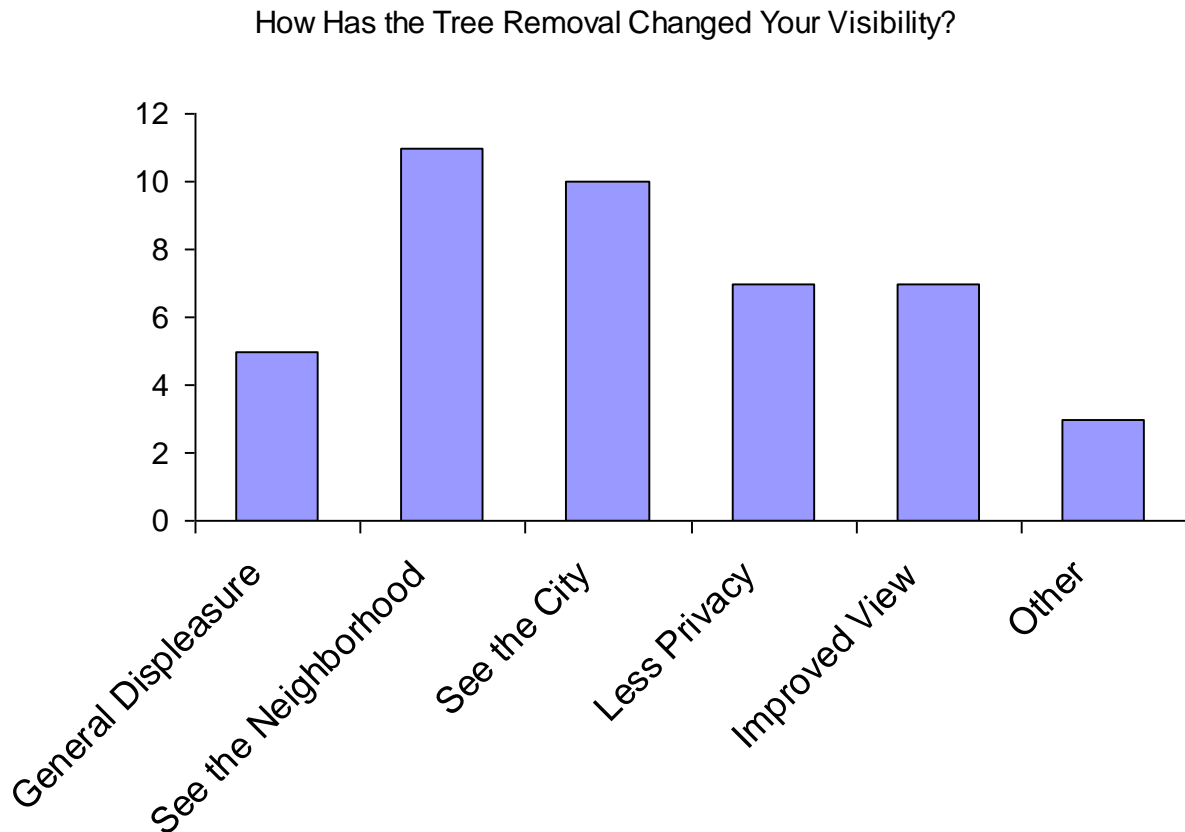
“Less time was spent on the swing set. It is now totally exposed.”

Expanding on the topic of shade, several residents found benefits to the reduction of shade. Residents who maintained gardens noticed both an increase in productivity (42%) and the possibility to now plant new vegetables (38%). This expense incurred by the residents was welcome. However, several respondents (17%) experienced poor flowering due to increased exposure. This resulted in either replanting with tolerant species, relocation of existing species, or death of existing species. One respondent even accredited the increased corn crop to the surrounding wildlife.

Property Screening and Community Relations

Privacy and property screening were not as extensively documented by experts as other relevant themes. 95% of respondents who recognized trees that screened their property acknowledged a loss of said screening. As shown in Figure 5, the majority of residents stated that their view has changed, whether for better or worse, in a broad sense. Only 16% of residents felt a loss of privacy as a result of the tree loss. This may be associated with the fact that most of the respondents felt no significant change in relations with their neighbors. However, 45% of respondents actually bought supplies that added to the privacy of their home.

Figure 5



On the topic of neighborly relations, 46% of residents stated that the cause of tree loss, the ALB eradication effort, has given them a common bond. Though it must be noted that this is not necessarily directly attributable to the loss of trees. 25% of the respondents noticed no change in neighbor-to-neighbor relations. This goes against what was found by Kuo (1996) that suggested trees bring neighbors closer together. Although it cannot be shown that the presence of trees contributed to the ties amongst neighbors, it is clear that the absence of trees did not weaken these ties, providing an interesting contrast to expert findings.

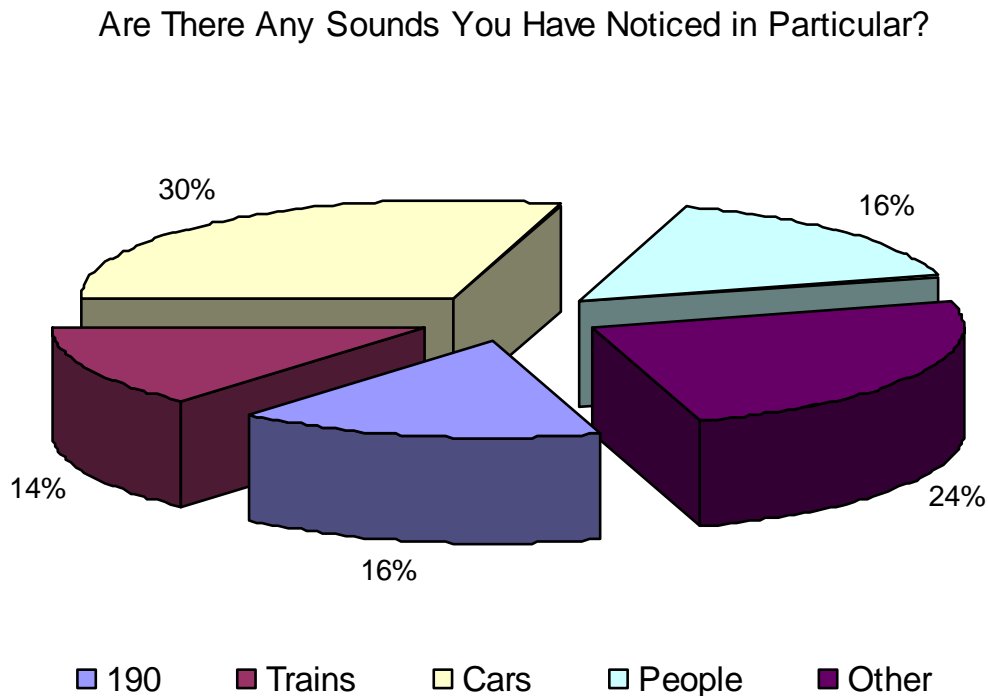
Wildlife

Respondents concluded that the number of birds near bird feeders or bird baths had somewhat decreased, and that wildlife in general had vanished with the trees. Residents discussed situations where squirrels were looking confused as to where to build a home and resorted to people's homes and garbage cans. Individuals also stated that the populations of chipmunks, raccoons, and other small mammals and rodents had essentially been cut in half. This provides evidence that the acute tree loss in Greendale and Burncoat had a definite effect on this ecosystem.

Noise and Wind

84% of people noticed an increase in noise after tree removal. The rest noticed no change. This noise was primarily due to cars, trains, and people, as noted in Figure 6. This reinforces the research done by Cook (1978), as previously mentioned. Noise specifically attributed to wind exhibits very similar statistics, with 96% of respondents noting an increase and the remaining having not noticed. Contrary to expert studies on noise in general, noise due to wind has little documentation. This data complements expert findings that wind speed is reduced 10 – 30% (Haughton and Hunter, 1994). This is further demonstrated in the residents' concerns regarding wind damage. Concerns included general exposure to rain and wind, roof and siding damage, stability of the remaining trees, and paint issues. Again, much of this is economic in nature, regarding increased risk and associated costs.

Figure 6



Runoff and Standing Water:

Due to the timing of initial tree removal (71% were removed during the winter), many respondents noted that there has not been sufficient time to notice a difference in weather-related runoff. However, several residents noticed a slight increase in water drainage via storm sewers and standing water in yards. This shadows the findings of the study done by Sanders (1986) that stated urban trees reduce runoff by 7 – 12%.

Conclusion

The project team completed twenty-five questionnaires with residents in the Greendale and Burncoat neighborhoods of Worcester Massachusetts. These questionnaires provided a significant amount of resident opinion on the benefits of urban trees. This data collection method provided the team with an in depth analysis on a broad collection of perceived benefits that had surfaced in the two focus groups. Interestingly, the majority of response in the questionnaires supported the expert opinions collected in forestry and academic literature.

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Project Number:

Content Analysis Report:

An Interactive Qualifying Project Report Submitted to the Faculty of the WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of Science by:

Jeffrey Robinson, Kyle Diaz, and Jeffrey Li with Gretchen Folk and Rob Krueger

Evaluating the Public Perception of Trees: The local media's portrayal of the ALB infestation

Project Advisors:

Rob Krueger, Bill Baller, Steve Bitar
(Robert Krueger, William Baller, Steven Bitar)

December 17, 2009

Abstract:

A content analysis was conducted on the Worcester Telegram and Gazette (Worcester, MA) with the goal of better understanding how the journalists documented the ALB and the degree to which they balance both expert and resident opinions. From this analysis the team wanted to gain knowledge of how residents valued the trees in their neighborhoods along with the types of experiences and opinions residents had on the recent deforestation.

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Executive Summary

The Asian Longhorn Beetle (ALB) was first discovered in Worcester, Massachusetts in August of 2008. In order to eradicate the beetle, the city removed thousands of host trees, some infected and some not. The project team researched the benefits of trees and found that experts document many benefits of trees. The team grouped the information into four major dimensions: environmental, economic, social, and health-related benefits of trees. The goal of this project was to uncover how people perceive the benefits trees, and through analysis, scientifically link this information to opinions documented by experts.

The first method in this project was the content analysis on the Worcester Telegram and Gazette that have been covering ALB-related news in Worcester for the past 18 months. The newspaper covered topics ranging from general information on the ALB and political response and reaction to the public's experiences with trees. The analysis was performed on articles related to the public perception of trees. The team then used key phrases and concepts to code those articles. There were 21 codes used, encompassing the four dimensions above and with 17 subthemes. The number of times each code appeared was recorded in the initial stage of the analysis. In this way, patterns and frequencies were found among themes and subthemes.

The purpose of this analysis was to learn how the media has presented and portrayed the recent tree loss in Worcester, MA to gain an understanding of the general public sentiment regarding the situation.

The social dimension was most apparent throughout the articles analyzed, but residents also noted environmental and economical impacts as being quite important to them as well. There was very limited documentation of statements connecting public health to urban trees. The analysis also concluded that people were more aware of the benefits and services that trees provided within the community, after the trees had been removed.

Introduction

Since the discovery of the Asian Longhorn Beetle (ALB) in August of 2008 a plethora of articles in the Worcester Telegram and Gazette (T&G) were published regarding the infestation, how ALB is affecting the immediate urban forests and how the public experiences and values their trees. Conducting a content analysis of these articles was a valuable and feasible method of collecting qualitative or subjective data and presenting that data in a quantitative manner. In a content analysis researchers identify patterns using key terms, key phrases, and topic repetition. This is referred to as coding.

For this project, the team focused on articles specifically from the T&G. The Telegram & Gazette is a regional newspaper covering both local and national headlines for Worcester County and central Massachusetts. They have been continuously covering the Asian Longhorn Beetle infestation in Worcester, MA for over eighteen months, detailing the municipal response, the political debate and public response.

For this project, the team conducted the content analysis first and used it as background for their study. The other three research methods employed were interviews, focus groups, and Q sorts. By studying public perception of trees following such an acute loss, it showed how people value their trees. Starting here gave the team an overview of what's happened in Worcester. The content analysis focused on the published material on the public's perception of urban trees - how people value the trees in their neighborhoods. Although the articles presented plenty of topics, from reforestation efforts, budget concerns, political debate and personal reflections of tree loss, the team filter through much of this content to focus attention on attitudes, behaviors, and reactions. More specifically to attitudes and behaviors specific to benefits of trees that are of importance to residents in the Greendale and Burncoat neighborhoods. (Berg, 2007)

Literature Review

After an investigation of academic literature detailing expert opinion of the benefits of urban trees, the team was able to organize the information into four key dimensions which included social, health-related, economic, and environmental benefits. This was intended to provide background information about the benefits of trees, so that the team had a better understanding of resident opinion before employing focus groups and interview style questionnaires within the affected community.

Aesthetics

Perhaps the most significant and maybe the most obvious theme documented by experts and supported by residents is that trees provide aesthetic value and beauty to the neighborhoods. The aesthetics and sense of community were the primary topic of concern from residents in the Greendale and Burncoat neighborhoods. A study by Schroeder (1989) concluded that residents credit trees as most important feature to aesthetic quality of community, correlating beauty to an increase in property value.

Property Value

A major theme developed by the experts was; trees have a significant effect on choice of residence and property value. Dombrow (2000) stated that the presence of trees is attributable to a 2% increase in home value; Cordell (1985, 1988) supported this determining that the presence of trees increased property value 3-5%. Rodriguez and Sirmans (1994) affirmed that a good view of park increases single-family home value by 8% and Crompton (2001, 2004) added that residence in proximity of a park increases home value (8-20%). Thompson (1999) concurred stating that trees result in a 5-20% increase depending on health of forest nearby.

The Worcester T&G also reiterated these finding as residents expressed their concerns with the decrease in property value and mentioned they would like the government to help with some type of tax rebate option.

Emotional Attachment

A major issue not heavily documented by experts, but one that was supported in the Worcester T&G was that resident's foster a strong emotional attachment to trees. Dwyer found residents are emotionally attached to trees and their community (Dwyer, 1991). People often experience grief and anger when big trees are removed (Barro, Gobster, Schroeder, and Bartram, 1997) The T&G confirmed their finding as people reflected upon their devastation when they lost the trees they felt so attached to.

Community

Losing a tree may be terrible for people, but the replanting process can bring people in the community together. By volunteering time to help plant trees people build a stronger community. Academics also found when people are active in caring for trees in their neighborhood there is an increase in the connections and stronger relationships between neighbors (Westphal, 2003)

In the content analysis, several articles discussed tree planting activities, which united and brought hope to the communities. Kuo and Sullivan (2001) found that there was less crime in areas in the city with trees. None of the T&G articles supported the literature's findings that trees make their community safer.

Moderate Temperature and Microclimate

Forestry and academic literature provided statistical evidence that the shade provided by trees contributes to microclimate regulation. This evidence was further supported in the data we collected throughout the two focus groups. Heisler (1986) documented that the shade provided by trees reduces summer energy use by 20-25%. McPherson (1997) supported this argument suggesting trees reduce the need for air conditioning. Akabari (2001) stated that trees account for a 5 degree Celsius reduction of city temperatures, and are involved in transpirational cooling which reduces solar heating of dark surfaces. Akabari continued that the existence of 10 million residential trees is responsible for \$2 billion annually in energy reduction and that urban tree planting can account for 25% reduction in net cooling and heating energy usage in an urban landscape. In the content analysis, the T & G articles confirmed these studies with stories of how hot it became on their front porches, or how hot a particular room got not that the trees were gone.

Urban Wildlife

One of the major subthemes for environmental impacts from this content analysis was urban wildlife and biodiversity.. Johnson (1998) stated that trees provide habitat that improves the biodiversity in a given ecosystem. Van Druff (1995) supported this adding that the birdfeeder industry is a direct biological indicator of area ecosystem health. Several articles mentioned residents noticing a major decline in squirrels, rabbits, and bird populations in their neighborhood.

Control rainfall runoff and flooding

Despite being heavily documented by experts, this perceived benefit of trees failed to emerge in the Telegram and Gazette. The hydrologic processes that trees provide are less noticeable to the average educated resident. It is probable that weather could also control the noticeability of flooding lawns or streets. Sanders (1986) stated that the presence of trees reduces the amount of money spent on improving groundwater recharge, and points out that canopy coverage reduces water runoff from 7-12%. Haughton and Hunter (1994) added that trees help to absorb rain water into the soil decreasing runoff.

Noise reduction

Another major benefit provided by trees is their ability to reduce urban noise levels. Aylor (1972) stated that leaves and stems scatter sound and the ground absorbs it. Later, Cook (1978) wrote that trees are significant in providing a buffer to aid in noise control. Reethof and McDaniel (1978) agreed adding that a tree line accompanied by shrubbery could result in a 3-5 decibel noise reduction. Bolund and Hunhammer (1999) stated that evergreens are the prominent tree for noise reduction, but oaks, maples, and even vegetation can decrease noise levels. The telegram and gazette supported the expert opinions above and mentioned that the loss of trees has left them vulnerable to highway noise from 190 as well as wind noise and general neighborhood noise levels.

Health

The health-related benefits documented by experts below were non-existent in the conversations in either of the focus groups. Heisler (1995) stated that the shade trees provide reduces ultra violet radiation, cancer, and cataracts. Ulrich (1984) alleged that a view of trees in hospital window reduce patients recovery time, reduce the need for medicine, and improve moods and attitudes throughout the hospitals. The study went further to conclude that exposure to urban environments increase stress while exposure to green spaces reduces stress. Some resident discussed how distraught they were after the trees had been removed, but no where did they mention that the tees affected their health in any way. Although the conversation was not directed toward health-related issues, the expert opinions on health related benefits of trees were not supported in either of the focus groups, nor were any surfaced by participants. These health-related benefits of urban trees was not supported by anything articles in the content analysis.

Trees ability to reduce stress levels was one of the health issues experts studied, and one that was publicized in the Worcester T&G. Kaplan and Kaplan (1989) found urban parks were able to reduce stress. Ulrich (1991) also found that exposure to an urban environment increase stress level while exposure to green space reduces stress levels. This was confirmed through articles in resident discussion about quality of life in an urban area had how it had changed after having trees cut down.

Method

In completing the content analysis on the Worcester Telegram and Gazette, articles were retrieved via ProQuest, a database available through Worcester Polytechnic Institute (WPI)'s

Gordon Library. Key terms such as 'tree loss' and 'ALB' were entered into the database which was able to locate every article that had been published on the subject to date. The articles were then organized into four categories which will be detailed below. Once the articles were assembled the coding and analysis was conducted by hand.

After reading all of the T&G articles collected, the team began the process of coding. The team selected key terms and phrases specific to certain benefits, and then used those indicators to mark the articles for analysis. Each benefit identified by the team can be placed within one or more of the four dimensions which include: environmental, economic, social, and health-related benefits.

The team used a common rule for content analysis that if a topic appears three or more times it is considered a 'pattern', two mentions is a 'coincidence' and an 'accident' is if a word or concept occurs only once. If we cannot find an apparent pattern, not finding a pattern is actually a pattern (Berg, 2007).

This analysis provides an informational background on the public's perception of trees in Worcester, Massachusetts. The Telegram and Gazette has provided the team with a better understanding of what residents are saying about their trees, how they have reacted to the loss of their trees and what characteristics in their new environment have stood out. The void created by the loss of 25,000 trees in such a confined region has illuminated the benefits and services that trees provide and the experiences that residents shared with them. The Worcester T&G has captured some of these feelings throughout its coverage of the last 18 months. The content analysis was a first step in the preparation for other research methods involved in this study.

The coding and categorizing of the Telegram and Gazette articles allowed the team to compare the opinions of residents with those of experts and journalists. How often ideas and feelings arose? and how often are people mentioning certain qualities of their urban forest?

Two advantages of a content analysis are time and cost efficiency. The content analysis was time efficient and can be completed quickly on the internet using a database query. Specifically for this project, the team accessed newspaper articles free through WPI's access to ProQuest, which is cost effective as well.

According to Berg, one of the key disadvantages in performing a content analysis is that information is not extracted directly from a participant and articles may be biased or contain flaws (Berg, 2007). Reporters often put their own spin on a topic or an interview, sometimes reworking a story to attract a certain audience, or even just to fill a page.

As of October 14, 2009, 238 articles were returned from a search of “Asian Longhorn Beetle (ALB)” on ProQuest. After obtaining and reading the articles, they were divided into four categories: government involvement, general ALB, and public perceptions, irrelevant information. From the 238 articles, there were fourteen articles deemed irrelevant, these containing the word Asian Longhorn Beetle and contained no other information.

There were 118 articles in the category general ALB that contained general background information about the ALB and logistical information about the eradication program. The background information included information about where and how the beetle first arrived in the US in the mid 1990’s, how it found its way to Worcester, and a few articles about the beetle and why it is so lethal to its host trees. The eradication program, the identification of infected trees and nearby host species and the subsequent cutting and treatment program of those trees identified, was covered in this group of articles as well.

The government involvement group contained 60 articles. These articles jumped beyond the logistics of the eradication program covering key players in the process including some discourse and debate about the process. Some of the key players working around the Worcester eradication efforts are the city of Worcester, Massachusetts DCR, and the federal government, specifically the United States Forest Service (USFS) and Animal and Plant Health Inspection Service (APHIS). Such a large undertaking involving so many residents and government agencies included some debate on whether the plan was the best choice, what kind of a financial commitment this would be, how the quarantine area was delineated, and how cutting decisions were being made, among others.

The fourth category, public perception, contained 46 articles. These articles were most appropriate for our study and received the most attention in the analysis that was completed. The articles covered resident opinions of the economic, environmental, social, and health-related benefits provided by urban trees. The content analysis focused on these 46 articles for coding and research purposes.

Once the 46 articles were identified, the team further divided the articles into four major dimensions discussed earlier, health-related, social, economic, and environmental. The project team read each article twice before coding them. Subcategories were developed from the first read through in order to further specify individual resident opinions of tree loss related to the four dimensions.

The four major dimensions were identified and the articles were divided into these 18 subcategories. For example, the social dimension was the broadest and included: privacy, emotional attachment, appearance of the neighborhood, cultivating community involvement,

and memories were all benefits that cropped up. Each of the 17 subcategories was divided into both negative and positive effects. Once the coding scheme was established, each article was reread in order to count the number of times each code appeared.

Results

Figure 1: Theme and Frequency

Theme	Number of Appearances
Social	66
Cultivate Attachment to Place, Both Emotional and Spiritual (devastating, depressing, crying, sad)	12
Negative Effect (raking, garden, more room, dedicated to killing, buckled my sidewalk, generate, and damage)	9
Privacy Screening (couldn't see)	5
Community Involvement (choose trees to replant; counting on public; hosting workshops; volunteer; outreach; combined efforts)	5
Appearance (beauty, aesthetics, barren, a mess)	37
Memories	3
Willingness to Pay (replanting)	9

Environmental	35
Urban Wildlife and Biodiversity (replanting; variety of hardwoods; trees replaced; reforestation; squirrels; wildlife)	10
Moderate Temperature and Microclimates (shade, cool homes)	8
Control Rainfall Runoff and Flooding; Stabilize Soil; Reduce Erosion (surface/groundwater)	5
Noise Reduction (all you can hear)	4
Ecosystem (ecosystem; ecology)	5
Wind (open to winds; wind tunnel)	1
Health	6
Recovery and Less Pain (healing)	2
Reduce Human Stress level (quality of life; enjoy)	4
Economic	21
Further impacts if the infestation Spread (Tourism, maple syrup)	2

Property Value (property value, decrease, devalue)	8
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The social dimension was most frequently mentioned and contained articles describing resident's social connection to the trees in their neighborhoods. The subcategories used in this section were appearance of the neighborhood, privacy and screening, noise, any costs associated with having trees, community involvement, emotional attachment, and memories.

The subcategory neighborhood appearance was very popular in the Gazette articles. The articles reported that trees had a positive effect on the neighborhood image and residents felt trees contributed greatly to the beauty of the neighborhood.

"Walking along a heavily cut street in the city, it is easy to notice the deterioration of its aesthetics"

"Cutting down and chipping the trees has left some neighborhoods looking barren"

"I've lived here for 10 years, and I've never seen the neighborhood look like such a mess,"

Some residents described how their neighborhood looked before the trees were removed.

"Natural beauty that comes from tree-lined streets and yards."

"Provided urban beauty."

Often times residents compared what they have now to how much better their neighborhood looked with trees. Residents expressed that trees play a significant role in improving appearance of the neighborhood, and the deforestation allowed residents to reflect this benefit more easily. This is considered a pattern; people associate trees with the appearance of their neighborhood.

Another subcategory, how trees cultivate attachment to place, deals mainly with the emotional attachment people had to their trees and how losing the trees brought negative emotional feelings.

"We had such an emotional connection when we drove through here."

"Great emotional and physical loss"

"I was crying over a tree."

"The loss of so many shade trees is a sad and painful"

"It's just empty, it's depressing,"

The word devastating was a pattern used in the articles when people were describing how they felt when the trees were removed.

"It's devastating; it feels like we were raped."

"Those neighborhoods have pretty much been devastated"

Residents did not foresee such a strong emotional reaction to the tree removal; however, some found themselves crying when they saw how much the neighborhood image changed and began noticing all that trees had provided them. This response appeared the second most often showing that residents have strong emotional ties to their trees.

The next subcategory, loss of privacy, was a negative impact mentioned in the articles. The trees that once provided a sense of privacy in the neighborhood were removed, leaving residents more aware of the protection trees provided. People talked about feeling more vulnerable to others who may now impede on their daily life and privacy.

"Remembers a time when he could cook a burger on his grill and the whole Bourne Street neighborhood couldn't see what he was cooking."

"She explained that as a Muslim woman she is required to wear a hijab, or scarf around her head, and burka in public at all times, but from the deck in her backyard no one can see her so she can remove the coverings."

Although the media did not mention privacy as much as the other major subcategory, there is still a pattern associating privacy to trees.

Memories, one of the subcategories, was defined as a coincidence, appearing two times. The memories included playing outside and also birds that once lived in their trees.

"It used to be a great tree to hide under when we played hide and seek, but I really like that it is going to be the state tree,"

"The canopy of my fallen city tree was a private theater to the morning symphony of birds using the tree to usher in spring or a new day."

Another benefit, cultivating community, identified things like involvement with tree planting activities and educating residents about trees and their urban forest. Some politicians expressed how people in the community need to get involved in order for the replanting efforts to be successful.

"It's the first effort to get the public involved in what has been a federally led challenge."

"Receive a tree at one of the remaining five community planting sessions"

"He said the project will be a model for communities across the state to reforest and to educate people about the importance of trees to our habitat and ecosystem."

Despite the obvious negativity involved with the neighborhood tree loss, the replanting process received positive response from the community. Replanting trees became a community activity that encouraged community involvement and positive social interactions.

The subcategory willingness to pay contains articles supporting that trees are extremely valuable in economic, social, environmental, and health-related terms and their monetary value exceeds far beyond the costs to replant. The articles show people felt it necessary to replant in order to restore the beauty and character of the neighborhood. Politian also discussed whether or not they should spend such the enormous sum of money needed to replant and most felt that replanting was far more important than what it will cost.

"Aggressive pursuit of state or federal funds to help with replanting efforts"

"Coming to the event were ready to replant"

Although generally positive, a few residents found some benefit of the tree cutting. The most common benefit was that the absence of trees reduced need for raking, another was that gardens benefited from the increased sunshine.

"Mr. said he looks forward to a lot less raking in the fall"

"She looks forward to seeing how big her flower and vegetable garden gets with a lot more sun this summer"

Other benefits listed in the articles that were neither a pattern nor a coincidence but considered an accident (each was only mentioned once) were: the tree roots were so big it killed grass, the roots on the sidewalks ruined the kids game, the tree loss created new room for younger trees to grow, and lastly that trees were a hazard as branches and limbs damaged the property.

"This city tree shaded my front lawn and was dedicated to killing the grass I stubbornly

put in every year."

"Its roots buckled my sidewalk, causing among other things the inability to draw a decent outline for a hopscotch game for my kids."

"In forestry, the big ones go, and the young ones stay. They have room and space to grow and replenish."

Twice this year its fallen branches damaged my property, first taking out the right side of my fence and then the left side.

The quotes above show residents attempting to be optimistic and trying to see any benefits that the ALB infestation and tree lost may have provided.

In the literature review, the major theme, public health-related benefits contains articles that describe trees improving human health condition and reducing the stress level. It was uncommon for people to mention the health benefits associated with the trees most likely because they do not immediately impacted their lives.

"Replanting trees is a healing process,"

"You need to start that healing process as soon as you can."

A connection can be made between the comments people had about their environment with trees and to the idea that trees could reduce human stress level.

"Its contribution to the quality of life in our city"

"She enjoyed the trees.

The major theme environmental benefits focuses on the impact of trees on the natural environment. The subcategories include: moderate temperature and microclimates, urban wildlife and biodiversity, control rainfall runoff and flooding; stabilize soil, reduce erosion, noise reduction, ecosystem, and wind.

When people replant to establish more trees in their neighborhood they are hoping to maintain their environment's biodiversity. Wildlife was also displaced when trees were removed. The articles talked about people's experiences with wildlife.

"He lists replanting (biodiversity) trees lost to the Asian longhorn beetle infestation as a main goal."

"The initiative intends to rally individuals and groups in an effort to bring biological

diversity"

"He said the significant loss of trees has displaced wildlife, such as squirrels and chipmunks".

"Been lost to the Asian longhorn beetle, squirrels and other wildlife are sneaking into houses in Greendale"

Within environmental dimension, the idea that a tree's canopy can moderate temperatures and create microclimates was prominent. The Worcester T&G articles quoted residents describing how they were dealing with loss of shade and the behavioral changes they were forced to make.

"There will be temperature swings as a result of the loss of shade."

"You'll be able to fry an egg right on Hillcroft Avenue because there's no trees left."

As expected, people discussed the shade created by tree cover and the benefits it provided. This category appeared eight times, establishing a pattern which supports the statement: trees provide shade to a neighborhood that is greatly valued by the residents in that neighborhood.

Trees ability to control rainfall runoff and flooding, stabilize soil, reduce erosion were environmental benefits detailed in the Gazette articles. In the content analysis, the team found articles describing this as a possible problem.

"Some homes will also probably experience water runoff problems for many years because of the significant change to the landscape."

"Locally, concerns also include effects on soil and groundwater."

The change in noise levels before and after the tree loss supports that trees serve as a buffer to help block noise. Residents noticed an obvious difference in noise levels once the trees had been and were able to communicate some of these noises to the reporters.

"They serve as a great barrier from the highway noise"

"When the wind goes, that's all you can hear."

"It's a wind tunnel now. There are no trees left on our street,"

Many people mentioned the effect on the local ecosystem when people expressed their concern about the effect of tree loss. They believe they are not seeing the effect yet, but are worried about the future.

"The importance of trees to our habitat and ecosystem."

"Negatively affecting the overall ecology of the Burncoat and Greendale neighborhoods."

The last of the major themes, economics, is about the financial services trees provide. The subcategories include: trees impact on property values and the negative financial impacts of a continued and prolonged infestation of the ALB.

A change in the property values of residents who recently lost their trees was a major concern. Residents foresee a dramatic decrease in the value of their homes and are extremely angered by this reality. Some individuals expressed to reporters that they would like the government to offer them some tax relief because of the decrease in property value.

"Taking so many trees off my street reduces my property value."

"They want some kind of reparations for the damage sustained to their properties and the expected decline in their property values."

Trees are a considering factor when people choose to buy homes and residents are concerned about selling their homes in the future and their value on the market.

"I can't say for sure if we wouldn't have moved here, but the trees definitely contributed to our decision."

If the beetle spreads further into parts of New England, there are worries about the effect on different industries. It could be a severe economical damage to the maple syrup industry, the timber industry, and tourism. Only appearing twice, this benefit is just considered a coincidence.

"Failure to contain the infestation here would put all of New England's hardwood forests at risk."

"New England forest area to the north, but, if it is, it could cause serious damage to the logging, maple sugar and tourism industries."

Discussion

The Worcester Telegram and Gazette provided the opportunity for the public to communicate their opinions on the tree loss. Further, it provided the team with the opportunity to better understand how the tree loss was portrayed by journalists, government, and most importantly the public. Although a majority of articles detailed the government involvement and general

information, the 46 articles on public perception were sufficient to perform a comprehensive content analysis and revealed a broad set of benefits associated with trees. From the analysis the team was able to compare what the residents and media considered the most important.

Many times expert's studies lean toward information related to environmental and economic impacts. The Worcester Telegram and Gazette covered that but was able to communicate some of the social impacts related to tree loss. Based on the analysis, residents and the media more easily expressed the immediate impacts that the tree had on the communities, such as 'appearance of the neighborhood'. Even though appearance of the neighborhood appeared the most there are not many academic studies that support this seemingly obvious benefit.

Experts opinions expressed through the forestry and academic literature focused on the benefits of trees that were more easily measures such as cooling, property value, and noise reduction. It's harder to calculate how tree loss changes the appearance of the neighborhood and how emotionally attached residents are to their trees, this is subjective information. Experts have researched certain health benefits of shade, like protection from skin cancer, but not one resident mentioned that as a concern. In fact, not one public health-benefit of trees was mentioned by residents.

There were several benefits of urban trees that both residents and experts agreed upon. Both the studies supported that trees increase property values, trees providing shade, and protection from noise.

Surprisingly, the content analysis revealed some other perceived benefits of tree loss that experts were not able to communicate. These included: trees were so big that they ruined outdoor activities, trees shade small trees, there is more sunlight for their gardens, and lastly, there is less raking to do.

Overall, the content analysis concluded that trees are a valuable amenity and provide economic, environmental, and social benefits to residents within a community. The media mainly focused on immediate impact, the initial experiences of the residents. Social benefits were the most frequently mentioned, then environmental, followed by economic, and as mentioned, public health benefits were not mentioned in the articles used for the content analysis.

After completing the content analysis the team was able to better understand the difference in opinions as far as what the public perceives as benefits of trees and what the experts and journalists have highlighted as the benefits of trees.

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Conclusion

The benefits that trees provide extend far beyond what the experts have outlined in forestry and academic literature. In order to better understand these benefits, the team triangulated the use of two focus groups, a content analysis on the Worcester Telegram and Gazette, and twenty-five questionnaires. The team aimed these methods as extracting resident opinion on the benefits of trees and at better understanding resident's experiences with trees and how they value trees. The team felt the public would have the greatest awareness of exactly what trees provide to a neighborhood. In order to better understand these benefits, the team employed a multi-method approach to expand upon expert opinion. Each theme that was identified was thoroughly analyzed and supported with evidence via statements and quotes from residents. This collaborative study between WPI and UMASS will continue with phase-two which will explore neighborhoods inside the quarantined zone but those who have yet to lose their trees. Phase-three will follow with an investigation of neighborhoods outside the quarantined zone.

Appendix 1: Focus Group Paper

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Focus Group Instrument:

Valuing Urban Trees

Focus Group Guide



Focus Group Guide

Preamble

Thank you for participating in this important collaborative study between Worcester Polytechnic Institute's Worcester Community Project and the University of Massachusetts' Department of Natural Resources Conservation. The Asian Longhorn Beetle infestation in the Greendale and Burncoat neighborhoods has created a number of challenges.

The goal of this project is to better understand how your trees affect your quality of life in social, health-related, environmental and economic terms—whether positively or negatively. This focus group interview and other data collection techniques will help us provide various government agencies with information on how they might better manage urban trees and forests.

This is the first study of its kind and your participation is critical to the success of the project. The interview should only take about 45 minutes to complete. The kinds of questions here are impressionistic ones. This means we want to know some general information on how you felt about your trees and the services or problems they provided to you.

We may ask you to follow up with another research technique, the Q-sort. This part of the study will take approximately 30 minutes. Regardless, of your level of participation your answers will remain strictly confidential. Your name will not be linked to this project, to any data, or results we find.

Interview Questions

The first set of questions focuses on trees in the community, especially how you experienced community relations with the tree cover.

Set one: Neighborhood/Community

1. How do you feel that trees affect the beauty or character of your neighborhood?

Probe: When you chose your residence, did the trees factor into your decision?

2. How do you feel the trees affected your sense of community? Positively?
Negatively?

Probe: Did they influence to community behavior?

3. Now that the trees are gone, has your community changed?

Probe: Have the relationship between you and your neighbors changed since the trees were removed?

Set Two: Family

4. How has the loss of trees affected your family?

Probe: Do you use the yard more? Less?

5. Are there any particular trees that had certain value to you? Like they embodied memories about someone or an event?

Probe: Memories of a loved one or an event?

Probe: Provided shade?

Probe: energy savings?

Probe: protection of sunlight?

Probe: Provided privacy from neighbors, road?

Probe: Reduced noise from roads or neighbors?

Probe: have you taken action to mitigate these issues?

Probe: Other sources of value?

6. Maybe you like having the trees gone. Does anyone see benefits from the tree removal?

Consent Form:**Valuing Urban Trees****Informed Consent Agreement for Participation in a Research Study**

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Title of Research Study: Public Perception and Valuation of Urban Trees: A Case Study of the Asian Longhorn Beetle and Tree Loss in Worcester, Massachusetts

Sponsor: Rob Krueger

Purpose of the Study:

This project explores the public perception of the urban forestry in Worcester, Massachusetts. Four research methods will be used: content analysis, semi-structured interviews, focus groups, and Q-methodology to gather a broad collection of perceived economic, environmental, social, and health benefits associated with urban forests. The case study focuses on residents of the Greendale and Burncoat neighborhoods of Worcester, MA. These areas were infested and eventually deforested as a result of the Asian Longhorn Beetle.

Risks to Study Participants: There are no foreseeable risks involved with this study. All participation is voluntary, and the participant is free to leave or refuse to answer any question.

Benefits to Research Participants and Others: Benefits to the research participants include an opportunity to express feelings, attitudes, and behaviors associated with recent tree loss in their neighborhoods.

Record Keeping and Confidentiality: The information collected in the interviews and focus groups will be recorded with a digital voice recorder which will be used for the sole purpose of documenting the conversation. Recordings of participants in this study will be held confidential as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that will identify participants by name. The final study and results will be available on the internet. However, any publication or presentation of the data will not identify any participant.

Compensation: There is no compensation for participation in this study. However, in the event of an interview or focus group, food and drinks will be provided by the researchers.

Compensation or Treatment in the Event of Injury: There are no foreseeable risks involved with this study. The participant does not give up any legal rights by signing this statement.

For More Information about this Research or About the Rights of Research Participants, or in Case of Research-Related Injury, Contact:

Rob Krueger: 1-508-831-5110 (Krueger@wpi.edu)

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IRB Chair (Professor Kent Rissmiller, Tel. 508-831-5019, Email: kjr@wpi.edu) University
Compliance Officer (Michael J. Curley, Tel. 508-831-6919, Email: mjcurley@wpi.edu).

Your Participation in This Research is Voluntary. Your refusal to participate in this study will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit. The information gathered in this study will be used in an Interdisciplinary Qualifying Project (IQP) and as part of a dissertation. The study will be available on the internet; however, your identity and personal information, as well as your responses will be protected and kept locked in a filing cabinet. The digital voice recorder will record interviews and focus groups for the sole purpose of documenting the conversation.

By signing below, you acknowledge that you have been informed and give consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

Date: _____

Study Participant Signature

Study Participant Name (Please print)

_____ Date: _____

Signature of Person who explained this study



Valuing Urban Trees

Q-Sort



Dear Respondent,

Thank you for participating in this important collaborative study between Worcester Polytechnic Institute's Worcester Community Project and the University of Massachusetts' Department of Natural Resources Conservation. The Asian Longhorn Beetle infestation in the Greendale and Burncoat neighborhoods has created a number of challenges for residents, local officials, and our government.

The goal of this project is to better understand how your trees affect your quality of life in social, health-related, environmental and economic terms —whether positively or negatively. This interview and other data collection techniques will help us provide various government agencies with information on how they might better manage urban trees and forests.

This is the first study of its kind and your participation is critical to the success of the project. The interview should only take about 30 minutes to complete. The data collection method we are going to use is called a Q-sort. It's an innovative method and operates much like a game.

Regardless, of your level of participation your answers will remain strictly confidential. Your name will not be linked to this project, to any data, or results we find.

If you have any questions about this collaboration please contact Professor Rob Krueger at Worcester Polytechnic Institute (508) 831-5110 or Krueger@wpi.edu.

We appreciate your help in this project.

Sincerely,



Rob Krueger

Director, Worcester Community Project Center, WPI



Brian Kane

University of Massachusetts-Amherst, Department of Forestry and Natural Resources

Walk in:

Introduce yourself. Thank them for their time. Try to put them at ease with banter. The weather. Their house.

Explain the Project:

This is an important collaborative study between Worcester Polytechnic Institute's Worcester Community Project and the University of Massachusetts' Department of Natural Resources Conservation. The goal of this project is to better understand how your trees affect your quality of life in social, health-related, environmental and economic terms—whether positively or negatively.

The data collection method we are going to use is called a Q-sort. It's an innovative method and operates much like a game. Don't worry. I'll walk you through it. The Q-sort will take about 30 minutes.

Your answers will remain strictly confidential. Your name will not be linked to this project, to any data, or results we find.

A funny method of interviewing...

The type of method I am going to use today is like an interview but it involves a game board and 41 pieces. This type of procedure allows us to collect very subjective information about our respondents while enabling us to quantify it.

Steps...

1. Place form board in front of them. Pull out card pile.
2. Explain that there are 41 responses to the question above the columns.
3. Have them start by developing three piles. **Pile one** is their most favorable responses to the question. It should go on the respondent's right. The **second pile** comprises those answers that are neutral, that the respondent cares little about one way or the other. **Pile three** are those responses that they disagree with.

Once they have developed these three piles have them start from the positive (+) end of the row and start filling in the cells. There can be only one card per cell. All cells must be filled. Vertical alignment doesn't matter, only the horizontal placement of the card does.

Ask them if they found the list comprehensive. Is there a statement that they would like to add?

They may not want to plug in negative statements to a positive column. Remind them that this is a "relational" approach. That a statement's location is relative to that of others. Further, you can inform them that they will have a chance to explain their sorting approach at the end of the process. Sometimes it's also useful to tell them that tomorrow they might have another sort; this sort is a snap shot of them today.

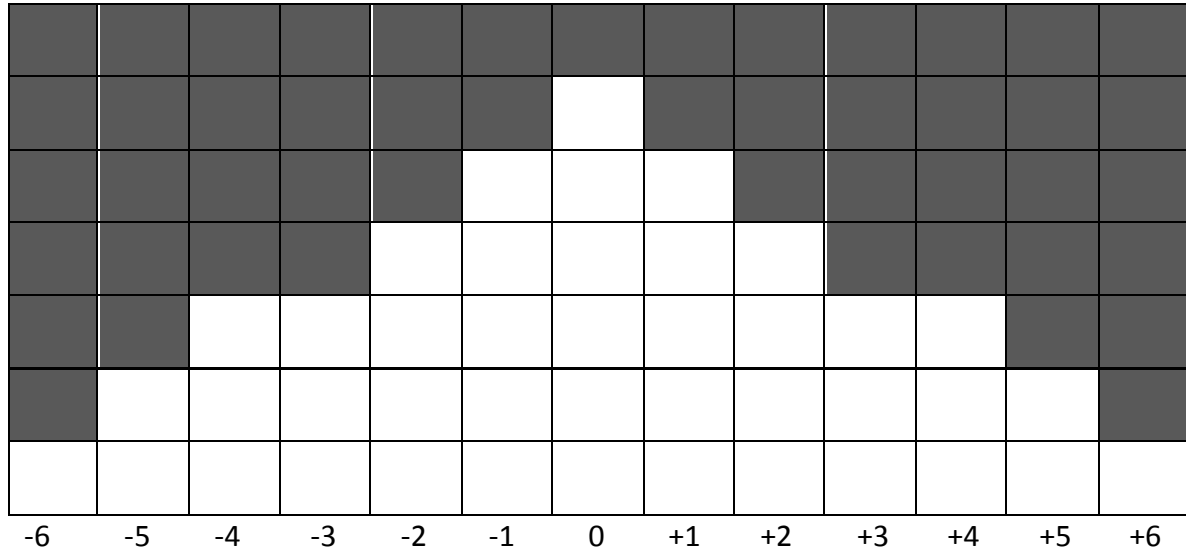
Once they have completed the sort, ask them to explain it. Not card by card, but an impressionistic explanation. What general story are they trying to tell through their placement of the cards?

Once completed:

Make sure they have privacy/confidentiality form signed by both of you. Make sure they have my contact information so they can ask questions.

Leave them a copy of the cover letter and a copy of the confidentiality statement.

Trees in my Neighborhood...



Least like my view

Most like my view

N=42

Trees in my Neighborhood...

Number		Column
--------	--	--------

3	clog the gutter.
2	have roots that bust my pipes.
1	reduce the cost of air conditioning.
4	increase my property values .
5	require professional care beyond what I can provide.
6	are a hazard if their limbs fall.
9	are expensive to plant and maintain.
8	damage our sidewalks.

7	reduce my electric bills
12	damage my fence
11	are a reason we bought this house
15	reduce basement flooding
14	are a legacy from previous generations
13	create lush canopies during the summer
17	have become “part of the family.”
27	prevent my community from becoming an empty windy, dusty place.

26	seem to be neglected by the general public.
25	protect us from the noisy highway (noise and screening).
29	give me a sense of privacy from my neighbors.
28	are connected to so many memories .
33	help landscape my property.
31	improve air quality.
36	keep my yard from becoming mud.
38	make my garden too dry and shady.
34	should be biodiverse.
37	keep my house shaded and cool.
42	can be decorative if small but won't provide the same shade, shelter, visual relief.
41	provide a habitat for wildlife.
40	prevent water runoff problems for many.
30	help lead to much healthier lives.
39	make my nose run and my eyes itch.
10	protect my kids from the sun.
32	provide oxygen for all the residents
18	have a calming effect that enhances community safety
19	are worth defending and provide a sense of place
35	contribute to community safety.
16	connect people to their land.
21	are an important political issue, one that candidates must be aware of.

20	provide a place for people to talk.
24	need my attention if they're going to survive.
23	can make any collection of buildings and roads feel part of a community; create community character.
22	cause me to do a lot of raking.

Focus group 1 Conversation:

Conversation Before discussion

Person 3: If they have done it right on the other side (other side of the) of the sidewalk it would have been okay (yeah) I just got up there. It's so tedious. I can't be at home just waiting for whenever they might come I mean if they have told me they were coming I would have tried to do (chase down you)

Person 2: When they actually came and planted the trees I got to view of it and putted on a different spot of what they (oh you did) were planting

Person 3: But the my thing they have planted and gone

Person 4: When they came around that day marking the spot they said were so glad your home and they don't realize after that (Laughing)

Person 3: Deep hand marking outside my property that's why I thought okay so they're going to plant a tree there.

Person 1: I called about that and they were very nice and said it was only an estimate spot.

Person 3: They may call me back if I follow up

It takes for us to come here. Yeah

Person 5: Hanging with -----Crazy -----

Person 4: Did they cut down his maples? The guy down the street from you the guy in the big blue house the old guy. He planted the sticks that are like 20 ft tall and they were all dead. One of it is alive. They were all Norway Maples. Hold them on Green hill Park on his bicycle. He

found them somewhere. Yeah! The guys a nut bag. He put them in the ground in February. You should drive down Granville and you will see it. Not tonight but sometime. The little sticks. The volunteer Norway. You can't exactly dig them out of the woods somewhere and brought them home. Got a root ball to put up. Is that a birds nest or is that a root ball.

Do you want me to boot here out? No I'll be okay.

Well thank You I hope you found that at least not painful. Ugh what I want to do now is just have a group discussion if we could just for you know just four or five question just sort of have a group discussion and the idea is maybe one of you will spark a idea and you will be able to build off that. Your answer for this part are probably more impressionistic then they are detail oriented you know. I wouldn't get into too much detail as you like so I got two types of question one about your neighborhood or community and one more about your household scale so Just thinking about your community for a minute how do you feel ah that tree in general affect the beauty and character of a neighborhood

Person 1: Well that was obvious when everything came down at once and now as all we saw was one house glued to the next house was no(ugh) separation , you know, in a what neighborhood that doesn't have, you know that does have an accurse, so of land and was just ugly

Person 2: Well as it seems like it made things much closer together

Person 2: Like I remember using the term it looks like a monopoly board

Person 1: 1 A Monopoly house

Person 2: Of

Person 1: houses

Person 2: Looking down the hill here. I think we houses were there but now they are really there. Because there's nothing to offset that design structure with something more aesthetic.

Person 3: And Also I would like a new community there was a house and a driveway, house and a driveway, house and a driveway. There was nothing as if it was sort of like I thought it was in front of some new community that some new building have just come up that there was no continuity from anything past or present and it was just this bunch of houses with a rural driveways coming down the hill. Right Just quite apart from it was plain ugly

Person 4: *Laughing*

Person 4: It just looked like all of the sudden it looked like a neighborhood that I wouldn't of wanted to live in (right) an then yeah (right) to overnight

Person 3: But the feeling of it was a feeling of it, you know I have just come in. I came in August. My trees were gone in like a few months

Person 4: in January or something

Person 3: So I didn't know this was the last fall I'm going to have a backyard full of yellow leaves

Person 3: Right and they were gone you know April August and maple. So it was really like bereft. You took the corner at your house and the big tree was gone. I missed the turn

Person 5: All of us were like o yeah. I missed a turn coming. Everybody we talked to walking down the side walk

Person 3: Laughing! How do I get to Hillcroft?

Person 4: The land marks weren't there

Person3: The landmarks were gone. Other people coming in got lost

Person 3: because the landmarks weren't there anymore. And everyone came in was like what's different. Yeah what happen? Even from Burncoat down

Person 1: I know it looked like the end of the earth heading up the hill.

Person 2: Well particularly, where they did not cut the trees down, part way down the hill there it was just subornation line and it's

Person 1: I know right and that was tough

Person 3: And that became a new marker. So now where where's the turn? Where there are no more trees.

Person 1: That was one of the prettiest parts of the hill going through that canopy under there was lovely and when the government workers first arrived here they said they were just odd by the beauty of the streets with all the trees

Person 2: And they said this was going to be a shame

Person 4: I only think that any of us

Person 5: Depressing though with people who didn't live here there ugh who would come through and would be like ah I drove through you neighborhood. Man that really sucks and there kind of like. Yeah we have to live here

Person 5: And you know especially when because the ice storm debris that didn't get cleaned up got packed in with the snow banks and they cut all these stuff down. And they couldn't stump it till later and so it looked like a war zone it was really hideous

Person 4: Awful

Person 5: For several months and so not only are you missing your turn. You're in this huge Neighborhood everything feels bigger because of the noise level and a lot of it doesn't feel as private and seclude as it did either and so you know that whole I don't know the bigger.

Person 4: My mom said the sky looks bigger. Yep but I didn't choose to live in Montana

Person 4: I live in Massachusetts because I like my trees. You know it just

Person 2: That noise levels have certainly become something we notice a lot.

Person 4: And it seems windier too and dustier

Person 2: It's definitely windier

Person 2: There's nothing to break the wind. Now particularly being up this high as we are the second highest spot in Worcester

So was this something you noticed from the sound of the wind blowing by do your window rattled more or do you feel like you pay higher heating bill or anything like that Ah

Person 4: I don't know ask us at the end of the winter about the heating bill but I don't know our porch furniture blow around all the time (Laughing)

Person 4: like everything

Person 2: Well just everything

Person 4: like everything's windy

Person 2: sound from the high way First of all

Person 5: We can hear one90

Person 2: WE could never hear one90 before now we can

Person 1: Yes

Person 2: Um But the wind I noticed this spring particularly when it was different I noticed it

Person 4: Oh my gosh

Person 5: You can hear it

Yeah oh

Person 2: It definitely has a different sound to it

Person 5: You remember when I called you about the guy that drove by in his Harley

Person 5: He has what we think are illegal pipes on his Harley

Person 5: Well of course all the neighborhoods can enjoy it we can actually hear him now like pretty much to Fitchburg.

Person 5: You can hear

Person 4: Seriously you can hear down West Boylston

Multiple people: You Can You can

Person 5: You can hear a continuous noise when he would have gotten sort of in through the tree line and block by one90 you couldn't hear it.

Person 4: It's really though in that time of the trees that getting cut down was a very emotional time in the neighborhood. When people were just would stand outside and would kind of just look around. It was kind of like somebody died. It was like grieving process people from other neighborhood who had they knew like across Burncoat they knew that their trees were going to come down they would come over and stand on our corners and look around and kind of you could see them starting to imagine. Oh this was what my streets going to look like and they were kind of like you know inquiring what was it like and what did they do and you know that's really. Um I remember that day coming home after the trees were cut down and we drove up and it was just this weird feeling and my daughter who's six started to cry in the back seat and I felt like crying and it was just so just really very sort of emotional time kind of the shock of that and then the this process was kind of grieving anger all the stages of grief

Person 2: And the process of how we got to those trees too (Um) and the whole process we went through with the USDA was of confusing

Person 1: We were definitely misled.

Person 2: We were misled.

Person 2: They would come around and designate certain trees that were going to be cut which our understanding of that was what we were told.

Person 2: Red dots blue dots. And they differentiate between the two of them

Person 4: they took quite a bit of time take during the whole set of do day

Person 2: I thought this cool you know there taking their time doing ugh but they came in and cut it all.

Person 5: Yeah and then when we complaint the response was if we got a response either the city or the USDA was that we didn't read the fine prints. It's like I have a P.H.D. I'm very skilled at reading fine print and there was no fine print that said that these particular trees were being cut they changed their tune mid way through

Person 4: And they didn't tell us.

Person 5: And I'll stand by that

Person 3: And alright I collected all the yellow things that were hung on the door and it said when the phases were and I have blue dot six trees four between and the two at the back and they were all blue. While they were cutting it I said you know they came down in there and I said there blue dots. Well it changed. The policy changed. I said

We didn't get a new notification said I'll check and when I came home the trees were gone.

Person 1: Well the news paper said that the um the reason they did that was because they were informed that ugh they could wait seven years or so before the next infestation will take place so the city said well then let's get it over with now and now you know they have come out with an objection try something to preserve what's left (Right) (Yeah)

Person 1: So to hear the city of course money wise hey thought would save money by chopping them all down now

Person 5: I think if they just told us that upfront that would have been okay that was part of what ----- said talking about the whole process that we had to go through that you know that they changed it mid stream and I think if we wrapped all our brains around this whole deforestation. Yes it would have been really horrible, but we would have done it all at the same time. Instead we have to go back call the people and find out. Oh yeah indeed after they cut all our trees down oh you know we were going to cut them anyway. We asked some of the people cutting them like yeah were cutting everything that's what they told us and in the mean time we had the ice storm they gone around with all the guys climbing the trees and everything so the right out here was designated a red dot so it was going to get cut so they waited waited before they cut all these trees down the ice storm comes a big branch falls off the stupid red dotted trees squashes my car out five hundreds buck of my deductible to get it fix.

Person 5: So is that an active nature. Yes should they have cut it down six months before probably?

Person 4: Yeah like our tree slated by the city to be cut down 8 I don't know like six years ago when we first moved in cause branches kept falling off it (yeah) and the never did (*laughing*) think about it maintaining it or anything but

Person 5: Yeah I know this isn't a getting back to the city or the USDA or who's to blame but (ugh um) those bugs move really slowly I think a lot of us are questioning the forestry department in the city it's like how did they let this go so long and not do anything about it. That's part of the whole anger is like okay.

Person 4: You knew about this. You were watching it for ten years

Person 5: Yeah somebody must have spotted one of those bugs somewhere along the way

Person 4: Yeah You know what the it sort of the reaction like I got the reaction about it too I never lived anywhere where there was a living in a active sort of war zone or whatever but I felt like it was I could almost imagine on some level in that like when I be leaving the house to go to work in the morning there are these trucks coming in they were like almost like cockroaches or like tanks like it was that feeling of like sort of like you know the role in these little groups like the beetle with the chopper one with the trees in and another you know whatever

Person 2: What am I going to come home with?

Person 4: There going to be little pods with trucks coming into the neighborhood invading the neighborhoods one of those feeling like ugh

Person 2: Definitely have a natural disaster feel

Huh that interesting Yeah

Person 2: Or an unnatural disaster because if you look at the biodiversity that was not happening in the neighborhood. And these were all one species of trees. That were planted here lust. They were highly susceptible and that's just a proven fact and biological term you don't plant one of everything

Well it's not natural too because of how god works. You know I mean. You didn't fly in because of this you know.

Person 2: When there replanting they had paid some attention to that I know of four of five different types of trees that have been planted in the neighborhood.

So it seems like you have a strong sense of community now you gone through the experience together. How did the trees before that contributed it to your sense of community you know where you as active you know in your conversation together before that did the tree?

Person 2: well were all out raking leaves

Person 2: Certainly like we count down to leaf day. (Ha Ha) Likes who raking when like certainly. Like you meet all you neighbors during the snow storm that you don't see for the rest of the year.

Person 4: To me also like think about a neighborhood that feels like at least to me that fell like home or a community it's a living space that has living things in it like trees and plants and you know grass rather than concrete and mending structure and so when we chose to live in our house a big part of that was this was a neighborhood that's interesting and feels like an neighborhood and it was like a lot about the trees that were in the neighborhood.

So I think I mean people chose to live here probably chose to live here probably because of the place that felt a lot like you know yeah were in a city but it really feels like a neighborhood it really feels like you know a community and we kind of you know we that little part of our neighborhood is very much a little community probably because we approach it that way.

Person 2: I mean give it a sense of establishment of being (there were old trees) yeah they were old trees. Okay this is a place where people have been in for a while and have cared for and how could we be a part of this. Not that has gone away I think that it is basically who most of us the people who lived here are but just having that I don't know

Person 1: Almost a 100 years old some of them and the trees in our house is going on 100 years old trees I lived here ugh now fifty something years and I didn't think anything of it all the big trees cause Worcester was smart enough to 100 years ago to plant all of these trees in these neighborhood except of the downtown area and even that was pretty thoughtful of them to put some tree where they did so that um I just took it for granted where I grew up we have trees they planted more even of them so

Person 4: You remember when some of the trees were new after the tornado

Person 1: After the tornado Right yours and there already good size and that was fifty years ago so it's definitely a lost and we all felt you know we should get a rebate because

A tax rebate?

Person 1: Yeah because we lost some value and people began to say they have their house up for sale and people wouldn't even come in and look at it. It was so devastating looking around here.

I want to go back to the very first point you made Allison that was about continuity in the neighborhood. Like you know, that it really now it really a true tell us more what you mean about that are you comfortable talking about that.

Person 1: Well it would be visual to come into a neighborhood you may not of think what is so attractive here and the houses are um a good vintage style of ours and the trees were just natural things to look at all those trees. I didn't even think about it. We would move to another neighborhood the west side or something at the time that would be similar. With the tree an if I was to move now I will certainly look for the same kind of design you know or appearance

You know this is kind of about a sense of place and things like that where you live and David comments to do tree kind of tell people who you are as a community you know in some ways. I mean people who drive through because they're there they been cared for you know there's something

Person 2: I think we touched on that about what Catherine have said and what I have said about this is an establish place were not living in a concrete village um most people here not only trees but they have yards they care for too that kind of shows okay you know I don't have a word or this back to the Lander of Worcester or what but we do have a care for this sort of stuff.

Person 5: ----- was a Hippie

Person 2: These are my neighbors

Person 5: One of the trees that got cut um next door on the other side um they have two teenagers now and when we moved in I guess we been here for nine years. Um their kids were younger and they had the tree swing and the kid pretty much played in that it wasn't actually until last summer when the youngest kid who is twelve or thirteen now. Um she was still playing in it. You know basically the nice weather before the trees left so you could always know their kids were playing the back yard. Having a good time it's that sense of community feel that you have multi generation throughout the whole neighborhood and you know is what we liked about the neighborhood sort of I don't see those kids at all this summer and is it because the trees are gone or if there teenagers now. I don't really know the answer to that, but you know there not there anymore.

Person 2: So that was the memory question you know, it certainly what makes up the part of the neighborhood. What do you remember about watching the day the branch fell on the car? You know beside the ice storm you know. Or you know

Person 4: When you and Erin took down the tree

Person 2: We took down the tree and dropped in the middle of the street you know that one.

Person 4: Without smashing anything

Person 2: Without smashing a thing

Person 5: Oh the neighborly thing with picking the I don't know if you guys are familiar with this, but (maple seedlic) ----- have a total (go ahead we will miss those) obsession of the little maple sapling after the sprawl in the spring you get all these maple trees everywhere and so you could guarantee ----- is out there plucking them so we would go out and help (We taught the kids) She trained the kids to do it too.

That's great I have the same problem actually.

Person 2: For me we don't have that problem anymore.

Person 3: For me there's also a sense of the trees outlasting us (Ah ha) Partly because I inherited those trees that was here before me and they would have been there after I have left, so that has even more of a continuity than I think anyone of us and how long we will be in this neighborhood

Person 4: Well it's interesting thinking about these new trees now cause you plant trees for the future you don't plant (Right) for now (for yourselves) cause there so small there not going do for us now so we have to live in our house as long as ----- (laughing) to get the benefits of these ones

Person 2: okay

Person 1: So don't move

Person 4: Alright, not planning on it.

So you have a couple other than not seeing the children playing outside as much and going outside collectively picking the maple sapling this year. Has the tree lost affected your behavior or other people behavior that you noticed in your neighborhood?

Person 4: It's too hot and sunny to sit on the porch

Person 5: It's pretty much we are not able to use our front porch

Yeah

Person 3: no shade

Person 5: This was like our extra room in the summer time and this summer we pretty much didn't use it. We brought shades it's not the same.

Person 4: We used our porch a lot last year. It was hot and windy and sunny. Yep

Person 3: I have to get an outside umbrella that would fly off

Laughing

Imagine holding it down. It was windier.

Person 1: It was hard to get over. I remember driving with my daughter is this a awesome part look at Hillcroft and it's ugly and mom you have to get over it and I said you need to live here every day and you go up and turn the corner. And you think this looks so awful. It's just going to be with us for a long time at the looks of it I think. It helps to see these little trees now. (Hmm) I felt really good and they put them around the corner here about that.

Person 4: We have to find new places to sit outside where it's not bright and sunny and rearrange the garden shade plants and the sun plants. That's

Person 2: On a positive note as far as being a gardener. It's a great summer for the garden. (Yeah) because for the first time I could grow thing for the entire season.

This summer I had a terrible garden because there was not enough sunshine. The tomato never took off

Even with the rain

Because later in the season they got that sunlight

Person 4: I still remember a couple of years ago in I don't remember what season whether it was fall or summer, but sitting out on our porch on our porch cause we're on a hill our porch was just from the first pull of our house and the back it's actually kind of up a level so sitting there when all the trees were there it was like sitting in a tree house we would sit there and hardly even see the road. We would just being sitting with leaves all around on it was my favorite place to read. I remember sitting there and seeing owl sitting on the trees and some watching all the birds and ugh um. It was great

Person 2: I was actually surprise how many squirrels there were all speculating how many there still were here this summer

Person 4: Some of them were living in our attic.

Person 4: We have birds trying to nest on our back porch because those poor things didn't have anywhere to go.

There modifying their behavior too.

Yeah Um

Do you ever think about like we talked about buying the umbrella? You know you know moving your garden changing the types of plants and things like that. Do you ever think of the economic benefit of it. Those are real economic benefit of your trees because now you go out and you buy shades and you buy new patio furniture you buy whatever you do. Was that

something you thought about before you lost your trees? Do you ever think about trees as you know (Shade) provide a real you know a real cost as the result of the lost of your trees. Do you ever think about that before?

Person 4: I'm sure but I don't know, but I'm sure that our heating cost will be higher in the winter cause there's no wind barrier and there yeah

Person 5: I don't think I thought about it before. You know I think I didn't really think about it in terms of having to purchase shades and that kind of stuff that was definitely off my radar screen. But even um cause we have two big trees out here that um in the late afternoon and summertime provided shade for this part of the house and it wasn't so much we actually thought about change in electric bill how it will be if we didn't have them. It's more that I appreciated that they were there. It helped with the whole sun factor (right) um. It was a noticeable difference this summer even without much sun.

Person 2: I don't know how that translates into property value it not a thing we have reassessed Certainly something people in the neighborhood speculated about what this done to our property value making that we seem less attractive

Person 5: We haven't been trying to sell our houses but were sure people that have been trying been trying to figure out what to do with it (right um hum) Is it a ten thousand dollar cut you take or do you not cut it at all. Who knows? Don't really know.

Person 4: It was sort of interesting a lot of the trees that came down weren't technically own by us, but they still felt like our trees

Person 2: well they did impacted us(Right)

Person 2: Decrease property Value (Right)

Person 4: Well I never really thought about it too much except the ones that had like dead branches and we weren't allowed to do anything about it. Because someone from the city have to some in, but there's that kind later, but you know You don't think too much

Person 1: but you think too much about city property and we took care of those strips we have to mow the lawn and make it look good(rake the leave) and add to the looks of the trees so (yeah) it was watching it (yeah)

So there were resources that extend beyond ownership (yeah , Yeah)

Person 1: We regard them as our trees. My tree on the corner and you tree on the corner

Person 5: That true cause we always use possessive.

Person 5: Those three kitties were our trees and you have those trees and you have those

Person 4: their personal

Were there any trees you had that was special attachment to like you know you mentioned there part of the family. Phrase you used and how did you come up with that the way to describe it?

Person 1: Even the conscious of it the bird in window your tree in the corner (ugh ha) and the one I had in the morning I wake up and I knew exactly how the limbs cause they were so huge the shade in that window I could see and the limbs were identify and I wake up and see that and now it's just a blank so that you so conscious they come up somewhere where ever you look and you know what it's going to look like(yeah) That's nice feeling.

Person 4: There was one up on the corner where -----put the face on remember that one (yep) he put the face way up high and it was stuck it was like a stick on (oh yeah) little face a little like that face, but it was at the top. (I remember that tree I know exactly what you where talking about yeah) I remember the day when the kids saw that trees. They saw the face, Mom there's face on the tree. Oh yeah yeah yeah. No really there's a face on the tree. Laughing

You know a special attachment to a tree cause it was describe as one of the family you know member of the family

Person 2: Well I guess we didn't quite have as much as that relevant relatively new here. I'm sure that you have much more of a feeling for that -----

Person 1:Each one did have a special

Person 2: There was certainly trees that we identify with more I'm thinking about the two ale back here which it could have fallen anyone in one of the three ways and damage one of the three houses in doing so that way there was a bit of an identity. There was a group of trees out here just weed trees.(Right) Stump or maples that were not really unhealthy but they were (I think they have weaken each other) they have weaken each other. They were approaching up breath. Well it fell on your garage (It did fell on our garage and a broken window in our house.) So we identify with those sorts of things and being aware of what they were. (yeah) We weren't real friends with them (laughing or you buy a bed) I lived in places where trees get to be your friends. I just think it was the length of time we were here. I mean it was one out here. We watch quite often got to help the tree. Just kept wondering that night when is that one going to lose that branch that been hanging up there. You identify with them. Certainly. And we did name our new tree out here. We named albe a-l-b-e. (laughing) so we started to get an identity with our little friend out here (continue laughing)

So ask that question in 20 years when albe grown up

when (albe) out of college this have been great were happy to sit with you and talk about this as long as you want but I also want to respect your time too. I think You know it's been very

informative to us we appreciate your responses and your candor and thank you very much for your time.

Conversation Focus Group 2:

Person 1: The skunks in the area thinned out a little bit .

Person 2: It been a tough year for the skunk I wonder if it have to deal with the trees

Person 2: One positive was I not having to rake. (yeah) I raked how many time twice . I used my lawn mower I ratter have to rake a lot. A lot

Person 2 : That was like family falls.

Person 2: I even like to get another ice storm to get out there and talk to our neighbors. You know any kind of catastrophes. Gets you outside weather related. Have any of you ever seen this neighborhood before this (no) (it was so beautiful) I think I have a picture from the lab top I have a picture and took about 30 picture the morning of the ice storm. I went outside and took phenomenal pictures of Hillcroft. It was one of the most unbelievable picture I ever seen in my life, but it's this street that and lose all the line of the trees. (What month were the trees cut?)It was cut in February

Person 3: Fun

It's sort of getting your juice going.

The next step, Thank you for doing that conversation about your experiences with the trees and the trees you had. I think one of the things with having them gone is that your more aware and more aware of the essence of having them in your neighborhood. My dad lives in Marlborough . He has all his trees and doesn't think about it much so we'll start out with a nice sort of easy question that answers as you feel comfortable sort of what comes up. How do you feel that trees affect the beauty or character of your neighborhood?

Person 3: Okay

Person 4: We're all going to answer one at a time or just

Person 4: It definitely enhances the beauty of the neighborhood. (Yeah) That's the most striking things. The visuals (Um Um) Yeah

Person 5: One of the reasons I brought my home was I parked down Dorothy Ave and all of the trees had to been at least fifty years old. At least (Yeah) and It was a very stately street as you

looked up. And as I told you before I had three very beautiful maple trees in front of my home. (Yeah)

Person 2: The first time we looked at the house it was in _____ October right. It was in October and we seen all the colors you know and that's the first thing we said to each other oh god great trees . It just great trees . It just enhances everything.

Person 3:The beauty of it

Person 2: Aesthetics, Aesthetics

Person 2: Kind of give you a boundary as well

Person 6: I have something too when people would ask where I lived um they here Worcester especially if there not from Worcester they think city and urban and I always characterize the neighborhood as well its Worcester but it's every house on the streets is different. It's not like one of those crazy subdivisions everything's the same and have a big beautiful old trees (yea h Um) that was always you know so I all of us I think really appreciate the trees now we don't have them I really feel like I appreciated them before they were gone. I love those trees (Um Yeah)

Some of the things that have crop up is a sense of place attachment to place yeah

Person 5: I actually have people come by and miss the turn (Oh my gosh) to come to our home because the landmarks they knew(right) and also without the trees it shown us what houses needs major repairs. (Laughing) (That's true) All the flaws are out there in the open. (Yeah, yeah that's true)

Person 6: Sorry Neighbors

Person 2: But people would say you have friend come to your house .Oh where you live? Oh, Worcester. Okay. They may live in a rural area and they come to visit my they say something like oh your neighborhood is really nice. They would be surprise, but really because of the trees. They probably they will say it now. They probably wouldn't have said it that much back then you know because I can recall some of the responses. Particularly my head faculty come from eastern Mass come out you know to the house. The response was wow great neighborhood and it had to be really because you know the trees cause that's the first thing you say houses and trees all of it combined

You lived here the shortest amount of time

Person 1: I have, It's funny I don't consciously said because of trees when I moved in here , but like when I was at school I went to school in Boston, but I love Bay State Rd. because of all the trees like I was drawn to , but I like old buildings I think part of that houses and building is older trees too. My Parents built the house when I was younger you know there was woods and stuff

but no trees, so I'm kind of use to that new tree thing , but I can gradually drawn more towards the more establish

So, you touched upon on it but when you chose the residence did the trees factor into your decisions. It sounds like most of you did.

Person 2:----- You been here since they were little sprites weren't you (Laughing)

Person 1: I lived in my parents' house

Person 5: You always lived here

Person 1: Yeah I never moved

Person 2: Yeah you seen the trees grow up with you. Yeah Yup. Um

So that's the character of you neighborhood and how about you feel about the trees affecting you sense of community? It could be positively or negatively or even like behavior in your community remember when we talked about kids were outside shoveling raking leaves seeing each other more that's a sense of community connection to the people

Person 5: Well I and another neighbor walked around because all of the neighbors are very concern about the value of our homes values. Very concern we walked around and they all signed a petition and we all submitted it and nothing happened to the Worcester city council meeting and um there were other people I guess did it they had several.

Person 5: Yes, after the trees were removed. What I am trying to get at is I talk with people I never know in my neighborhood before and I met a lot of people which was nice. It's nice to know we all try to go to the meetings together. They have a lot actually they have another one Monday night .Did you get that?

Person 2: Monday Night yep

Person 5: Um so as I say I got to know a lot of people but it on a adverse

The reasons are so good yeah

So did they do anything for your community before?

Person 5: No the Taxes no

No, no in the way you met people now and you been out talking with folks now , but you know is there some way that you know cause the trees are gone now you feel like you are missing you know around community and things like that not in terms of only community

Person 3: I don't think so do you?

Person 5: No

Person 3: I don't think so

Person 5: No, No

Person 2: In this neighborhood people are out and about a lot walking dogs and you see each other a lot

Person 4: You still do the yard work you don't do as much raking , but there out there doing yard work

Person 2: Still do the yard work, but as far as frequencies like I said I been out there two times doing yard work where as last year I would been out there constantly I mean you know 5 6 weekends out front sweeping the leaves on streets. I think the likely hood of seeing people more socially in that situation for me would be higher. You know, but I have to say a lot of the conversation when the trees were here were about the trees you know . About the trees whether that limb needed to come down or whatever just maintenance of it you know the trees in your backyard the ones that fell that time you had a caught so the fact that they're there also have to contend with them in a sense, so you have a conversation about the trees whether to trim them or how much shade their providing well you know that happens to you know I don't know if that's part of (yeah yeah) you know that's definitely a fact (Hm um)

Person 5: There's a lot of controversy going on right now as far as planting go they are only going to plant on the sidewalk where there's no wires and I firmly believe because of what have happen to us if they planted on both side of the streets hopefully the residents will take care of those trees because the city really never took care of their trees never and now maybe it will be an awareness to the public

Person 6: It's very funny I was actually reading the Worcester Telegram and Gazette online this past week I never feel compelled I want to write a snippy comment(laughing) about the articles, but somebody there was some articles about the replanting and I was very surprise that how negative the perceptions is like who cares this is no big deal and of course they shouldn't be planting under the wires what do these fools in those neighborhoods think anyway causes so much damage to the wires and outages and blah blah blah. I was really piss off come up here and see our neighborhood and how decimated it is and you tell me you live in a neighborhood like this before and after and say it's no big deal. I was furious.

Person 5: I would be very interested _____ if this beetle reaches the west side of the city and what the reactions were going to be over there.

Person 6: I'm curious to know if they are going to cut down all the trees and then ask question after the trees were gone like what they did up here so wait a minute maybe we didn't have to cut down so many. It was just not very thoughtful not very was it kind of rash and impetuous

Person 5: I definitely feel for the future if as we discussed before going into other communities (yeah) and everybody have to be on the same page. The politician and the (homeowner agencies) conservation (the state level) the state level have to be on the same page before they go around in the neighborhood and put blue dot and red dots (Yep) and they take and they take everything down.

Person 6: And you feel like you want to be a good neighbor when you see the dots you don't want to say I'm not going to let them cut my trees down. (hm) Take me to court you don't want to be a jerk, but then you hear about people that said hell no I'm not going to get my tree taken down (um hm) and they still have their trees so they pinch a fit and had a voice maybe there's a middle ground I don't know (hm)

In some instance it sounds like there's not an opportunity to volunteer, but this is creating a opportunity to have a voice and say things out loud (um hm) but in the some of this hopefully informing by you speaking to us especially as we pass on these information (um hm) hopefully it can it is a influential piece to let the policy that happen.

Person 5: In another issue I know one person my neighbor wasn't asked today maybe she would have come. She is extremely upset the fact the trees on this side of Burncoat street were removed first all these side streets across Burncoat street (they replanted over there first) Exactly they were the last area to be the tree removed and the first ones to get some the prime trees. Bay State Rd is beautiful Thorndike Rd is beautiful and the tree she got she said (silence). It's not right they should have replanted where they took down first.

Person 6: You I actually would of asked more people but I was kind of afraid you know hey watch this thing come to my house and maybe I should have done more

Person 5:As I said before a lot of us are trying to forget it because the horrific winter last year (with the ice storm then two) (um) (and the two other) (the two together that's a lot)

Person 2: We found out in October were losing our trees then the storm hit in December like salt in the wounds you know and it decimated them and about two third of the trees loss there limbs so you have some sticks and everything else is off you knew everything was coming off later and they did. (Yeah) psychologically it was a interesting coincidence with the things that occurred

So to continue on sort of the trees and the ways they stand in your minds I guess in heart as well and this goes in the community level instead of more or even personal here. How has the tree loss affected your family um and even with using especially you guys have kids using your yard more or less take it more as a community level instead of a household how have the loss of tree affected your family.

Person 4: Loss of privacy could see through everybody's window _____ you have to stop peaking in (laughing) that's one thing and the noise level has increase (absolutely wind , the wind) Would you stop yelling (It's much more windier .) It doesn't break the wind barrier that's a good point.

Is it even wind noise or the feeling of winds?

Person 5: Oh my god you could hear it um you could hear it whistling

Person 2: You could hear whistle out cause our out is west prevailing winds hit that side of the house and we haven't heard it really really yet but we will hear it this winter (coming yeah) and it will be whistling I could heard it because we had a couple of windy nights

Person 5: The screens even whistle now (Yeah Yeah Yeah)

Person 3: Do you think it was hotter this summer?

Person 5: It was horrific (was it) my back porch (felt like it) was 120 in a very confined area. (big difference) It was 120 in my back porch.

Did you ever use the porch? Were you able to

Person 2: Humidity was down this summer but you know hot (Yeah)

Were you able to sit on the porch like previous summer?

Person 5: Oh! No, No, No, No Not before NO

Person 2: The kids we all had

More Than One: We brought more umbrellas. We all brought more umbrellas.

Person 2: We all had you know I think I cried the day they took these trees down I was happy to be home writing. I was working from home when they took the big three in front of the home I was emotional (yeah yeah) I just couldn't you know it was sad watching them do it (very sad) It was intriguing , but also very sad _____ our daughter cried I think she was the most emotional. You know

Person 6: There's a awful sense of doom. You could see the crane from a distance (right) (yeah yeah) and really aerie (you knew they were coming) and everyday you see them coming closer and The day we came home (the noise and everything) (you go to work and come home there's no tree)

_____ do you remember the day you cam home and there was no tree was that sad?

(Yes)

Person 7: I started to cry

Person 2: I don't think I used the yard as much this summer um because of the heat like in the afternoon from like 3 o'clock on. We had a party this summer I actually putted beach umbrellas out. It was one of those things. It was just hot. We use to have lots of great shades big trees over here and here on the western side of the after noon it was still nice when it was still out we had shade in the yard you know. So I think it decrease our use of the back yard for us

Person 6: And we're really considering moving. (Hm) And that's a big part of it because the whole neighborhood is just depressing changed

Another prime change was the feel they have privacy change or visibility difference. You were remembering you were able to see mount Wachusetts, which may be a good thing, but are there other things visible that were once blocked by the trees?

Have you done anything about the wind noise you know the heat the house is warmer you notice that?

Person 4: In the summer time. Yeah yeah this summer, have you done anything about it

Person 5: Looking into _____ windows

Person 4: High Power Binoculars (laughing) I could see exactly (Are you looking at _____ or _____) I could see the shades. Who are you looking at?

Person 2: _____ is very careful. I'm not.

Person 6: Well that bathroom window I always step back from the side cause you can see right in there (right)

Person 5: I know it cost a lot of people a lot of money because the wind have torn the shingles off their roof. Sliding off there homes. Um a lot of people in the neighborhood have put in more insulated window (anticipation of the winter coming) A lot of reason.

Have you notice any utility bills change if you have an air conditioner you think you have it more longer this summer during the months it wasn't such a wet June.

No No

Person 2: This summer wasn't that humid the humidity is what's make me run the air conditioner. It could be hot and you will run it, but the humidity is what we want to get out of the air. We still have 3 4 we put three upstairs and one down here, so we have four still the same amount

And then about the noise What are some of the noises you heard before that you haven't heard previously that stood out anything? Actual sound

Person 2: It's funny you can hear people just in general from yards over. You could hear things you wouldn't have heard before. You could always hear the highway down here, but you could really hear it now um I'm an early bird and I get up early in the morning. Often times if I open the door I let the dog out I could hear cars from the highway there and um even sitting in here working on the computer. It's like 4:35 in the morning sometime I can hear sometimes the hum on 190 and 290 you can hear that

Person 3: The train down there seems loud.

Person 2: It's loud definitely loud

Person 5: And dogs you can hear dogs can you (yeah)

Person 3: Dogs yeah. The fire truck

Person 2: We always hear the train

Person 1: Now the lights I could see the fire truck, before it wakes me up now I see the lights

Person 2: Were on a fire truck route right here

Yeah Surprise one hasn't come by yet (laughing)

So then now at the personal level within your own yards and you did talk about losing the three trees in particular. Are there particular trees you have that have a real meaning to you? Maybe memory memorial your kids played on. Trees in particular that you may have lost. Any personal connection to them?

Person 5: Cherry tree, but it was from the ice storm I had to take it down. (yeah, yeah, yeah right)

Person 4: You think we get memories from them I was thinking the one in front of your house

Person 5: _____ My son used to go probably as big as _____ 3 or 4 and used to have a hammer and a butter knife and said he was going to chop down the tree and everyday he would go out there and hammer with the butter knife and made a little hole in it he said he was going to chop down the tree. We always laugh about that

Person 1: He made it easier for the beetle to get in (yeah right) (laughing) (he made it easier for the beetles to get in) (Yeah) (Laughing)

Person 2: Yeah for me not really, for me we had that border like down the side in the front. We have a border that kept the house in a little cell. We weren't here that long 11 years. I planted the furnace burn nine years ago when _____ that was actually. That's not a host tree

Person 5: Did you hear the new ting too about injecting the trees? Did you read that in the paper, but now they are afraid that it was going to affect the water supply? (God) yeah (I just saw the headline)

We'll move from memory of tree one sort of change from removing you tree we talked a little about it was about the property values and that sorts of thing you probably notice that 's probably going to be effected

I heard at least 20 percent at least that initially (that's interesting)

Person 5: Well you see I even approach one of the councilor about this well so far as my petition goes she said before we could do anything about it we have to see how many houses sell in your area in the summer.

Person 4: It's not going to happen in our life time. (no Um mu)

Person 6: Actually some of the things in our yard grew more our lawn in the backyard was nicer

Person 2: we had so much shade (the tree will take the moisture) couple things being a gardener (I rather have a crappy lawn) The lawn is unbelievable we have green it was thick regardless how many times the dog was on it the perennial through the roof we all had that experience so of us did have some (um hm) you know what these were Norwegian Maple and they self propagate and they have those little thins that makes you nose sneeze. Everywhere they reseed they grow everywhere. One real down side about that type of tree was here and the question about biodiversity. That type of trees planted here was really short sighted in sense of it was agony to get rid of those things. We pull out of the ground in the garden (have to hand pick them) If you wanted a good garden you have to by hand pull the suckers out of the garden in a soft rainy day or they would grow and even if you don't get the whole tree next year it will be twice as large. SO you know that was the down side . It was a very big down side. For that type of tree I'm not saying the trees should be gone eliminate that byproduct of not having that. Is a good thing you know?

Person 5: I just want to bring up the fact too I was unemployed during the winter and I noticed the poor squirrels immediately after very confused sat on neighbors deck looked this was and that way stood there for at least 15 minutes and you could almost see it thinking where did all my nuts go. Where did my food supply go (even in the winter) and the birds.

Person 2: It's funny you mentioned nature we have two bird incidents birds of prey incidents we have couple of hawks grab things in our back yard before. Poor little bunnies, but one day were out here in the kitchen (no I had one day getting ready to take _____ to school look more it's a hawk it was in the middle of our yard) but then that's the third one in the kitchen and see wings it was a wing span (it was a turkey blucher we have turkey blucher too) We have Pauget(??) fountain in the neighborhood I was like oh hey. One morning I was up right here in the front. For the birds of prey have a lot more opportunity maybe even with the overall population went down. I don't know it was interesting we had these three incidents (yeah nice)

Well that rounds out our discussion if anyone has any last topic they want to talk about. If not we would just like to honor your hosting and respect everyone's afternoon and time to.o this gives us a lot to think about.

Environmental Benefits

Moderate temperature and microclimates (carbon avoidance)

<p>Heisler 1986, 1990, 1995</p>	<p>Energy savings with trees Tree plantings that save energy Effects of individual trees on the solar radiation climate of small building Urban Ecology</p>	<p>Alter windspeed and direction, reduce solar radiation by 90%, transpiration (all work together) Shade reduces summer energy use, 20-25%</p>
<p>McPherson 1990, 1997</p>	<p>Modeling residential landscape water and energy use to evaluate water conservation policies. Landscape Journal</p>	<p>Reduce need for AC, carbon avoidance</p>
<p>Akabari 1988, 1992, 1995, 2002</p>	<p>"The impact of summer heat islands on cooling energy consumption and CO2 emissions" Cooling Our Communities: A Guidebook on Tree Planting and Light-colored Surfacing Shade trees reduce building</p>	<p>5 degree C reduction of city temp, transpirational cooling, reduce solar heating of dark surfaces \$2 bil annual reduced energy cost with 100 mil residential trees Urban tree planting can account for 25% reduction in net cooling and heating energy usage in urban</p>

	energy use and CO2 emissions from power plants	landscape
Nowak, 1995	"Trees pollute? A "TREE" explains it all"	TREE, Temperature, Removal of pollutants, Emission of VOC's, Energy conservation
Haughton and Hunter 1994	Sustainable Cities, Regional Policy and Development, book	Wind speed lowered 10-30%, solar radiation reduced up to 20%
Scott et al 1999	Effects of tree cover on parking lot micro-climate and vehicle emissions Journal of Arboriculture	Shading in parking lots reduces VOC emission of cars

Improve air quality and sequester carbon

Nowak 1993, 1994	Atmospheric carbon reduction by urban trees Journal of Environ Manage	Bigger trees remove more than small ones
Nowak and McPherson 1993	Quantifying the impact of trees: the Chicago Urban Forest Climate Project.	Improve air, sequester carbon

Nowak and Crane 2002	Carbon storage and sequestration by urban trees in the USA Environmental Pollution	Less carbon sequestering in urban forests than forest stands
Rowntree and Nowak 1993	Measuring and analyzing urban tree cover. Landscape Urban Planning	Improve air, sequester carbon
McPherson 1997	Modeling residential landscape water and energy use to evaluate water conservation policies. Landscape Journal	Chicago gets \$9mil worth of air quality in 1 year Long term benefits of trees are 2x value of costs

Remove pollutants from air

Nowak 1994, 1995	“Trees pollute? A “TREE” explains it all”	TREE, removal of air pollutants
McPherson et al 1997	Quantifying urban forest structure, function and value: the Chicago Urban Forest Climate Project Urban Ecosystems	
Smith 1990	Air Pollution and Forests- book	Vegetation temporarily retains pollutants, then washed off by rain or dropped with leaves
Murray et al 1994	New York State Energy Plan, Vol. II: Issue Reports, NY state EO	Ranges of cost benefit, 109K- \$8.3 mil

Control rainfall runoff and flooding therefore stabilizing soils and reducing erosion

Sanders 1986	Urban vegetation impacts on the urban hydrology of Dayton Ohio Urban Ecology	Ohio 22% canopy coverage to 29% coverage reduce runoff from 7-12% Reduces money spent on process, improve groundwater recharge Through controlly rainfall and flooding, stabilize soils, reduce erosion
Houghton and Hunter 1994	Sustainable Cities, Regional Policy and Development, book	Rain becomes surface water runoff and degrades water, pick up urban street pollutants

Reduce urban noise levels

Cook 1978	Trees, solid barriers, and combinations: Alternatives for noise control Conference proceedings	30m wide belt of tall dense trees + soft ground reduces sound 50%
Reethof and McDaniel 1978	Acoustics and the urban forest Conference proceedings	3-5 decibel reduction with row of shrub and row of trees behind
Bolund and Hunhammer 1999	Ecosystem services in urban areas	Evergreens preferred for noise reduction, but soft ground and vegetation decrease noise
Aylor 1972	Noise reduction by vegetation and ground Journal of acoustics	Leaves and stems scatter sound (ground absorbs it)

Phytoremediation

Westphal and Isebrands 1989	Phytoremediation of Chicago's brownfields: Consideration of ecological approaches to social issues Conference proceedings	Absorbing, transforming, containing contaminants
USEPA 2000		
De Sousa 2003		

Urban wildlife and biodiversity

Van Druff et al 1995		Economic benefit (birdfeeder industry), biological indicator of area health
Johnson 1988	Planning for avian wildlife in urbanizing areas in America desert/mountain valley environments. Landscape Urban Planning	Provide habitat that improves biodiversity
Brown 1979	Interests and attitudes of metropolitan New York residents about wildlife Conference proceedings	Feelings of personal satisfaction when attracting wildlife

Health Benefits

Reduce cancer risk

Heisler et al 1995	Urban forests' cooling our communities?, Conference proceedings	Shade reduces UV radiation, cancer and cataracts
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Recovery and less pain

Ulrich 1984	View through a window may influence recovery from surgery Science	View of trees in hospital window reduce re medicine, better mood through stay
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Reduce human stress levels

Ulrich 1984, 1991	View through a window may influence recovery from surgery Science Stress recovery during exposure to natural and urban environments, Journal of Environmental Psychology	Exposure to urban environments increase stress, exposure to green spaces reduce stress
Hull 1992	How the public values urban forests Journal of Arboriculture	Urban parks reduce stress
Parsons et al 1998		
Kaplan and Kaplan 1989	The Experience of Nature: A Psychological Approach book	Urban parks reduce stress
Cackowski and Nasar 2003	The restorative effects of nature: Implications for driver anger and frustration, Environmental behavior	Reduce driver aggression

Economic Benefits

More productive office workers

Kaplan 1992, 1993	The role of nature in the context of the	View of trees at office provides
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	workplace. Landscape Urban Planning	psycho benefits to affect job satisfaction, more productive, fewer illnesses, higher job satisfaction
--	----------------------------------------	-------------------------------------------------------------------------------------------------------

Increased Property Value

Rodriguez and Sirmans 1994	Quantifying the value of a view in single-family housing markets Appraisals journal	Good view of park increases single-family home value by 8%
Anderson and Cordell 1985, 1988	Influence of trees on residential property values in Athens, GA Landscape Urban Planning Residential property values improve by landscaping with Trees Journal of Applied Forestry	Athens, GA, increased value of 3.5-4.5% higher with trees
Crompton 2001 2004	The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base, Nat'l Rec and Park Assoc	Near a park increases home value (8-20%), ripple effect of being near green space 7% increase in rental commercial rates near landscaped property
Dombrow et al 2000	The market value of mature trees in single family housing markets Appraisals Journal	LA 2% increase home value
Sydor et al	Valuing Trees in a Residential Setting:	Athens, GA, \$296 increase in

2005	Revisiting Athens Draft paper	residential value
Thompson et al 1999	Valuation of tree aesthetics on small urban-interface properties Journal of Arboriculture	5-20% increase depending on health of forest nearby

Positive impact on shopping behavior and perception of shopping experience

Wolf 2004, 2005	Freeway roadside management: The urban forest beyond the white line Trees and business district preferences: A case study of Athens, Georgia US Business District Streetscapes, Trees, and Consumer Response Journal of Arboriculture	Consumer behavior, spend longer shopping, pay to park, spend more, consumers like tree screen from commercial areas Spend more	Nesting sampling Survey method, mailed Preference rating exercise, 30 images, varying greenspace, then a shopping scenario to project behavior, rating scales, then ?'s on urban tree perception and demographics
Wolf 2003	Public response to the urban forest in inner- city business districts Journal of Arboriculture		Respond to visual hypothetical situations, perception, then behavior, then WTP (willingness to pay) Last demographics and socioeconomic situation Mailed surveys

Crompton 2001	Parks and Economic Development. American Planning Association	Customer service, merchant helpfulness, product quality are better in places with trees	
Dwyer et al 1992	Assessing the benefits and costs of the urban forest Journal of Arboriculture	Urbanites that use parks pay more for trees and forests in rec areas	

Social Benefits

Improving learning and behavior by children in urban areas

Taylor, Kuo and Sullivan 2001	Views of nature and self-discipline: Evidence from inner-city children Journal of Arboriculture	b/c reduce stress and physical fitness increases learning and better behavior by children	Observed use of outside space, near trees or not near trees
Wells 2000	At home with nature: Effects of "greening" on children's cognitive functioning Environmental behavior	Same as above	

Cultivate attachment to place, emotional and spiritual

Chenoweth and Gobster	The nature and ecology of aesthetic experiences in the	Provide experience (emotional and spiritual) and foster strong attachment to	
-----------------------	--------------------------------------------------------	------------------------------------------------------------------------------	--

1990	landscape. Landscape Journal	community, positive meanings and values	
Barro, Gobster, Schroeder and Bartram 1997	What makes a big tree special? Treemendous trees program	Emotional ties to trees and connection to community	Qualitative analysis of comments made by residents about specimen trees in area, key word/coding
Dwyer et al 1991		Attachment to places and trees	
Schroeder 1991 2002 2004	Preference and meaning of arboretum landscapes: Combining quantitative and qualitative data Journal of Environmental psychology Experiencing nature in special places Journal of Arboriculture Special Places in the Lake Calumet Area USDA report	Provide experience that foster spiritual and cultural attachment	
Westphal 1999 2003	Empowering people through urban greening projects: Does it happen? Conference	Volunteer tree planting provides more connection Strengthens sense of community	Photoelicitation and semi-structured interview, both data analyzed Single use camera to

	<p>proceedings</p> <p>Urban greening and social benefits: A study of empowerment outcomes</p> <p>Journal of Arboriculture</p>		<p>take 10 pictures of changes in environment, door to door canvassing</p>
Feldman and Westphal 1999		<p>Active in community tree care increases connection</p>	

Reduce negative psychosocial issues, fear, violence, aggressive behavior

<p>Kuo, 1996 1998</p>	<p>Fertile ground for community: Inner-city neighborhood common spaces and the social integration of inner-city adults.</p>	<p>Stronger ties to neighbors, sense of safety and adjustment, more children supervision, healthy pattern of play, use of neighborhood common space, few incivilities, fewer property crimes, fewer violent crimes better coping skills</p> <p>Less graffiti near green areas of neighborhood</p>	<p>Watching residents and their behavior outside, spending time outside, focused on spaces near trees.</p> <p>145 randomly assigned residents in public housing units (2 types, w/ trees and w/o) studied</p> <p>“How safe do you feel here?”</p> <p>Then 90 residents asked to report incivilities, graffiti, etc</p>
Dwyer et al	<p>Assessing the benefits of and costs of urban</p>	<p>Chicago research, alleviate hardships of</p>	

1992	forests	inner-city life	
Kuo and Sullivan 2001	Environment and Crime in Inner-city: Does vegetation reduce crime?	Less crime in buildings with more trees and green space	Collect 2 years of police reports for 98 apt buildings and correlate that w/ green cover
Kuo 2003	The Role of Arboriculture in a Healthy Social Ecology Journal of Arboriculture	In poor inner-city neighbors more green space means enhanced resident territoriality, healthier patterns of interrelation, shared resources	100 Chicago residents asked to respond to images, one with trees, one without
Schroeder and Anderson 1984		Reduce the fear of crime	

Willing to pay

Zhu and Zhang 2008	Demand for Urban Forests in US Cities	Cities over 100,000 people show elastic demand for urban forest, responds to change of income, higher income can afford expense alternative land use, planting and maintaining urban trees	
Stolt 1982			

Dwyer et al 1989			
------------------	--	--	--

Schroeder 1989	Environment, behavior, and design research on urban forests Advances in Environment, behavior and Design-book	Residents credit trees as most important feature to aesthetic quality of community, more appealing so increase value of property	
-------------------	----------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------	--

Negative affect

Nowak 1995		TREE emission of VOC's	
Myrup 1991		Too few trees trap heat and slow cooling air flow	
Tingey et al 1991 Guenther et al 1994		VOC emission, varies with species air temp and enviro factors	
McPherson and Doherty 1989		Some places, irrigation is costlier than benefit of trees, think AZ	
Van Druff 1995		Attract wildlife and that has negative benefits	
Nowak		Increase allergic reactions, lyme	

2004		disease issues	
Dwyer 1995		Maintenance costs, planting, removal, damage costs	

U.S. Government Census Bureau:

en

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[Search by address »](#)[saff_gn2_fact_sl](#)[saff_factsheet](#)**2000** 2006-2008 data **not available** for this geographyView a Fact Sheet for a **[race, ethnic, or ancestry group](#)**[Reference Map](#)**Census 2000 Demographic Profile Highlights:****General Characteristics - [show more >>](#)****Number Percent****U.S.**

Total population

19,911

[map](#) [brief](#)

Male	10,096	50.7	49.1%	map	brief
Female	9,815	49.3	50.9%	map	brief
<u>Median age (years)</u>	37.0	(X)	35.3	map	brief
Under 5 years	1,153	5.8	6.8%	map	
18 years and over	15,642	78.6	74.3%		
65 years and over	3,179	16.0	12.4%	map	brief
<hr/>					
One <u>race</u>	19,558	98.2	97.6%		
White	17,282	86.8	75.1%	map	brief
Black or African American	1,131	5.7	12.3%	map	brief
American Indian and Alaska Native	50	0.3	0.9%	map	brief
Asian	424	2.1	3.6%	map	brief
Native Hawaiian and Other Pacific Islander	15	0.1	0.1%	map	brief
Some other race	656	3.3	5.5%	map	
Two or more races	353	1.8	2.4%	map	brief
<hr/>					
Hispanic or Latino (of any race)	1,615	8.1	12.5%	map	brief
<hr/>					
Household population	18,460	92.7	97.2%	map	brief
Group quarters population	1,451	7.3	2.8%	map	
<hr/>					
Average <u>household</u> size	2.35	(X)	2.59	map	brief
Average family size	2.95	(X)	3.14	map	
<hr/>					
Total housing units	8,067			map	
Occupied housing units	7,853	97.3	91.0%		brief

Owner-occupied housing units	4,930	62.8	66.2%	map
Renter-occupied housing units	2,923	37.2	33.8%	map brief
Vacant housing units	214	2.7	9.0%	map

Social Characteristics - show more >>	Number	Percent	U.S.	
Population 25 years and over	13,994			
High school graduate or higher	11,752	84.0	80.4%	map brief
Bachelor's degree or higher	3,362	24.0	24.4%	map
<u>Civilian veterans</u> (civilian population 18 years and over)	2,093	13.4	12.7%	map brief
Disability status (population 5 years and over)	3,394	19.6	19.3%	map brief
Foreign born	1,422	7.1	11.1%	map brief
Male, Now married, except separated (population 15 years and over)	4,215	50.9	56.7%	brief
Female, Now married, except separated (population 15 years and over)	3,899	48.5	52.1%	brief
Speak a language other than English at home (population 5 years and over)	2,739	14.5	17.9%	map brief

Economic Characteristics - show more >>	Number	Percent	U.S.	
In labor force (population 16 years and over)	9,804	61.0	63.9%	brief
Mean travel time to work in minutes (workers 16 years and older)	21.1	(X)	25.5	map brief
Median household <u>income</u> in 1999 (dollars)	44,689	(X)	41,994	map

Median family income in 1999 (dollars)	52,000	(X)	50,046	map
Per capita income in 1999 (dollars)	21,266	(X)	21,587	map
Families below poverty level	318	6.4	9.2%	map brief
Individuals below poverty level	1,407	7.6	12.4%	map

Housing Characteristics - show more >>	Number	Percent	U.S.	
Single-family owner-occupied homes	4,364			brief
Median value (dollars)	114,500	(X)	119,600	map brief
Median of selected monthly owner costs	(X)	(X)		brief
With a mortgage (dollars)	1,067	(X)	1,088	map
Not mortgaged (dollars)	336	(X)	295	

(X) Not applicable.

Source: U.S. Census Bureau, Summary File 1 (SF 1) and Summary File 3 (SF 3)

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U S C E N S U S B U R E A U
Helping You Make Informed Decisions

Appendix 2 Questionnaire

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Appendix A



Valuing Urban Trees Questionnaire



Dear Respondent,

Thank you for participating in this important collaborative study between Worcester Polytechnic Institute's Worcester Community Project and the University of Massachusetts' Department of Natural Resources Conservation. Recent studies have shown that trees provide excellent social and economic benefits to city residents. Our goal is to learn about how your trees affect your quality of life in social, health-related, environmental and economic terms. This interview and other data collection techniques assist various government agencies in how they manage urban trees and forests.

This is the first study of its kind and your participation is critical to the success of the project. The interview should only take about **35** minutes to complete. Your answers will remain strictly confidential. Your name will not be linked to this project, to any data or results we find.

If you have any questions about this collaboration please contact Professor Rob Krueger at Worcester Polytechnic Institute (508) 831-5110 or Krueger@wpi.edu.

We appreciate your help in this project.

Sincerely,

Rob Krueger
Director, Worcester Community Project Center, WPI

Brian Kane
University of Massachusetts-Amherst, Department of Forestry and Natural Resources

Section I.

Background

1. What is your street name? _____ (just take name, not number)
2. Were your trees removed as part of the ALB eradication program? (Y / N) **If no, go on to question 9.**
3. What month and year were the trees removed?
4. How many trees were removed? _____
5. What were there sizes? _____
6. How many trees remain? _____
7. Of those that remain, are there any marked for removal? (Y / N). If so, how many? _____
8. Were there any special trees that were removed? (prompt: planted in honor of someone)

(Hand them a map of their street, mark former tree locations)

9. How do you feel that trees in general affect the beauty, landscape, or character of your neighborhood?

10. When you chose your residence, did the trees factor into your decision? (Y/N)

If so, how?

11. Do you see benefits from the tree removal?

12. Have you volunteered your time to support urban tree activities? If so how?

Go on to next page...

17. As a result of shade loss have you:

____ changed where you relax outside or where children can play? **If so, have them explain.**

____ changed your garden content (flowers or vegetables) ? **If so, have them explain.**

18. As a result of shade loss, have you needed lawn or garden products? **If no, go to question 18.**

If yes, what products have you purchased?

19. As a result of shade loss, have you changed how you use your outside space? (Y / N)

If yes, how have you changed ?

Go on to next page...

Section III.

Trees not only provide shade but also screening (privacy). This section asks questions about screening.

20. Did you have trees that screened your property or windows? (Y/N) **If no, go to section IV.**

21. If yes, were they removed? (Y/N) **If no, go to section IV.**

If yes...

22. How has the tree removal changed the views from your home? (ask if they like it?)

23. Have you changed your behavior or used products to add to the privacy or screening of your house?

24. Has the tree removal affected your relationship with your neighbors?

Go on to next page...

Section IV.

We now want to explore how the tree loss affected you during rain events...

Since your neighborhood trees were removed, please evaluate the following features of rain events:

25. *The amount of water standing in your yard after a rain or snowmelt event has...*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

26. *Icing on my street and /or driveway has...*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

27. *Water going into storm sewers has...*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

Go on to next page...

28. *Erosion in my yard or neighborhood has...*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

29. *The water in my basement:*

Declined significantly less than with	Declined somewhat less than with	Remained about the same.	Increased somewhat	Increased a lot.	Don't know
---------------------------------------	----------------------------------	--------------------------	--------------------	------------------	------------

the trees.	the trees.				

30. *The dampness in my house:*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

31. Are there other ways in which weather related runoff has affected your house since the trees were removed?

Go on to next page...

Section V.

We now want to turn to your experience of noise and wind.

32. *Since the trees were removed, the street noise has:*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

33. *If you have experienced a change in noise, are there any sounds that you have noticed in particular?*

34. *Since the trees were removed the wind noise has...*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

Go on to next page...

35. Do you have concerns about the wind affecting your home or neighborhood (prompts: seasonal variation, weak limbs from trees, increased roof damage? (Y / N)?

If so, how?

Section VI.

We now want to turn to your experience of wildlife factors.

Since your trees were removed,

36. *wildlife in my yard has...*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know
--------------------------------------------------	---------------------------------------------	--------------------------	--------------------	------------------	------------

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Since your trees were removed,

37. *The number of birds in my neighborhood has...*

Become significantly less than with the trees.	become somewhat less than with the trees.	remained about the same.	increased somewhat	increased a lot.	Don't know

38. Do you maintain a birdbath or birdfeeder? (Y / N) *If no, go on to Section VII.*

Go on to next page...

39. *Since the trees were removed, the wildlife around my birdbath has...*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

40. *Since the trees were removed, the wildlife around my birdfeeder has:*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

41. *Since the trees were removed, the amount of bird feed I buy has...*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

Go on to next page...

42. *Since the trees were removed do you think your property value has changed?*

Declined significantly less than with the trees.	Declined somewhat less than with the trees.	Remained about the same.	Increased somewhat	Increased a lot.	Don't know

43. How much time do you and your family spend working in your yard each week?

- 0-1 Hours
- 1-3 hours
- 3-5 hours
- 5-8 hours
- 8-16 hours

44. If yes, what kinds activities do you participate in?

45. How much time do you and your family spend recreating in your yard each week?

- 0-1 Hours
- 1-3 hours
- 3-5 hours
- 5-8 hours
- 8-16 hours

46. If yes, what kinds activities do you participate in?

Go on to next page...

How much money do you think you have spent over the last year:

47. on your yard maintenance? _____

48. landscaping supplies? _____

49. trees specifically? (Time spent pruning, arborist) _____

50. Since the removal of the infested trees, have you changed your tree management habits?

51. If you replaced trees, did you:

_____ buy your own tree

_____ obtain a tree from the Worcester Tree Initiative

_____ obtain a tree from the Department of Conservation and Recreation

_____ Other _____

52. If you replaced trees, did you:

_____ replace with a tree of a similar variety?

_____ replace with a tree with similar shade qualities?

_____ replace with a tree of similar stature?

_____ replace with an ornamental tree?

_____ replace with a fruit or nut tree?

Thank you for your time!! This survey will assist the city of Worcester with its planning initiatives around green infrastructure. End of Survey.

Appendix B



Valuing Urban Trees

Informed Consent Agreement for Participation in a Research Study

Investigator: Rob Krueger, Gretchen Folk, Jeffrey Robinson, Kyle Diaz, Jeffrey Li

Contact Information:

Rob Krueger: 1-508-831-5110 (Krueger@wpi.edu)

Gretchen Folk: 1-774-238-6614 (gpfolk@gmail.com)

Jeffrey Robinson: 1-860-306-9407 (jrobinson@wpi.edu)

Kyle Diaz: 1-774-200-4237 (diazinator@wpi.edu)

Jeffrey Li: 1-617-407-3863 (jli07@wpi.edu)

Title of Research Study: Public Perception and Valuation of Urban Trees: A Case Study of the Asian Longhorn Beetle and Tree Loss in Worcester, Massachusetts

Sponsor: Rob Krueger

Purpose of the Study:

This project explores the public perception of the urban forestry in Worcester, Massachusetts. Four research methods will be used: content analysis, semi-structured interviews, focus groups, and Q-methodology to gather a broad collection of perceived economic, environmental, social, and health benefits associated with urban forests. The case study focuses on residents of the Greendale and Burncoat neighborhoods of Worcester, MA. These areas were infested and eventually deforested as a result of the Asian Longhorn Beetle.

Risks to Study Participants: There are no foreseeable risks involved with this study. All participation is voluntary, and the participant is free to leave or refuse to answer any question.

Benefits to Research Participants and Others: Benefits to the research participants include an opportunity to express feelings, attitudes, and behaviors associated with recent tree loss in their neighborhoods.

Record Keeping and Confidentiality: The information collected in the interviews and focus groups will be recorded with a digital voice recorder which will be used for the sole purpose of documenting the conversation. Recordings of participants in this study will be held confidential as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that will identify participants by name. The final study and results will be available on the internet. However, any publication or presentation of the data will not identify any participant.

Compensation: There is no compensation for participation in this study. However, in the event of an interview or focus group, food and drinks will be provided by the researchers.

Compensation or Treatment in the Event of Injury: There are no foreseeable risks involved with this study. The participant does not give up any legal rights by signing this statement.

For More Information about this Research or About the Rights of Research Participants, or in Case of Research-Related Injury, Contact:

Rob Krueger:

Gretchen Folk:

Jeffrey Robinson:

Kyle Diaz:

Jeffrey Li:

IRB Chair (Professor Kent Rissmiller, Tel. 508-831-5019, Email: kjr@wpi.edu) University
Compliance Officer (Michael J. Curley, Tel. 508-831-6919, Email: mjcurley@wpi.edu).

Your Participation in This Research is Voluntary. Your refusal to participate in this study will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit. The information gathered in this study will be used in an Interdisciplinary Qualifying Project (IQP) and as part of a dissertation. The study will be available on the internet; however, your identity and personal information, as well as your responses will be protected and kept locked in a filing cabinet. The digital voice recorder will record interviews and focus groups for the sole purpose of documenting the conversation.

By signing below, you acknowledge that you have been informed and give consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

Please tell us something about yourself.

In what year were you born? 19_____

Are you male or female (circle one)?

Do you consider yourself -

1. White
2. Black or African American
3. American Indian or Alaskan Native
4. Native Hawaiian or other Pacific Islander
5. Hispanic or Latino
6. Other (please indicate) _____

What is the highest level of education you have completed (circle one)?

1. Less than high school?
2. Some high school?
3. High School or GED
4. Technical or Trade School
5. Some college
6. College graduate
7. Graduate school or Masters
8. Doctorate degree

What is your income range?

10,000-30,000

30,000-49,999

50,000-79,999

80,000-99,999

100,000 +

Study Participant Signature

Date: _____

Study Participant Name (Please print)

_____ Date: _____

Signature of Person who explained this study

Appendix C



Worcester Polytechnic Institute's Worcester Community Project and the University of Massachusetts' Department of Natural Resources Conservation. The Asian Longhorned Beetle infestation in the Greendale and Burncoat neighborhoods has created a number of challenges for residents, local officials, and our government.

The goal of this project is to better understand how your trees affect your quality of life in social, health-related, environmental and economic terms—whether positively or negatively. This interview and other data collection techniques will help us provide various government agencies with information on how they might better manage urban trees and forests.

This is the first study of its kind and your participation is critical to the success of the project. The interview should only take about 30 minutes to complete.

Regardless, of your level of participation your answers will remain strictly confidential. Your name will not be linked to this project, to any data, or results we find.

We appreciate your help in this project.



Questions or Comments:

Phone:

E-mail:

Appendix 3: Content Analysis

Forty-Six Full text articles from the Worcester Telegram and Gazette on public perception

Full Text

(629 words)

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WORCESTER - To City Council candidates Joffrey A. Smith and Joseph A. Casello, the race for the District 1 seat is largely about experience.

Mr. Smith, the 28-year-old incumbent, says his four years on the council have given him the experience to tackle the issues affecting his district's residents.

But to Mr. Casello, a 57-year-old retired city firefighter, it is life experience that most qualifies him to help people. He has no aspirations for higher office - a goal for which he has criticized Mr. Smith - and has lived here for all but five years.

"He does have good life experience, but that's not necessarily good government experience," said Mr. Smith, a homeowner who runs a financial planning company. He lists helping establish a PILOT program for city colleges, redirecting \$50 million from employee health care expenses to city services, and securing funding for a tree replanting effort as among his accomplishments.

Mr. Casello has said he is not a politician, just a resident with common sense who wants to improve his city. With Mr. Smith not ruling out a run for outgoing state Rep. Robert P. Spellane's seat in 2011, Mr. Casello vows to be "the first line of defense for people and their rights."

Mr. Smith also said he will not abandon his constituents if he is re-elected. He lists replanting (biodiversity) trees lost to the Asian longhorned beetle infestation as a main goal.

"Nobody knows what lies ahead," Mr. Smith said in response to whether he would launch a campaign for state representative next spring. "But my focus now is on representing District 1."

Mr. Smith became the youngest-ever elected councilor when he ran for a first term in 2004. Meanwhile, Mr. Casello, a fire lieutenant, was wrapping up a nearly 32-year career with the department. He retired in October 2005 with a knee injury and collects a pension from the city. A licensed electrician for more than 25 years, Mr. Casello said he has done some electrical work since retiring but nothing that would need to be recorded for tax purposes.

His focus lately has been his second attempt at defeating Mr. Smith, in a campaign he describes as more focused and organized than his bid in 2007.

"I'd just ask voters, 'Are you better off now, with the current councilor, than you were four years ago?'" Mr. Casello said. "If I get elected, I'll put out a newsletter letting people know what's going on, what I'm doing. I want my name on a magnet on people's fridge. If there's a problem they can't resolve, they call me."

Full Text

(617 words)

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WORCESTER - Members of the Worcester County Beekeepers Association had an exclusive audience last night with federal officials running the city's Asian longhorned beetle eradication efforts.

Several of the 12 beekeepers who came to the U.S. Department of Agriculture's new headquarters for eradication efforts on West Boylston Street said they welcomed the discussion with the members of the USDA's Animal and Plant Health Inspection Services program, but others were still concerned about the effects chemicals used to kill the beetle might have on the local bee population.

Beekeepers in the area have expressed concern about the USDA's use of imidacloprid to kill the invasive, tree-killing insect first discovered in the city last year. Combined with infested tree removal, officials plan to inject the chemical into potential host trees over three-year cycles to kill off the beetle in the area.

Leominster beekeeper Dean E. Stiglitz said he questioned whether imidacloprid is being used as intended to fight the beetle. He said studies about the effect of the chemical on the environment were more focused on agricultural uses, where crops would be harvested and replanted yearly. The affect on a tree is still not fully understood, he said.

Officials at last night's meeting said the impact of the chemical on crops also focused around spraying of the chemical, not the more focused injections into the trunks of the trees or the soil beneath them.

The USDA officials did say they are looking closely at the effects of the chemical on bee populations, particularly in light of the onset of colony collapse disorder, a mysterious ailment that has been killing off bee populations. Jeffrey Pettis, a bee researcher with the USDA's Agricultural Research Service, said hives have been set up in and out of the regulated area for the beetle. He said samples have been taken of normal hives, and said testing will continue after the chemical treatments begin in earnest to see if high levels of the chemical can be

detected. He cautioned that science is now pointing to a number of causes of colony collapse disorder, including destruction of habitat and disease.

Mr. Stiglitz said there is concern among the beekeeper community that imidacloprid affects the bees' behavior.

Beekeeper Kenneth M. Warchol of Northbridge said he understood there might be some harmful effect on the bee population, but said the eradication was for the "greater good."

"This is needed," Mr. Warchol said. "I'm glad there's a study on the bees going on, and I'm thankful it's going on."

Other members were more skeptical. Laurie A. Herboldsheimer, Mr. Stiglitz's wife, told Christine Markham, national director of the USDA's Asian longhorned beetle eradication program, she would rather let the trees the beetle infests die off than inject poisons into trees and the soil. Ms. Markham said the results would be catastrophic to the landscape, the forests of the Northeast, and local economies.

Other beekeepers were critical of a pilot program going on in Worcester, where around 450 trees are being injected with the chemical through trunk and soil treatments at different sites in the city. Julie Twardowski, the USDA's national Asian longhorned beetle program coordinator, said that pilot program will help determine the effectiveness of chemical treatments started in the fall, rather than the spring, which is when treatments started in other cities that have dealt with infestations. She said other chemicals in addition to imidacloprid are being used to test their residual staying power in the trees, and said those chemicals are also being tested in China to see if they actually kill the beetle.

Full Text

(349 words)

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WORCESTER - Arborists and municipal leaders were unanimous on one point yesterday: Reforestation will be the way Worcester copes in the wake of the 2008 ice storm and the continuing Asian longhorned beetle battle.

"Replanting trees is a healing process," said Clint D. McFarland, federal program director of the Asian longhorned beetle eradication program.

Before the discovery of the beetle's presence in Worcester, approximately 17,000 trees lined city streets.

Eighteen months later, the insidious pest has laid claim to more than 4,500 of the trees on city streets.

Walking along a heavily cut street in the city, it is easy to notice the deterioration of its aesthetics, officials said.

Extensive tree removal in Worcester has brought about issues unclear to the naked eye, they said yesterday at a panel discussion on the future of urban forestry.

"Trees bring shade, cooling, tranquility and higher property value," said City Manager Michael

V. O'Brien.

Brian Breveleri, the city's head forester, echoed Mr. O'Brien's point. "Trees are a major capital asset in Worcester."

Those tasked with ridding Central Massachusetts of the Asian longhorned beetle will simultaneously take on the responsibility of replenishing the tree population. For the effort to succeed, it will have to be a cooperative effort involving forest industry officials, municipal leaders and the public.

The bothersome beetle was not the only defacer of Worcester over the past year.

Electric poles, homes and cars were damaged during the December ice storm. Of the 169 communities in Massachusetts served by National Grid, 146 were affected by the storm. More than 1,400 electric poles had to be replaced across National Grid's service territory in Massachusetts, New York, Rhode Island and New Hampshire. Naturally, trees did not escape the wrath of the storm.

Because of the destruction, National Grid had fewer Worcester trees to oversee, which generated surplus funds because of less trimming and maintenance.

National Grid yesterday contributed the \$50,000 to the city. The grant will help fund the "Right Tree. Right Place" initiative in the city.

Carefully chosen locations for planting will help avoid future problems, officials said.

Full Text

(167 words)

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The City Council's unanimous vote to treat trees vulnerable to the Asian longhorned beetle through injections, rather than drenching the surrounding soil with chemicals, is a sound choice. Councilors Gary Rosen and Joffrey A. Smith were right to push for the injection method, because the chemical to be used, imidacloprid, remains controversial for its potential environmental effects.

Among those concerns is a possible role in the collapse of honeybee populations. Although studies of imidacloprid conducted in France and Germany appear to show no direct detrimental effects on bee populations, many beekeepers continue to worry about subtler effects that could emerge. Locally, concerns also include effects on soil and groundwater.

Given the environmental stakes, and the fact that imidacloprid is more effective in protecting trees when injected, it makes sense for the city to give specific direction to federal and state authorities in how to conduct next spring's chemical warfare. Clear communication between City Hall and those carrying out the work in the field is essential to success.

Full Text

(621 words)

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WORCESTER - Sean McCall remembers a time when he could cook a burger on his grill and the whole Bourne Street neighborhood couldn't see what he was cooking.

Now the street, once adorned in trees, is open to the winds, thanks to the Asian longhorned beetle and ice storm damage.

"It's a wind tunnel now. There are no trees left on our street," said Mr. McCall, an arborist by trade. "When the wind goes, that's all you can hear."

Mr. McCall was among a group of people picking up a new tree as part of the Worcester Tree Initiative's goal to help the city's tree population flourish again. The Worcester Tree Initiative, a private group in Worcester that has given away about 1,500 donated and bought trees and trained volunteers to plant them, has a budget of about \$150,000 for trees.

More than 40 varieties of trees were available to people who attended the group's event yesterday at the Forest Grove Middle School. Everyone who picked up one of the more than 100 trees available was taught how to plant and care for it. The trees handed out were all varieties that would not host the Asian longhorned beetle.

The initiative, spearheaded by U.S. Rep. James P. McGovern, D-Worcester, and Lt. Gov. Timothy P. Murray, helps people pick trees and care for them. The Greendale and Burncoat Street areas of the city were hit hard by the beetle infestation and the ice storm.

"The two of those things together was like the perfect storm," said state Rep. James O'Day, D-West Boylston.

He looked at photographs of the devastation recently and saw the drastic change in landscape after the removal of thousands of trees. "It is so important for us to stop this infestation," he said.

Federal money and, it is hoped, \$500,000 in city cash if special legislation is allowed, will help the city recoup its lost trees, which shielded neighborhoods from heat and wind and provided urban beauty.

Mr. McGovern marveled at the number of volunteers at yesterday's event. He had no idea there were certain times of year trees could be planted, nor was he aware of the methods surrounding tree planting.

"At the end of the day we are making sure all the trees torn down are replaced," he said.

Authorities were on hand to teach people how to plant a tree, what kind of mulch to use and the ways insects or rodents attack tree stems. A 35-page tree owner's manual was also handed out, and people taking trees had to attend a class first.

Mary Knittle, co-chairman of the initiative's steering committee, said people coming to the event were ready to replant.

"A lot of people took the springtime to assess what their yards were going to be like, what the sun was going to do and what their grass was going to do," she said. "They are ready now. I think the panic has died down."

Peggy Middaugh, project coordinator for the Worcester Tree Initiative, said the program

creates tree stewards who can help others in planting trees so they survive.

"We really want to make sure people fall in love with their trees," she said. "Now that they are missing, people are realizing how important they are."

City Manager Michael V. O'Brien, who was on hand for the ceremony yesterday, said trees shape neighborhoods, and the beetle and ice storm destroyed several areas once flush with trees. The replanting effort is for future generations, he said.

"It's a legacy. The work we do today will be for the next generations," Mr. O'Brien said.

Full Text

(217 words)

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Money doesn't grow on trees, but \$4 million-plus can do a lot to help make trees grow.

The Department of Agriculture is directing nearly \$4.49 million in federal stimulus money to Central Massachusetts to restore foliage lost in the battle against the Asian longhorned beetle.

The state Department of Conservation and Recreation will administer the tree-planting program, which over the next two years will help restore lost trees on private as well as public property. Property owners will be consulted about what kinds of trees they want planted, according to the DCR.

The amount of the stimulus money towers over the \$500,000 for tree replacement set aside in the city's spending plan for capital improvements this fiscal year, and the \$150,000 the energetic private group Worcester Tree Initiative has in its budget. This bounty is good news for all who appreciate the beauty and value of trees.

State and federal agencies have cut down about 25,000 trees so far in Worcester and parts of Holden, Boylston, West Boylston and Shrewsbury. Hardest hit have been neighborhoods in the Burncoat and Greendale sections of Worcester.

The battle against the beetle so far has not been pleasant, and regulations and missteps have frustrated many. But with the small fortune in hand, careful planting and abundant patience, the trees will return.

Full Text

(522 words)

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Nearly \$4.49 million in federal stimulus money will go to plant trees in Central Massachusetts, an effort aimed at restoring foliage to an area hit hard by the Asian longhorned beetle.

The funding is part of \$89 million in stimulus money announced yesterday for 78 projects on forested land in 30 states, the U.S. Department of Agriculture reported. Only one other project in California was larger than the Massachusetts project.

The state Department of Conservation and Recreation, which will administer the program, will seek to begin hiring people to plant trees this fall, said Wendy Fox, DCR spokeswoman. More

tree planting will continue

next spring, Ms. Fox said, with planting taking place on public and private properties.

"You've got to hire probably 20 full-time people to do the work, which involves talking to nurseries to make sure there's sufficient stock, talk to property owners about what sort of trees they want on their property, and then plant the trees," Ms. Fox said. "It's a two-year project."

She declined to estimate how many trees might be planted with the stimulus money, saying it would depend on the cost of the trees.

The money expands tree-planting possibilities in the area. Previously, the state and federal agencies fighting the Asian longhorned beetle had \$500,000 for tree planting, Ms. Fox said. The Worcester Tree Initiative, a private group in Worcester that has given away about 1,500 donated and purchased trees and trained volunteers to plant them, has a budget of about \$150,000 for trees.

"The more, the better. That's just great," said Peggy Middaugh, Worcester Tree Initiative coordinator. "We will get more trees planted in Worcester."

The Asian longhorned beetle is a destructive insect native to Asia that was discovered in Worcester last year. Authorities say it has likely lived in the area for years, chewing leaves and boring through tree trunks.

To eradicate the bug, state and federal agencies have cut down about 25,000 trees in a 66-square-mile area that consists of Worcester and parts of Holden, Boylston, West Boylston and Shrewsbury. The effort has cost nearly \$24 million so far and left some neighborhoods, particularly the Burncoat and Greendale sections of Worcester, stripped of trees. U.S. Rep. James P. McGovern, D-Worcester, said in a written statement that the money represents an excellent use of stimulus funding.

"The ALB infestation in our community has been devastating," Mr. McGovern said. "The federal government must continue to be a strong partner in the eradication effort."

U.S. Sen. John F. Kerry, D-Mass., called the money "an essential step toward eradicating this infestation in Massachusetts and preventing it from spreading," while Lt. Gov. Timothy P. Murray issued a statement saying that with the funds, "we will begin to restore the shade and natural beauty that comes from tree-lined streets and yards."

Tree trainers workshop today

WORCESTER - The Worcester Tree Initiative will hold a "Train the Trainers" workshop for volunteers from 4:30 to 6:30 p.m. today at the South Worcester Neighborhood Center, 47 Camp St. Volunteers will learn how to train residents to properly plant and care for trees. For more information, visit www.treeworcester.org.

Full Text

(832 words)

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With all that has been said and written about the Asian longhorned beetle infestation in Worcester and strategies to eradicate it, people sometimes lose sight of the fact that the goal of the program is to preserve trees, especially urban trees. This reminder is especially important to citizens of Worcester in light of the devastating ice storm combined with tree losses from ALB eradications. Worcester has just experienced the worst environmental disaster in its history from these two events. It will be decades before new planting will restore Worcester's urban forest to provide the same environmental benefits that existed before these events.

Based on experiences in New York and Chicago, the efforts to eradicate ALB - assuming that is possible - will require many years. The lead organization responsible for eradicating this pest is the Animal and Plant Health Inspection Service, which is an agency of the United States Department of Agriculture. This organization has authority to quarantine and contain or eradicate specific invasive pests that threaten agriculture as well as native flora and fauna. To date, these efforts have focused on survey and detection to identify the scope of the infestation, and removal and destruction of host trees and potential host trees.

However, with today's tree care science, the technology exists to eradicate the ALB while simultaneously preserving Worcester's urban forest. These two goals need not be mutually exclusive and results can be recognized much faster if we combine integrated pest management strategies, rather than relying solely on detection and eradication of host trees. Integrated pest management strategies have been highly successful in arresting ALB in Chicago.

To emphasize this point, in recent months we have held discussions with industry leaders and government agencies involved in the ALB eradication efforts in Massachusetts. To be clear, this is a complex situation. The regulated area is the largest that government officials have had to establish to date. To add to the problem, laws, policies and science surrounding this pest are complicated. Simply put, the average person caring for trees could be left spinning in circles.

For example, under current policy, the detection of an oviposition site where eggs are deposited in bark wounds created by the adult beetle dictates removal of the tree. Yet the mere presence of this oviposition site does not necessarily mean that a tree is infested with ALB. The fact is that if trees are preventatively treated with a systemic insecticide that is fully registered and widely used against ALB and similar borers in developed landscapes, then borers that hatch from eggs will not successfully infest stems and branches. Tree removal is not required.

To be clear, that efforts to eradicate the Asian longhorned beetle from Massachusetts will take years, if not decades, to accomplish. These efforts that will ultimately protect our urban and natural forests cannot be accomplished by the government alone. It will take the combined efforts of the government, university researchers, private industry and private citizens.

It was for exactly this reason that we met with members of APHIS and offered to share information and assist in this effort. During these meetings, we questioned the validity and accuracy of verbal and written statements by APHIS stating that there were no treatment options and that it was not legal for a person or for a company to treat ALB within the regulated area. As a result of our discussion, APHIS has issued a written letter to the public and our industry asserting that those statements were not accurate. In fact, it's perfectly legal for a

person or company to conduct treatments for Asian longhorned beetle within the regulated area. And this has now been clarified. The truth is that involvement from the private sector will reduce the spread of this pest, contain it more quickly and ultimately preserve more trees than government actions alone.

We also believe that products and technologies that are now available can provide protection against ALB infestations that will save thousands of trees in Worcester from destruction due to active attack or just the mere appearance of an attack. University researchers and private industry have developed many new products and techniques that are effectively protecting trees from similar pest infestations. These products and tools need to be integrated into Worcester's ALB program to provide a comprehensive strategy that focuses on protecting the city's urban forest rather than solely eradication of a pest.

We are striving for progress, which can come in the form of understanding the important contributions that trees makes to the urban environment and quality of life in cities. Progress can come in the form of developing a better understanding of how to manage an invasive pest while preserving and protecting tree resources. Progress can come by recognizing that we all need to work together to solve challenges. And progress can come by having an open mind to new ideas and alternative strategies.

Jeffrey P. Hehman is a certified arborist and Bruce Fraedrich is a lab director with Bartlett Tree Experts.

Full Text

(913 words)

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WORCESTER - Despite researching an odd-looking bug for a week and being 90 percent sure of what it was, Donna Massie still felt foolish last summer when she contacted government officials with her suspicions about the presence of the Asian longhorned beetle in her Greendale backyard.

"I called anyway," Mrs. Massie said.

Yesterday, Mrs. Massie, of 14 Whitmarsh Ave., was rewarded for making that call.

Local, state and federal officials honored the Worcester woman for being the first person in the region to report a sighting of the destructive pest. During an outdoor ceremony at Quinsigamond Community College, part of recognizing August as Asian Longhorned Beetle Awareness Month, Mrs. Massie was bombarded with accolades for blowing the whistle on the invader that had landed in Worcester and beyond.

Her vigilance sparked a multimillion-dollar ongoing eradication program.

Mrs. Massie's first encounter with the pest occurred when her husband, Kevin E. Massie, who had spotted it on a friend's car, brought it to her attention. A few days later, she noticed more beetles in her backyard and some holes in the trees.

It was a year ago Aug. 1 that Mrs. Massie reported the Asian longhorned beetle to the U.S.

Department of Agriculture.

"Truth be told," Mrs. Massie said, "on Aug. 1, the first thing that came to my mind was, can it hurt my grandchildren?"

USDA state survey coordinator Jennifer Forman asked Mrs. Massie to send a cell phone photo of the beetle. Patty M. Douglass, the USDA's state plant health director for Connecticut, Rhode Island and Massachusetts, saw the photo of the beetle late on a Friday night.

"It was your cell phone photos," Ms. Douglass said. "Within five seconds I knew life in Worcester was going to change."

Ms. Douglass called Mrs. Massie about 7 that night and asked if she and Ms. Forman could visit the next day to survey the property and capture some of the insects. By the following Monday, the large, white-spotted beetles were identified as the Asian longhorned variety.

The eradication process was launched.

The insect, native to China, is most often found in various species of maple, including red, silver and sugar maples, as well as the box elder, London plane, mimosa, birch, elm, horse chestnut, poplar and willow trees. Tunneling by beetle larvae eventually kills infested trees.

Signs of an infested tree are oval pits in the bark, oozing sap, accumulation of coarse sawdust, round exit holes and adult beetles, which are 3-1/4- to 1-1/4-inch long, black with white spots and long antennae striped with white and black.

As of July 26, contractors had cut down 25,335 trees from the regulated zone: Worcester and sections of Holden, Boylston, West Boylston and Shrewsbury. Of those trees, the USDA has verified more than 13,000 as infested.

The entire northeastern United States has been placed on high alert for the beetles, according to federal officials.

At yesterday's event, Mayor Konstantina B. Lukes characterized the beetle invasion as one of the worst natural disasters in the history of the city.

"The landscape has changed for generations to come," Mrs. Lukes said.

Scott J. Soares, commissioner of the Massachusetts Department of Agricultural Resources, spoke at yesterday's ceremony, and said that people like Mrs. Massie are crucial to the all-out offensive on the Asian longhorned beetle. Despite a year's worth of work trying to eradicate the pests, he said, there is still a need for the public to play an even more active role in the ongoing process of elimination.

"People really are the most critical link," Mr. Soares said.

To highlight that, he said, Gov. Deval Patrick proclaimed August as Asian Longhorned Beetle Awareness Month,

to encourage every resident in the state to be on the alert for the Asian longhorned beetle, and to report sightings of the invasive insect.

Mrs. Massie said that a year ago, people were blaming her for all the trees being cut down in

the city.

"This year, the same people understand a little more," Mrs. Massie said, and have been more supportive. Now considered a local expert on Asian longhorned beetles, she receives calls and visits from people who want her opinions on beetles they find in their backyards.

She has studied and researched throughout the year. Mrs. Massie recently had a display of the beetles in shadow boxes at the Worcester Historical Museum for others to learn more.

"I was lucky to squeeze an egg out of a female and that's in one of the boxes," Mrs. Massie said.

She collected so much information that last September she created a Web site titled "Life is Wood." It's at asianlonghornedbeetleitems.com.

At yesterday's ceremony, Mrs. Massie received citations from the state House of Representatives, the state Senate and the city of Worcester. A citation from the state Department of Agriculture recognized her commitment and contribution to sustainable agriculture, mainly maple sugaring.

She is still on the lookout for Asian longhorned beetles. She found one in her backyard recently and carried it to the ceremony in a specimen container.

"I'm starting to feel like the real beetle lady," Mrs. Massie said.

Full Text

(674 words)

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WORCESTER - Gray skies grudgingly gave way to blue yesterday as a spirit of green spread across 40 city neighborhoods and Earth Day cleanup sites yesterday from University Park to Quinsigamond Commons.

Suzanne Patton, interim executive director of the Regional Environmental Council, proclaimed the 20th annual event an "unqualified success" as volunteers, site coordinators and honorees gathered for hamburgers or veggie burgers hot off the grill at YMCA Family Park.

Mrs. Patton said everything went smoothly, with more than 500 volunteers and a shift in the weather forecast from rain to clouds with brief moments of sunshine.

Getting wet was not a problem for Michael Tran, a student at University Park Campus School, who took an unexpected swim in the park pond as he was plucking trash from the water.

"A very smelly and adventurous fall," he said.

Katie Huppert, seventh-grade science teacher at University Park Campus School, said the 20 students who showed up gathered nine bags of trash and, for the first time this year, segregated four bags of recyclables.

Each year the job gets easier, and less trash is carted off to the Wheelabrator plant in Millbury.

"On Monday we'll get a report from Wheelabrator on the totals that were collected from all sites, but as we lead by example, I think increasingly people are aware of the importance of

keeping their neighborhoods and parks clean," Ms. Patton said.

She identified the Friendly House neighborhood and the secluded area of Swan Avenue and Paris Avenue as two of the more challenging cleanup sites this year.

Mrs. Patton said the city, given its economic challenges, went "above and beyond" and was a great partner in this year's Earth Day event.

While Mayor Konstantina B. Lukes was not present for the awards ceremony, District 4 Councilor Barbara G. Haller read the mayor's Earth Day proclamation and said, "making and keeping the city of Worcester cleaner is one of the city council's highest priorities."

Volunteers with the Worcester Tree Initiative were at Crystal and Illinois streets giving away trees to people willing to plant them. They received guidance from Department of Conservation and Recreation workers.

Alan W. Snow, of the DCR's Urban Community Forest program, said the mistake most people make is planting trees too deep. He emphasized the trees' need for water at this time of year and a mulch of compost to compensate for urban soils devoid of nutrients.

"What people want to do is re-create a little of the natural forest floor in their back yard with a coarse mulch," the community action forester explained.

For the second consecutive week, the Worcester Tree Initiative was giving away white oaks, royal burgundy cherries, prairie fire, snowdrift and coralburst crab apples.

Brenda McCann of Rutland, who selected a cherry, said the tree give-away provided a few moments to think about something other than the white pines, oaks and shagbark hickory on her property damaged in the December ice storm.

Peggy Middaugh, coordinator of the Worcester Tree Initiative, said a week ago there were 400 requests for the 200 trees, which were available as a result of a major donation from Wal-Mart, as well as numerous private donations.

The new nonprofit organization is dedicated to re-establishing the city's presence of trees, particularly those shadeless streets and backyards where trees were removed to eradicate the Asian longhorned beetle.

Ms. Middaugh, former REC executive director, was one of several the council recognized at the picnic at the YMCA park.

Others honored with a plaque bearing a work glove were Don Abraham, the city DPW's assistant director of streets and sanitation, who retired yesterday; Fred Confalone of Wheelabrator Millbury; Ted Conna, honorary board member of REC; Laura McNaughton, director of residential electric and gas efficiency services at National Grid, a major Earth Day cleanup

Full Text

(803 words)

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WORCESTER - Hundreds of people turned out at Burncoat High School yesterday to receive free trees to help replace some of the tens of thousands destroyed by the Asian longhorned beetle infestation and the devastating December ice storm.

City Manager Michael V. O'Brien said that, as he was driving to the event, he thought about what he would say. His first thoughts were about "that dang beetle ... a biblical ice storm ... and the reality of some of the toughest budgets in the toughest economic conditions the nation has seen in a long time."

"What came to my mind immediately is you can't keep a great community like Worcester down, in spite of all those factors that are working against us," he said to a thunderous applause.

The Worcester Tree Initiative was launched in January by Lt. Gov. Timothy P. Murray and U.S. Rep. James P. McGovern, D-Worcester. Each donated \$5,000 from their campaign funds. Wal-Mart Foundation and CSX Transportation have committed nearly \$200,000.

The goal is to plant 30,000 trees over the next five years. But, after seeing all the enthusiasm yesterday, Mr. Murray said he expects the goal will be exceeded. He said the project will be a model for communities across the state to reforest and to educate people about the importance of trees to our habitat and ecosystem.

"With every tree that is planted we make a statement that we believe in this city ... we believe in this region and we're committed to its future," he said. "And, equally important, it gives us one of those teachable moments to educate ... our young people about environmental stewardship."

With bright sunshine and temperatures in the 80s, yesterday was perfect for tree planting.

Robert T. Sullivan, CSX communications director, said the project is one of the service days the company sponsors each year in the 23 states in which it operates. CSX donated two large trailers filled with an array of tools, including wheelbarrows, shovels and generators, to City Year Boston.

Young people from the national service organization arrived at the school Wednesday to begin preparing for the event. Yesterday, they planted trees throughout the school property and court yard and at some homes on Burncoat Street.

After several 20-minute group lessons on how to properly care for trees, it took only a couple of hours to give out the 187 crab apple, cherry, pear and Greenspire Little Leaf Linden trees. Most were at least 10-feet tall. After the trees were gone, many people were given rain checks to receive a tree at one of the remaining five community planting sessions that run from May 2 to June 6.

Pamela M. Sikorski and her neighbors, Angelo and Donna Katsoudas got rain checks. Mrs. Sikorski said all of her trees, including a large white birch that everyone in the neighborhood loved, were taken down because of the Asian longhorned beetle.

She said she and her husband personally planted the trees and landscaped their property at 26 Dodge Ave. 40 years ago.

"It took us 40 years to grow it and it took them 20 minutes to take it down," she said. "The place looks awful. It really does. Now we've just got to start from square one again. It's depressing."

The Katsoudas said they also lost all their trees at 49 Wilkinson St.

Some host trees that were not infested were also removed, they said.

"It's devastating," Mr. Katsoudas said. "It feels like we were raped. You come home and your trees are gone."

Mary Knittle, one of the co-chairmen of Worcester Tree Initiative's steering committee, said the success of each new tree will be tracked in a database. She said all the trees are from area nurseries. Schoolchildren and community groups from Worcester, as well as the other beetle-impacted towns - Shrewsbury, Holden, West Boylston and Boylston - are involved in the project, she said.

Mayor Konstantina B. Lukes and several local city councilors, School Committee members, as well as state Sen. Michael O. Moore, D-Millbury, and state Rep. James J. O'Day, D-West Boylston, a co-chairman of the initiative's steering committee, also participated in yesterday's event.

Full Text

(779 words)

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WORCESTER - Soil. Water. A shovel.

That's all it takes to successfully plant a tree, right?

Actually, it's a bit more complicated than that, and experts are urging Worcester residents to plant carefully as they begin restoring trees to neighborhoods where about 20,000 trees have been cut down in recent months to fight the Asian longhorned beetle.

The type of tree matters, the number of trees matters and the location matters, according to H. Dennis P. Ryan, urban forestry professor at the University of Massachusetts at Amherst.

"It doesn't do any good to plant trees that are going to die," Mr. Ryan said.

But planting new trees is definitely an important step for communities after the trauma of losing trees, according to Clint D. McFarland, federal program director of the Asian longhorned beetle cooperative eradication effort, which is engaged in a multiyear effort to survey trees in the Worcester area and remove those that are infested or vulnerable.

"You need to come back," Mr. McFarland said. "You need to start that healing process as soon as you can."

To get things started on the right foot, the nonprofit Worcester Tree Initiative is kicking off its privately funded tree-planting campaign from 9 a.m. to 2 p.m. tomorrow with a festival at Burncoat High School, 179 Burncoat St. Volunteers will plant 150 trees in the neighborhood, and the group will give away 150 trees to individuals who register and complete a 20-minute

workshop on tree planting. Transportation company CSX Corp. is donating all the trees, and once all the trees are distributed, the initiative will give residents vouchers that can be redeemed for trees.

Education is a key element of the Worcester Tree Initiative's campaign. The group has begun training volunteers and will distribute checklists on how to properly plant and care for trees. It is also working with nurseries to educate tree shoppers.

"What we've seen in other places throughout the country that run campaigns ... is that the upkeep and maintenance of trees is just as important as planting it," said Paul A. Belsito, a coordinator of the initiative.

Careful planting also offers Worcester the opportunity to create an "urban forest" less likely to be wiped out by any one bug or fungus. Experts say no single tree genus should account for more than 10 percent of a tree population.

Yet an estimated 80 percent of Worcester's trees before the Asian longhorned beetle were Norway maples, a tree vulnerable to the bug. Norway maples were widely planted after a 1953 tornado ripped through the city, said Jeff Willman, manager of Bigelow Nurseries Inc. in Northboro.

They "seemed to be the right tree at the right time," Mr. Willman said. But now the tree is considered an invasive species, he said, and "there are so many other choices, good choices, that do well here."

Brian D. Breveleri, director of urban forestry for the city of Worcester, recommends that individuals first think about the space they have for trees. Shade trees such as oaks will grow tall and produce a large canopy, he said, while ornamental trees will remain smaller and produce flowers or fruit.

Other tips: Plan on spending 30 minutes planting a tree. Don't plant next to buildings, because the roots and canopy could grow into the structure. Don't plant under electrical wires. Don't plant near roads where salt, cars and snowplows can cause damage. Don't plant near sidewalks or driveways, where roots can disrupt pavement. To discover where underground utility lines are placed, consider contacting Dig Safe at (888) 344-7233. Plant in the spring or fall but never during winter or summer. Plant in good soil.

When it comes to trees, choose from varieties resistant to the Asian longhorned beetle. The Worcester Tree Initiative has posted a list of recommended varieties on its Web site at www.treeworcester.org.

And don't get sentimental and plant a maple tree.

"It's not to say that eight to 10 years from now that we can't go back and plant maples, but right now let's be proactive," said Mr. Breveleri, Worcester's urban forestry director. "I want the beetle out of here as much as every resident does, but right now let's take away the food source."

Children at the Clark Street School surround shovels used to plant a tree during an event for the Worcester Tree Initiative last week. (C) Tree-planting checklist

Full Text

(858 words)

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In the fall, Martha Gach says, her family in Iowa has to haul them out of their cellar by the shovelful.

They secrete a nasty yellow fluid when you hold them, fly around the house annoyingly, and then fake dead when they are discovered. But we still love ladybugs, and this past week in Central Massachusetts one of nature's best harbingers of the return of warm weather began finding its way outside. The cute little spotted insects know it's almost aphid-eating time, and as temperatures rose above 55 degrees, the bugs began making their spring appearance.

Certain butterflies also will be appearing and dragonflies won't be far behind as the weather finally breaks through the chilly 30s and 40s of early spring, giving nature a chance to show its best side.

At the Massachusetts Audubon Society's Broad Meadow Brook Conservation Center and Wildlife Sanctuary in Worcester, Ms. Gach, conservation coordinator, said she has not seen ladybugs yet, but they have appeared in normally colder northern Central Massachusetts.

Warmth is all they want and when they get it, they are off and buzzing around.

"They come out on sunny days in the spring when it is 55 to 60 degrees," she said.

The beetles also sometimes emerge from their winter hiding if there is a January thaw, but are a good indicator real spring weather has arrived when they start appearing en masse on the sides of white or brightly colored buildings or crawling around on laundry hanging in the sun.

Ms. Gach said she may have missed some of the early ladybugs at the sanctuary because she has been focused on some other warm-weather harbingers.

"My eyes have been out for butterflies," she said.

Mourning cloak butterflies, a large brown butterfly with yellow fringes on its wings, have been appearing in the sanctuary, as have Eastern commas, spring azures and cabbage whites.

"The mourning cloaks always return to the same place in the sanctuary," she said. "They're a little late this year."

Ms. Gach said she has also been noticing white suckers, a type of fish, appearing in the sanctuary's brooks.

Temperatures last week were, at times, in the 60s and although the weather took a turn for the cold, the 60s and 70s are expected to return later this week.

David Small, president of the Athol Bird and Nature Club, said Friday the weather is not yet warm enough for dragonflies and damselflies, but they should begin to appear soon.

"Boghaunters (a dragonfly) will be emerging in another couple weeks, as will some of the whitefaces," he said. A Northern green-striped grasshopper has been seen by one club member.

The ebony and ringed boghaunters are a challenge for people to observe as they are found in sphagnum bogs and swamps with open pools and are both rare.

Mr. Small said brown elfin butterflies were out and about Friday at several locations as well as the four seen at Broad Meadow. He said he saw a Compton tortoiseshell butterfly last week at Quabbin Reservoir.

"The cold wet start of spring is quickly overcome by warm days like today," he said Friday. "Many insects are ready with the lengthening daylight and are only waiting for the warm weather to emerge."

Ladybugs, one of the most popular insects, are state insects in Massachusetts, Delaware, New Hampshire, Ohio and Tennessee. Native ladybugs, which include two- and nine-spotted of the species, are in decline - forced out by the 19-spot Asian beetles. There are 400 species of ladybugs in North America and 5,000 worldwide.

As a side note, Ms. Gach said ladybugs are really lady beetles. The mouths tell the tale. Beetles have biting mouths, while bugs have straw-like mouths to suck plant and insect juices. The name ladybug came out of the Middle Ages, but all ladybugs are beetles. Efforts are being made to track the various species through Cornell University's lost ladybug project that seeks photographs of the beetles to try to track the health of the native species.

Ladybugs, butterflies and

dragonflies are welcome additions to the springtime habitat. The warm weather will also bring out some pests. In Worcester, people are scouring trees, waiting for the latest appearance of the Asian longhorned beetle that has already forced the destruction of many beautiful trees found to be hosting the destructive insects.

People with old houses are also discovering more ants and wasps emerging from the walls and other hiding places. Nature's abundance offers the good with the bad, but if long-range weather forecasts are accurate, lawns, forests, fields, ponds and brooks will soon be buzzing with excitement and entertainment.

Contact George Barnes by e-mail at gbarnes@telegram.com.

Full Text

(331 words)

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The adage holds that from tiny acorns grow mighty oaks, and so it is likely to be with the Worcester Tree Initiative, which yesterday outlined plans to rebuild Worcester's urban forest after years of neglect, the ravages of the December ice storm, and the still mounting losses attributable to the Asian longhorned beetle.

Meeting with the Telegram & Gazette's editorial board, Congressman James P. McGovern, Lt. Gov. Timothy P. Murray, and several members of the Initiative's steering committee outlined their vision for a 30,000-tree, five-year effort to restore Worcester neighborhoods, as well as

parts of neighboring towns, to their arboreal glory of old.

The effort is an extraordinary, timely and most-welcome partnership among the federal, state and local governments, the business community, environmental activists, civic groups and the many individuals who have been painful witnesses to the loss of their cherished shade trees, particularly in the city's Greendale and Burncoat neighborhoods.

Msrs. McGovern and Murray have each contributed \$5,000 from their campaign funds to get the initiative started, and a series of announcements, public tree plantings, and ongoing educational campaigns will be blooming as spring advances, and chronicled at the Initiative's Web site, www.treeworcester.org.

It is important to note that the Worcester Tree Initiative's activities, while conducted in cooperation with the USDA, are separate from the federal agency's program to offer replacement trees to those homeowners directly affected by the Asian longhorned beetle infestation. Working with arborists and local nurseries, the Initiative intends to rally individuals and groups in an effort to bring biological diversity and beauty to many of the city neighborhoods. The Initiative's Paul Belsito noted at yesterday's announcement that Worcester has seen a long, steady decline in its urban forest over the last 30 years.

Reversing that trend, and ridding the city of its Asian beetle problem, will remain challenges for years to come. The Initiative is a fresh idea sure to usher in a season of hope after a winter that cut deep into the city's heart.

Full Text

(569 words)

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WORCESTER - The Worcester Tree Campaign, a group aiming to plant thousands of trees in areas affected by the Asian longhorned beetle infestation, expects to announce a major corporate sponsor next week and begin training volunteers who will teach residents how to plant trees.

Those events will lead up to an April 25 event at Burncoat High School, where officials expect to kick off a carefully plotted, high-tech effort to restore the region's urban forest and address the concerns of frustrated residents who have lost trees to insects and other forces.

"We really think there's an opportunity to channel that frustration and loss to something that's positive," Lt. Gov. Timothy P. Murray said yesterday during a Worcester Tree Campaign presentation to the Telegram & Gazette's editorial board.

The group's plan, which will require individuals to complete a short educational session on tree care before they can obtain a free tree, is a reaction partly to the Asian longhorned beetle, an insect native to China that was discovered last summer in Worcester but may have been chewing its way through the city's hardwood trees for a decade. Group officials said they also want to address the general decline of the Worcester area's "urban forest" in recent years and build a more tree-savvy citizenry.

"It's not just about taking down trees that have been affected by the beetle, but going further than that," said U.S. Rep. James P. McGovern, D-Worcester.

Since the discovery of the beetle in Worcester, the U.S. Department of Agriculture and state and city agencies have launched a multiyear program to cut down infested trees and trees at risk of infestation. A total of 19,700 trees have been removed so far in Worcester, including 8,107 trees confirmed as infested, a USDA spokeswoman said yesterday.

Cutting down and chipping the trees has left some neighborhoods looking barren. Worcester Tree Campaign officials said their goal is to see 30,000 trees planted in the area over five years. That would include their own plantings, separate plantings financed and managed by the federal government, and a third set of plantings financed by municipalities.

The Worcester Tree Campaign's effort could cost \$300,000 to \$400,000 a year for the first two years, said Joseph O'Brien, district director for Mr. McGovern. Corporate sponsors could cover the first \$100,000 annually, which would fund administrative expenses, and all other contributions would go to purchase trees, he said.

The group plans to launch its tree-planting initiative April 25 by planting 75 trees at or near Burncoat High School and another 75 trees in the school's neighborhood. The same day, the campaign will make 150 trees available free to individuals who want to take them home for planting.

The group plans to plant "whips," young trees about 4 to 8 feet tall with trunks about an inch around. Species available for planting will likely include certain oak and linden species, and Coralurst crabapple, Kwanzan cherry and Aristocrat pear.

Individuals will need to complete a session, estimated at 20 to 30 minutes long, on how to plant and care for their tree, and they will be asked to register trees in a database that will allow organizers to track the progress of the trees, according to Peggy Middaugh, campaign co-coordinator.

"We want to make sure the trees live long term," Ms. Middaugh said. "We don't just want to put them in the ground and go."

Full Text

(481 words)

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WORCESTER - Neighbors of Quinsigamond Community College are protesting the college's decision to fast-track its plans to alleviate traffic by building a loop road, which they say will bring more noise and traffic to what used to be a pleasant part of the city.

The college, at West Boylston Street, Assumption Avenue and Burncoat Street, has scheduled a neighborhood forum to discuss its projects at 6 this evening in the Hebert Auditorium on campus.

In a recent letter to neighbors, college president Gail E. Carberry said construction on the loop road project is expected to begin in April.

"Having completed our work with state and city officials, we have been informed by (the state Department of Capital Asset Management) that due to the federal stimulus efforts, the Loop Road project has been fast-tracked," the letter states.

The proposed loop road would direct traffic around the campus instead of forcing vehicles to drive through the steep, sometimes dangerous center. The college's enrollment, now close to 7,000, has been rising over the last three years, and it is expected to keep climbing.

"As you know," Ms. Carberry says in her letter, "growth in our enrollment and the attendant increase in the flow of traffic has resulted in the current roadway structure on campus posing safety issues for our students."

Neighbors of the college, who already have lost trees around their homes because of the Asian longhorned beetle infestation, say they don't want more noisy activity in their neighborhood.

"Every one of the hundreds of trees that once blocked our neighborhood from QCC have been totally removed, leaving many of our backyards totally exposed to Assumption Avenue, where the 'Loop Road' is planned," states a letter from a group of affected neighbors in the Greendale and Burncoat sections of Worcester.

Neighbors also said they are disappointed to see federal stimulus funds directed toward a project that "make this an area where people no longer want to live."

The role stimulus money is playing in the project is unclear. College spokesman Victor A. Somma Jr., who provided a copy of Ms. Carberry's letter, said in an e-mail, "No, the college will not be receiving stimulus funds for the Loop Road project." He did not respond to a later e-mail asking for clarification on Ms. Carberry's statement that stimulus funds have fast-tracked the project.

According to neighbors, the college also is poised to build an overflow parking lot off Assumption Avenue. Neighbors oppose the proposed lot because it would be too close to their property, in a space that used to be covered with trees.

Last spring neighbors tried to halt the college's plans by arguing that bats in the area would be harmed by construction.

The college has been hosting meetings to discuss its plans with neighbors. Rep. James J. O'Day, who represents the area, also is hosting tonight's meeting.

Full Text

(890 words)

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WORCESTER - Saying the next phase of the Asian longhorned beetle fight is like a Whac-A-Mole game, Colin M.J. Novick warned conservationists and naturalists traveling with him to Bovenzi Park that the infestation will not be limited to the Worcester area.

Whac-A-Mole is a game where fake moles randomly pop out of holes and the person playing the game tries to hit them with a mallet. Mr. Novick, executive director of the Greater

Worcester Land Trust, was referring to the possibility that beetle infestations caused by the transportation of cordwood would occur randomly outside the quarantine area created in Worcester, Boylston, Holden, Shrewsbury and West Boylston to contain the destructive pests.

"The faster you realize you have the beetle and recognize the signs, the better," he said.

Mr. Novick said people managing conservation areas should already be looking for signs of beetle infestation. The infestation was in Worcester 10 years before it was discovered. The result has been widespread devastation in once tree-lined neighborhoods.

"This is the first winter and we've had 19,000 trees cut down and expect at least 10,000 more," Mr. Novick said, adding that there could be many more infested trees once they do more surveying.

He said people outside the quarantine area should understand that beetles could have already jumped to other isolated areas because of the removal of firewood from Worcester and surrounding towns before they were quarantined and illegal removal of wood after the quarantine was established.

"There are too many land trusts and conservation folks who are saying, 'Thank God they are not in my area,'" he said. "We expect this to begin showing up in pockets outside the quarantine area."

On a field trip from the Massachusetts Land Conservation Conference held yesterday at Worcester Technical High School, Mr. Novick, Jennifer F. Orth, an invasive species expert from the state Department of Conservation and Recreation, and Tom Lautzenheiser of the Massachusetts Audubon Society took participants on a bus ride through streets in the quarantine area off West Mountain Street, stopping on Monterey Road and at Bovenzi Park on Maravista Road.

On Monterey Road, participants were shocked by what they saw. In front of every house except one was a large stump where a 50-year-old Norway maple had been cut down. The large trees had been planted following the 1953 Worcester tornado and were all infested by the beetles or were known host trees.

Standing on a stump, Mr. Novick said it still has not been decided what trees would be planted to replace the maples. It will have to be a hardy species, which is one of the reasons Norway maples were chosen after the tornado. "These are really tough conditions," he said.

The beetles attack maples as well as birch, poplar and horse chestnut trees, but Ms. Orth said studies so far show they prefer maples of all kinds, except Japanese maples.

The main reason for the seminar on the beetles was to impress on representatives of land trusts and conservation organizations that they need to take the infestation seriously, even if it is now centered far from any of their properties. Mr. Lautzenheiser said the infestation has not been detected in the New England forest area to the north, but, if it is, it could cause serious damage to the logging, maple sugar and tourism industries.

"We really need to confront it and we need to contain it," he said, adding that based on studies of forest types around the state, 1.7 million acres of trees could be affected by the Asian

longhorned beetle.

"Every county except Dukes County has some vulnerability."

Mr. Novick said it is extremely likely that at some point someone took beetle infested wood out of the area, possibly for camping, and the wood could have infested a state park or other forest. He said the beetles normally don't travel far on their own.

At Bovenzi Park, which is not far from ground zero for the infestation, Mr. Novick said what made the problem significantly worse was the Dec. 11-12 ice storm. In the 120 acres of the quarantine area, 40 infested trees already had been found. Then the ice storm hit and tops of trees infested with beetles broke and fell to the ground, possibly spreading the insects.

The park now looks as if the property were thinned by selective cutting. It no longer offers much of a barrier from Interstate 190. Invasive plant species already are moving into the logged area, and Mr. Novick said more work is needed. But those in the park with him discovered some signs of hope. Vernal pools on the property were teeming with wood frogs calling out with their unusual clucking sound.

"It's still a forest. There are still trees. There are wood frogs in the pools," Mr. Novick said, pointing to one pool that seemed to be bubbling with frogs.

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Full Text

(712 words)

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My friend Gina doesn't live in Greendale, but she's quite upset about the squirrels.

"You have to warn people," she keeps saying.

"We've already warned people," I noted.

"Warn them again."

She's referring to reports that, since so many trees have been lost to the Asian longhorned beetle, squirrels and other wildlife are sneaking into houses in Greendale. This, in turn, has forced already-beleaguered residents to set fire to their homes and flee to places where squirrels are not only unwelcome, they're baked into kebabs.

That's certainly what I would do. I know everyone would empathize - and by everyone, I refer mainly to females - when I note that if I ever saw a squirrel darting around my family room, I would respond in the cool, detached manner epitomized by Jamie Lee Curtis when Michael Myers lunged toward her with a coat hanger embedded in his eye. I'm actually surprised that Alfred Hitchcock never made a horror movie involving squirrels, as they're every bit as demented as birds and rats, both of which have been featured in such fine wildlife documentaries as "The Birds" and "Willard."

But Gina feels even more strongly about this than I do, so much so that she actually put her fears in writing. I'm hoping that if I publish her screed, it will shut her up:

I've been informed that because of the tree loss in Greendale, squirrels are now trying to find their way into the homes of the residents there. I'm horrified not only for the families of Greendale, but for the rest of mankind. I didn't understand that the trees were the squirrels' homes. I never really thought about where squirrels lived and frankly never cared. But now all the squirrels born and bred in Greendale for generations are faced with homelessness and are understandably confused and probably very angry. My concern is that their discombobulation could lead to unruliness and aggression as they struggle for survival. Little children are probably most at risk since they are closest to the ground and are creature-like themselves. Attacks at the school bus stop could become the norm.

Why can't the squirrels just walk a mile to another town with trees? They could at least dispatch one member of the clan with some extra nuts, to see what's out there for them. I would be terrified if I lived in Greendale. Before you know it, we'll see squirrels chucking acorns through living room windows.

If something isn't done - like a major squirrel relocation project - I'm afraid a new breed of squirrel will evolve that is probably even less friendly than what's out there now. After all, they're just rats in fur coats anyway. Soon we may see a scary species called The Greendale Squirrel - a rogue rat threatening humanity in unspeakable ways.

I implore you to warn your readers about this quandary. Even though these squirrel gangs are now just an issue in Greendale, other towns aren't so far away. And if the squirrels go to Holden, you can bet something will be done to deal with the problem.

Mea Culpa: Boy, readers sure are emotional about improper English.

A column last week about Barbie and me (Barbie and I?? Me and Barbie??) brought out the sharp-eyed grammarians - a redundancy, surely - who were quick to point out my mistake in writing, "between Barbie and I," when it should have been "between Barbie and me." Apparently, any idiot knows that prepositions take the objective form of a pronoun, and my error was so egregious that many readers were, in turn, "astonished," "taken aback" and even "appalled" by my slip-up.

"I hope I am among many, many people who were disturbed by the error in today's column," wrote Marilyn Baker. "Please don't do it again."

"Not to be snippy," began a snippy Ellen Weingart. "Did you zone out during grammar lessons?"

Hope and Esther Abisamra were much nicer: "We have always admired your crisp writing style even when we don't agree with your sentiments. Of course, we know that there are deadlines to meet and much pressure ..."

I wish I could claim such excuses. Truth be told, I zoned out during grammar lessons. My apologies.

Full Text

(463 words)

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As winter eases its grip, residents in the Asian longhorned beetle quarantine zone are facing a very different kind of spring than the ones they have been long accustomed to. Those late April and early May days when the trees unfurl their foliage and the air grows heavy with sweetness and warmth will pass some neighborhoods by this year, replaced by a season of cutting, chopping and clearing away nature's fallen.

At the end of the first year of open warfare between beetles and humans, it is arguable that this pest has taken as heavy a toll on the values of some properties as the sins of greedy Wall Street barons.

The damage inflicted in the Greendale and Burncoat neighborhoods has also been exacerbated in some instances by overly zealous contractors working at the behest of the U.S. Department of Agriculture. After vigorous protests and a flurry of communications among residents, city councilors and USDA officials, all parties appear to be on the road to clear communications regarding which trees must go and which can stay, at least for now.

It all has residents of once tree-lined streets yearning for some good, green news close to home.

The seed of such good news is not far off, in the form of new tree plantings, which are likely to begin next month. In addition, the city council last week agreed to study the idea of undertaking a program of tax abatements or a revaluation of the affected neighborhoods. Current law apparently does not allow abatements on the basis of a beetle attack, although the ugly truth is that as property values have fallen with the lopping of limbs, some decline in tax bills also can be expected.

That is small compensation for the loss of shade trees and memories, but the city needs to approach the question of compensation carefully. Money is particularly tight this year, and government cannot necessarily make up for every ill that befalls city residents. Given the size and scope of the beetle battle, however, the city and its residents are well served by an aggressive pursuit of state or federal funds to help with replanting efforts. And there is little doubt that private citizens and businesses in the city will come together to purchase a profusion of trees to begin that process.

The fight is far from over. Officials and contractors will continue their survey and tree removal efforts for several years to come. They have no choice but to pursue their efforts to a successful conclusion, ensuring that the beetles' damage to New England begins and ends in Worcester. And residents are right to press for a return - with the help of neighbors and nature - to something resembling the neighborhoods, and seasons, they have long cherished.

Full Text

(671 words)

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Scene 1: The commander of an alien spaceship orbiting just outside Earth's atmosphere is debriefing an alien spy named ALB2 who had just returned from a mission in North America.

Commander: You were sent to assess our capability to destroy the Earth's ecosystem by studying the politics of a small Earth city.

Why did you choose this financially strapped city called Wore-cess-ter?

ALB2: It's "Wooster," sir, and our landing there was pure luck. Instrument failure forced us to remotely use one of the earthling's airport navigation systems to land our entry craft. And since our arrival had to be secret, we needed not only to find an airport that was fully equipped with the earthlings' latest navigational instruments and technology but also one that was not being used. Worcester had such an airport.

Commander: There were two of you. Tell me about ALB1. What happened to him?

ALB2: Sir, as you know we had disguised ourselves as Asian longhorned beetles, which are a known threat to the ecosystem in this part of the world. We wanted to see how quickly Worcester leaders would detect and react to our presence.

Now, sir, our political assessment machine indicated that Worcester was divided, relatively, into two major political spheres, the West Side and the East Side. Our mistake was that we didn't know that the trees on the West Side were members of the NIMBY species.

Commander: NIMBY?

ALB2: Yes sir. It is a species that is fiercely opposed to any kind of perceived parasitic encroachment, both foreign and domestic.

Commander: What happened?

ALB2: I don't rightly know how sir, but ALB1, who was assigned to the West Side, ended up in the entomology collection of one Geoff Ford, an earthling pest exterminator who co-owns a business in the city.

Commander: That explains why the West Side of the city had little or no infested trees. So that was when the leaders discovered your presence?

ALB2: No sir. In fact, this Geoff Ford won a blue ribbon award for his insect collection, the summer after he added poor ALB1 to it.

Commander: But how did you manage to sow so much destruction on your side of the city? A vast swath of the city was clear-cut of its trees.

ALB2: Sheer luck again, sir. We were helped out by the Bush administration, remnants of which are still searching for weapons of mass destruction. I infested a couple of trees and the WMD people, with complicity from city leaders, did the rest.

Commander: You are not making any sense ALB2. The Bush administration is no longer in power. Besides, the search for weapons of mass destruction was confined to Iraq, was it not?

ALB2: It is true, sir.

Commander: But why would this renegade group believe WMDs could be hidden in Worcester?

ALB2: Guilt by association, sir. Worcester has a sister city in England, and that sister city is opening a relationship with Gaza, a city in the Middle East, and Gaza is ruled by Hamas, a terrorist organization that had ties to Iraq.

Commander: How are Worcester's leaders dealing with this ecosystem disaster?

ALB2: They are beating a full retreat, sir, regrouping now and then with tactical maneuvers, such as their plan now to provide tax relief to some of the residents who have lost their trees as a result of the clear-cutting.

Commander: But how will they decide who gets relief and who doesn't? Don't answer that, ALB2. Thank you for your service.

Scene 2: The alien commander meeting with other members of his cabinet.

Commander: Gentlemen, something went awfully wrong with the mission. ALB1 is lost and ALB2 has gone absolutely bonkers.

He would have us believe that Worcester's leaders, given the dire financial times, still annually fund a fully equipped airport that they do not use, and would start a civil war by offering tax relief to only a select number of its residents. That is the greatest fairy tale I have ever heard.

Full Text

(749 words)

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WORCESTER - The City Council has taken a first step toward offering some tax relief for homeowners whose properties have been negatively affected by the Asian longhorned beetle infestation and eradication program.

By a unanimous vote, the council last night asked the Law Department to draft home-rule legislation that would allow the city to grant real estate tax abatements to owners whose residential properties declined in values from the impact of the beetles.

So far, the beetle eradication program has resulted in the cutting of more than 17,000 trees in the Greendale-Burncoat street area, leaving many once tree-lined streets virtually treeless.

Councilor-at-Large Frederick C. Rushton said the city needs to help those neighborhoods recover, but he said recovery will not happen overnight. Because the landscape in that part of the city has changed so dramatically, he said, it may take years for homeowners to regain the value of their homes.

He said the city, the U.S. Department of Agriculture and state Department of Conservation and Recreation - participating jointly in the beetle eradication collaborative - have admitted to making mistakes and wrongly taking down trees that were not supposed to be cut. As a result, the councilor said, the city needs to step up and provide homeowners some tax relief.

Of the 17,000 trees taken down, 10,000 were confirmed to be infested with the beetles, while 7,000 were suspected of being infested. As things turned out, 30 percent of those so-called "host trees" were later confirmed to be infested.

"There's no question that many of these people are going to see a substantial decrease to their home values," Mr. Rushton said. "There is no temporary fix for this. Instead of forcing people to file a claim form, the city should be proactive and go out and try to fix this. The city should be reaching out to these people first. These are unique and specific circumstances that must be addressed."

District 1 Councilor Joffrey A. Smith, whose district includes the Greendale area, said neighborhoods have been devastated by the loss of so many trees. He said that has impacted the quality of life for residents, and their home values as well.

Mr. Smith recalled a story in which a homeowner living on one of the streets that has been clear-cut recently held an open house; he hoped to sell his home. He said the homeowner told him that while many vehicles pulled up in front of the home that day, no one ever got out of their car and not one person bothered to go inside his home.

"Mistakes were made along the way in this (eradication) program, and that's clearly unacceptable," Mr. Smith said. "We need to give these people whatever financial break we can. We plan on rebuilding these neighborhoods by planting 30,000 trees over the next five years, starting in the spring. While that's a step in the right direction, that may not be enough. These people have suffered enough."

The councilor said state law currently prohibits the city from granting a real estate tax abatement under these circumstances.

He suggested the city file a home-rule petition, specific to the impact of the Asian longhorned beetle.

District 2 Councilor Philip P. Palmieri, whose district includes the Burncoat area, said the clear-cutting of trees in that area has wreaked havoc with the ecosystem. He said the significant loss of trees has displaced wildlife, such as squirrels and chipmunks, which are now seeking refuge in homes.

He added that some homes will also probably experience water runoff problems for many years because of the significant change to the landscape.

At the request of Mayor Konstantina B. Lukes, the draft legislation will be submitted to the City Council once it is prepared so the council can review it before it is filed with the Legislature.

District 3 Councilor Paul P. Clancy Jr. pointed out that tax abatements can only be filed between Jan. 1 and Jan 31 of each year. He also raised questions over whether abatements can be granted over aesthetic issues and, if so, to what degree.

As an alternative, Mr. Clancy said, the city may want to have the Assessing Department conduct a complete re-assessment of all properties in the affected area

Full Text

(575 words)

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To say residents in Worcester's Greendale and Burncoat Street areas are angry is an understatement.

They are downright livid over what has happened to their neighborhoods - ground zero in the collaborative effort to eradicate the tree-killing Asian longhorned beetle. Since January, more than 17,000 trees have been taken down through an aggressive tree-cutting program that has significantly altered the landscape.

What has drawn the ire of so many people is the way their streets have been virtually clear-cut of trees. Their once tree-lined neighborhood streets are now unrecognizable. As City Councilor-at-Large Frederick C. Rushton observed last week: "You'll be able to fry an egg right on Hillcroft Avenue because there's no trees left."

Of the 17,000 trees taken down, 10,000 were confirmed to be infested with the beetle, while 7,000 were suspected of being infested. As things turned out, 30 percent of those so-called "host trees" were later confirmed to be infested.

To add insult to injury, there have been more than a few reported instances of tree crews cutting down the wrong trees. People lost trees that never should have been cut down: George and Katherine Evans, of 14 Randolph Road, lost 21 trees taken down on their property, even though not one was found to be infested with the beetle and they had not given permission to have any taken down.

"There's a lot of anger and frustration out there, and it's justified," said Councilor-at-Large Gary Rosen.

The fact that more than 225 people packed the hall at Greendale People's Church Thursday night for a meeting on the beetle eradication program underscored that frustration. They didn't show up to heap praise on the U.S. Department of Agriculture, the state Department of Conservation and Recreation, and the city for their efforts in the beetle eradication program. Instead, residents showered them with a barrage of complaints about the program and how it has been managed.

While an official with the USDA acknowledged that mistakes have been made, and city and state officials announced a number of changes intended to make the program more transparent, it was of little solace to residents.

They want more than having new trees planted in their neighborhoods; they want some kind of reparations for the damage sustained to their properties and the expected decline in their property values.

"Apologies right now are not enough," Mrs. Evans said. "What is fair for the loss of trees that had been growing for 100 years?"

The City Council appears ready to raise that issue, as well.

Six city councilors, spearheaded by Mr. Rushton, are co-sponsoring an order for Tuesday night's council meeting that asks for a legal opinion on whether properties negatively affected by the Asian longhorned beetle infestation and the eradication program can qualify for an abatement of their property taxes.

"It's important to see if we can provide some relief to these people," said Councilor-at-Large Joseph M. Petty, one of the co-sponsors. Also joining Mr. Rushton and Mr. Petty are District 2 Councilor Philip P. Palmieri, District 1 Councilor Joffrey A. Smith, Mr. Rosen, and Councilor-at-Large Michael J. Germain.

"Those neighborhoods have pretty much been devastated," he added. "This is probably one of the biggest quality-of-life issues facing this city and we certainly owed it to them to at least look into this."

Mr. Palmieri agreed: "This is often looked at as a tree issue, but it's probably more about people than trees."

Full Text

(541 words)

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WORCESTER - The program to eradicate the Asian longhorned beetle is negatively affecting the overall ecology of the Burncoat and Greendale neighborhoods.

With the massive loss of trees, displaced wildlife, including squirrels, chipmunks and birds, are seeking refuge in homes located within the 2.2-square-mile target area, forcing some homeowners to hire exterminators to clear their dwellings of the unwanted visitors.

City officials also are wondering how much of an effect the tree loss - about 17,000 have been cut down to date - will have on run-off and other related environmental issues.

Since the beetle eradication program began in January, much has been made about what the loss of infested trees would mean to the aesthetics of the affected neighborhoods. Now, residents and local officials are recognizing that the program may have broader implications.

A number of environmental concerns were raised at a community gathering Thursday evening at Greendale People's Church and at a meeting yesterday morning at City Hall of the City Council Standing Committee on Public Health and Human Services.

Councilor at-Large Frederick C. Rushton, at yesterday's meeting, said many streets are no longer recognizable because of the tree clearing.

City Manager Michael V. O'Brien agreed, saying the effects of the program have been dramatic on the Greendale and Burncoat areas.

"This is more than a tree-loss issue," he said.

Federal officials believe at least 25,000 trees will be taken down.

Mr. O'Brien said the city has begun investigating the long-term effects of the loss of the tree canopy.

He said city officials need to know what will happen in the event of a big rainstorm and whether there will be temperature swings as a result of the loss of shade.

Some residents also have reported higher wind gusts since the trees were cut down.

Christine Markham, director of the U.S. Department of Agriculture's national Asian longhorned beetle eradication program, said that some of the effects will be mitigated because work crews did not remove the stumps of high risk trees that were taken down in naturalized wooded areas.

She said those trees that had no signs of infestation are expected to regrow, with their roots sucking up water in the soil that might otherwise pose flooding problems.

Jeffrey Daley, senior policy adviser at the Massachusetts Department of Conservation and Recreation, said officials at the Massachusetts Department of Fisheries & Wildlife have been asked to advise homeowners trying to cope with the problem of displaced animals.

Matthew "Twig" Largess, an arborist from Rhode Island who is studying the beetle problem here, said the infestation, if not stopped, could ravage the forests of New England.

He noted that December's ice storm will most likely help the beetles move into other areas because of all the downed tree debris and he called on arborists from around the country to aid authorities with the eradication program.

Environmental issues aside, Mr. Rushton said that the values of homes in the affected areas have dropped substantially since the tree cutting began and suggested that the city consider an abatement program for affected homeowners.

Councilor-at-Large Gary Rosen, chairman of the public health and human services panel, said that matter may very well be taken up by the full city council.

Full Text

(683 words)

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George and Katherine Evans have had a 30-year romance with their home at 14 Randolph St, reveling in its history - it was built for former Worcester Polytechnic Institute professor John E. Sinclair - and adding to its natural beauty with projects like the stonewall Mr. Evans wound around maple trees on the property.

Then on Feb. 9 and 10, with the brazenness of a coldhearted interloper, the Asian longhorned beetle eradication strike force dropped in, set its big tree-cutting machines in their driveway and clear-cut their half-acre property, taking a total of 21 trees.

The Evanses were stunned. They understood the nature of the city's beetle problem, but they had also understood that there were established guidelines under which infested and host trees would be taken out.

Infested trees were to be identified and marked. Property owners were to decide whether they wanted their host trees taken out. Yet, none of the trees on the Evanses' property were marked as infested prior to the arrival of the eradication team.

Eight trees were marked with a blue dot, signaling that they were host trees but not infested, but the couple didn't sign any document giving permission to take down host trees.

"It's like somebody died in your family," Ms. Evans said of the devastation that the eradication team left behind.

"Our trees were taken by eminent domain. They didn't even offer us the common courtesy of coming and telling us what they were doing. This is collateral damage, unnecessary damage that takes down healthy trees and devalued our land. This is a travesty to the citizens of a democracy."

The Evanses' story is one that City Councilor Phil Palmieri has heard from a growing number of residents and indicates, he believes, that the U.S. Department of Agriculture is following a clear-cut eradication policy in defiance of the measured approach city officials have sought.

"We have told them that we do not want clear-cutting, but clear-cutting seems to have been their solution all along," Mr. Palmieri said.

Suzanne Bond, a spokesman for the USDA, acknowledged that trees, some of which were infested, were removed from the Evanses' property without permission or advance notice.

"Clearly, there was a breakdown in the process," she said. "The ALB (Asian longhorned beetle) partnership is regretful of this incident, and we have learned some lessons from it."

Ms. Bonds insisted that the Evans case is isolated.

"We don't have any other information to lead us to believe there are other cases," she said.

"We will continue to engage with property owners and we will examine our business practices to prevent a similar case in the future."

Indeed, at a hasty meeting in Congressman James McGovern's office Wednesday night, the USDA agreed to several changes in the eradication program that will provide property owners with more advance notice and more information on the property owner's rights, obligations and options.

Some of these changes, such as sharing databases with the city on the number and location of trees taken, posting streets and areas that are about to be cleared of infested trees, seem like common sense ideas that should have already been part of the process.

Ms. Bonds points out that the beetle infestation is a serious one, and that 92 percent of city residents impacted by the problem have agreed to have host trees taken out.

No one doubts the seriousness of the problem, but you have to wonder whether everyone in that "92 percent of city residents" group really understood what they were signing away. You have to wonder whether every one of the 17,000 trees that have been removed so far needed to be taken down.

For the Evanses, the permission slips to take out their trees arrived in a letter postdated Feb. 20, about 10 days after the trees were taken and about a week after they had written a letter to the editor critical of the eradication process.

If that was an attempt to cover tracks, it was badly handled, but quite emblematic of the entire process thus far. Contact Clive McFarlane via e-mail at cmcfarlane@telegram.com

Full Text

(298 words)

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The attempt by some members of the Worcester City Council to meddle with the Asian longhorned beetle eradication program is parochial politics at its worst.

The city is fortunate that the federal government is providing the expertise and much of the money - running into the millions - to remove a serious long-term threat to the region's ecology. Yet some councilors are complaining that trees are being cut unnecessarily and that people and their representatives are being left out of the loop.

District 1 Councilor Joffrey A. Smith alleges that "No science is being applied to this." In fact, a great deal of science has informed the beetle eradication program, in the form of the career government scientists and professional foresters who are trying to rid the city of a serious pest.

District 2 Councilor Philip P. Palmieri, meanwhile, posed the classic "What's the rush?" Mr. Palmieri must understand how important it is that the beetle invasion be contained rapidly and completely. The rapid growth of the beetle quarantine area last year demonstrated just how much of a feeler-hold the beetles had established in Worcester in the years before their threat was recognized.

The councilors complain some trees marked only for monitoring have been cut down. That is true, but about a third of such trees were found, after cutting, to be harboring beetle larvae.

The loss of so many shade trees is a sad and painful chapter for Worcester, but residents and political leaders alike must accept that it is only by unrelenting removal of all affected and suspect trees that the beetle infestation can be stopped. And only a sure end to the infestation will ensure Worcester enjoys a rebirth of the urban shade trees that the community rightly cherishes and now so longs to save.

Full Text

(471 words)

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WORCESTER - It doesn't matter whether you just enjoy watching birds flock to a backyard feeder, take part in the annual Christmas bird count, or have a scientific interest in bird behavior.

The all-day 19th annual Birders Meeting at Worcester Vocational Technical High School will have something of interest for anyone interested in birds and the natural world, according to Mark C. Lynch, a longtime birder who will be one of the speakers at the forum.

Mr. Lynch said the event usually draws several hundred participants, and because it's being held in Central Massachusetts this year, he's hopeful many birders from the area will attend.

While the day's theme is Birds and Birders on our National Wildlife Refuges, Mr. Lynch's afternoon talk will look at the past 50 years of birds and birding in Central Massachusetts.

His wife, Sheila Carroll, will talk about Worcester County and the Breeding Bird Atlas project, a statewide effort of the Massachusetts Audubon Society and U.S. Geological Survey to map areas where birds nest.

Mr. Lynch said he and his wife will talk about the changes that have occurred as birds such as the mockingbird, once commonly associated with the South, have moved north.

Another example of change is the evening grosbeak, Mr. Lynch said. A very common sight at winter feeders decades ago, the evening grosbeak now nests in Massachusetts, but is spotted much less frequently in the winter.

The program, from 7:45 a.m. to 4:45 p.m. Saturday, includes a variety of talks on the state's national wildlife refuges, Lee Allen Peterson's reflection on his father, Roger Tory Peterson, and his legacy to birding with the definitive "Field Guide to the Birds."

Other speakers will talk about birds and climate change and invasive plants and birds. Massachusetts Audubon Society ornithologist Wayne Peterson will talk about where and how birds sleep.

Mr. Lynch said anyone with an interest in the natural world would find something of value from the participants and vendors at the event.

A topic of particular interest to Worcester birders will be the impact of trees removed as a result of Asian longhorned beetle infestation.

"I'm also anxious to see both the immediate and long-term impact to bird nesting sites of the Dec. 11 storm, where the crowns of many trees were snapped off by the weight of the ice," Mr. Lynch said.

"It's like a one-two punch for birds that might have nested in those trees," he said.

Registration information is available online at:
http://massaudubon.org/PDF/birders_meeting/2009/17th_reg.pdf.

The forum is sponsored by the Massachusetts Audubon Society in conjunction with the U.S. Fish and Wildlife Service, with support from Houghton Mifflin and Birds and Beans coffee.

Full Text

(994 words)

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WORCESTER - Richard A. Segersten stood outside his Inwood Road home yesterday afternoon with his neck craned upward.

The tree removal crew made quick work of the tree in the front yard next door; a few swipes of the chain saw here and there, and it was reduced to a street sign-height post. Mr. Segersten said the huge tree in his backyard was marked for removal, either yesterday or within the next few days.

Like many residents in the area most affected by the infestation of the invasive, tree-killing Asian longhorned beetle, Mr. Segersten was both resigned to and anxious about having trees

removed from his property. He understood why it had to be done. After all, the area near northern Burncoat Street and Quinsigamond Community College has seen its fair share of devastation in the past.

"That tree was a sapling just after the tornado," Mr. Segersten said, pointing to the behemoth in his backyard that has been marked for removal. "It was maybe six feet high."

Mr. Segersten said he was old enough to remember the 1953 tornado, and said the aftermath of the tree cutting reminds him of the destruction back then.

"Although it was trees and houses that were destroyed," he said.

Mr. Segersten's neighborhood is what the Asian Longhorned Beetle Cooperative Eradication Program is calling Phase 3 of the initial tree removal program. It is the last phase of the initial tree removal in the highly infested Burncoat/Greendale section of the city.

Suzanne M. Bond, a spokeswoman for the U.S. Department of Agriculture, said Phase 3 will officially go into effect Monday, although she said some work from earlier phases, including stump grinding, debris pickup and spot tree removal, will continue.

She said 13,028 infested and high-risk host trees - trees that may not be infested, but are species the invasive beetle tends to bore through - have been removed so far from the regulated area, which includes the city and parts of Shrewsbury, Holden, West Boylston and Boylston. She said 45 percent of the trees removed have been from 2 to around 5 inches in diameter at chest height.

"It's not 13,000 mature, towering trees," Ms. Bond said.

She said 92 percent of homeowners have returned permission slips to have high-risk host trees and infected trees removed from their property. The high return rate reflects residents' understanding of the seriousness of the problem, she said, and 560 compliance agreements have been signed by companies doing tree-related business in the regulated area.

Overall, the process is moving ahead of schedule. The cooperative had expected to be done with tree removal in April, but said it appears crews will be done with Phase 3 in March. Then the eradication effort will go back to intensive survey efforts in the area to try and get a better sense of the scope of the infestation, she said.

It's hard to overstate the utter transformation taking place in the northern section of the city. Stumps and woodchips line the streets. Newly impeccable lines of sight reveal views across entire neighborhoods, most with front and back yards now barren and exposed.

"It's almost a surreal experience to drive into my neighborhood and up to my house with virtually no trees lining the streets," said Fales Street resident Kate Davenport. "It looks like a new housing development with old houses."

Ms. Davenport's neighborhood is across the street from where some of Phase 3 will begin in earnest next week. Many trees that have not been cut down still show damage from the December ice storm that also ravaged the area. Twigs and small branches and woodchips are just about everywhere. Ms. Davenport said it has been a rough couple of months.

"I've lived here for 10 years, and I've never seen the neighborhood look like such a mess," she said.

Fales Street resident and self-proclaimed tree-hugger Suzanne Swedberg doesn't have much to hug anymore.

"It's just empty, it's depressing," Ms. Swedberg said. "I loved the trees in the spring."

She said she did not realize how much privacy the trees provided in her front and back yard, and joked that she can now see in the window of a friend up the street that was previously blocked from view. She said she plans on planting some more trees in the spring.

"I can't live in a plain, boring, flat lot," she said.

Clearly trying to wrest some sort of sense of optimism out of the unfortunate situation in their neighborhoods, Ms. Swedberg, Ms. Davenport, and Mr. Segersten all pointed out unexpected bright spots that could come of the tree-cutting.

Ms. Davenport said she looks forward to seeing how big her flower and vegetable garden gets with a lot more sun this summer; Ms. Swedberg said a neighbor is starting a sort of neighborhood history project; and Mr. Segerstern said he looks forward to a lot less raking in the fall.

Mr. Segersten, who grew up with the giant tree in his backyard, said he'll ultimately take the cutting in stride.

"It's time," he said. "In forestry, the big ones go, and the young ones stay. They have room and space to grow and replenish."

City officials, along with representatives from the USDA and the state Department of Conservation and Recreation, will attend the Burncoat/Greendale Neighborhood Watch meeting at 5:30 p.m. March 5, at Greendale People's Church, 25 Francis St., Fisher Auditorium, to update residents on the eradication program and answer questions.

Credit: TELEGRAM & GAZETTE STAFF

[Illustration]

PHOTOS; MAP; (PHOTOS) T&G Staff Photos/TOM RETTIG (MAP) T&G Staff; Caption: (1) Richard A. Segersten of Inwood Road stands in front of his house yesterday prior to the removal of trees on his property that are infested with the Asian longhorned beetle. (2) Suzanne Swedberg, standing in front of her home on Fales Street, holds a photograph showing her house before the removal of trees infested with the Asian longhorned beetle. (MAP) Tree removal to fight Asian longhorned beetle

Full Text

(963 words)

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Kathryn E. Aroian

Certified Arborist

Cedar Lawn Tree Service Inc., Ashland

Age: 33

Family: Single

Native of: Worcester

Current residence: Hopkinton

Time in current job: Three years

What do you do?

"I assist people who are making decisions about caring for their property; trees, both large and small, and landscape plantings. Often I am trying to diagnose insect and disease problems or advising on pruning or if removal is a good option for them. I help people decide what plantings they should install, depending what they're trying to go for.

"At my company I have a fairly big role coordinating spray services. Spray services would be for winter moth, which, inside Route 495, is an invasive pest. Also, the hemlock woolly adelgid. Those insects can overtake the vitality and health of a tree. Horticultural oil would be a safe way to manage it.

Do you prune and climb?

"I have been trained to prune and climb, but that's not the most economical thing for my boss to have me do. I do the pruning at my house but I don't do a lot of the large tree work."

How did you get into this field ?

"I was working for Nielsen TV ratings, and I really was looking to change careers and not have to sell something I didn't believe in. When I saw the advertisement for this company, I was impressed by the size and scope of the services they were offering. It was an opportunity to work outside. I've been an avid gardener and camper, and it seemed like a natural fit. The great outdoors is very dear to my heart. Since starting here I went to UMass and got my BS in urban forestry."

A lot of trees will be cut down to fight the spread of the Asian longhorned beetle. Why?

"The Asian longhorned beetle has been discovered in other areas of the country. The eradication has been rather severe. While they're modifying on a continual basis how to proceed with the program in Worcester, they're being more selective on what trees to remove. In past outbreaks they've removed all host trees. In Worcester they are now removing infected trees and scouting host trees. When the city was inventoried in 2006, 80 percent of street trees in the city were Norway maples, which is a host tree.

"I grew up in Greendale, a mile and a half from ground zero. I think most of those trees are infected. When I came back here after the Dec. 12 ice storm, I saw so many trees damaged. These people were already going to lose a lot of trees. Now, all the tops are broken. Some people may not own any trees."

Is there any other treatment for the beetle other than removing the tree?

"Once a tree is infected with the beetle, it has to come down. Any sign that eggs were laid or any exit holes, it's out of here. For host species with no sign of infection, there is an insecticide that can be injected into the trunk or through a soil application. ... The tree takes it up through the roots or inside the xylem, and it goes through the leaves and bark. When an insect (that the insecticide is designed for) ingests it, it kicks the bucket."

Why is the Asian beetle such a problem here?

"The reason the Asian longhorned beetle has so much potential is that it has a wide range of host species. It doesn't move very fast, but it will knock out a tree by tunneling. It makes large holes inside. You may never know the tree is infected, but it eventually stops getting enough water and food. You don't see it so much in evergreens and oaks. It's mostly maples, ash and willows. As it spreads, if people start taking wood out of this area, it's going to spread and have an economic effect. Now, the city is going to have to plan on replanting. We don't want to end up with another monoculture. There are a lot of varieties of trees people can get.

"All the street trees in Worcester are a monoculture. So, diversity is important. It's also good for the birds."

What's the best part of your job?

"I think that working with people to take care of their favorite trees and plants is rewarding. ."

What's the worst part?

"I guess, the busiest season, April, May and June. I'm at work so long I'm doing my own gardening by the light of the moon. I'm mulching by the outside light. That's an ironic fact of my job. I got into it because I'm so enthusiastic about outdoor activities. I'm generally swamped. I took my vacation in November this (past) year."

What have you learned from this job?

"In the course of being at this job, I can look out the window and know what kind of tree I'm looking at. I can make changes that I feel good about in the community. It's not like planting trees along the street as a volunteer. But people are asking me for my opinions to strengthen the value of their landscape, aesthetic value. I knew it before, but there is such a gamut of what people think about trees. Some think they're a nuisance. They'll call to cut a tree because they don't want to rake leaves. That's a funny concept for me that I hadn't considered before."

Compiled by reporter Martin Luttrell

To be featured in or to suggest a job profile, send information to Dave Greenslit, Telegram & Gazette, Box 15012, Worcester, MA 01615-0012, or send an e-mail to

Full Text

(688 words)

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WORCESTER - First there was shock, then anger, and eventually acceptance that 6,000 trees

were affected by the Asian longhorned beetle and needed to be removed.

Now there's hope.

Yesterday's launch of the Worcester Tree Campaign was a standing-room-only event in Harrington Center at Quinsigamond Community College full of those interested to know what they could do to make Worcester, Shrewsbury, Holden, West Boylston and Boylston even better than before the Asian longhorned beetle infestation.

"As tragic and difficult as this is, it's an opportunity to make our urban forest stronger and better," said U.S. Rep. James P. McGovern, D-Worcester, who helped organize the event with Lt. Gov. Timothy P. Murray.

Worcester Tree Campaign is a five-year plan to replant 30,000 trees on public and private property. It's the first effort to get the public involved in what has been a federally led challenge.

"From the beginning (of the Asian longhorned beetle discovery), people have been

asking 'How do we get involved?' It's time for a city and central Mass-wide network for people to plug into without bureaucracy," Mr. Murray said.

Former Regional Environmental Council executive director Peggy Middaugh and Paul Belsito, who was former state Sen. Edward Augustus' Worcester district director, will coordinate the new partnership of federal, state and local efforts. A special event is in the early stages of planning, but will be held in April around the environmental holidays Earth Day, April 22, and Arbor Day, April 24.

Worcester Tree Campaign brings together the expertise of federal and state conservation divisions, the organizational tools of municipalities and manpower of the community.

"In a kind of morbid way, the best place for the Asian longhorned beetle to show up in Massachusetts is Worcester," said Eric Seaborn of the Massachusetts Department of Conservation and Recreation's urban and community forestry bureau.

"The professionalism of city management, the interaction of communication between its agencies and the commitment of its community gives this reforestation effort many advantages."

Yesterday, many offered ideas such as replanting trees where they won't interfere with lawns or utility wires. Lance McKee of Circuit Avenue offered that a local ordinance should determine how close a tree can be planted to a building so that it can't obstruct solar paneling.

Noting that the Mohegan Council Boy Scouts will celebrate its 100th anniversary next year, Executive Director Jay Garee said the replanting would give the Boy Scouts a great opportunity to shepherd its good will through the energy of its 4,700 scouts.

The Worcester Tree Campaign also will help raise the 50 percent required to match \$24.5 million in USDA federal dollars through 25 cent donations of school children, the funds of

Worcester's larger community foundations, such as the Nathaniel Wheeler Trust, or tap into a trust run by the state Department of Conservation and Recreation

fund of donations that will be tapped later this spring to purchase trees.

Even before the beetle eradication program began last year, organizers said the city was experiencing heavy losses in the tree canopy. Evelyn Herwitz's 2001 book, "Trees at Risk: Reclaiming the Urban Forest," which estimated that the city had steadily lost publicly owned trees through much of the 20th century as the numbers fell from 50,000 to 20,000 at the turn of the millennium was referenced several times and copies of the book were available for a \$15 donation to Worcester Tree Campaign.

According to Ms. Herwitz's book, the Asian longhorned beetle is the latest threat to Worcester's urban landscape. There was the chestnut blight in the early 1900s, an ice storm in 1921, Dutch elm disease of the 1930s, the hurricane of 1938 and the tornado of 1953, both of which affected parts of the same Burncoat neighborhood attacked by beetles.

The idea: Worcester Tree Campaign is a five-year plan to replant 30,000 trees on public and private property.

Raising money: The Worcester Tree Campaign also will help raise the 50 percent required to match \$24.5 million in USDA federal dollars.

Full Text

(757 words)

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To be honest, I had very little appreciation for the tree that stood on the sidewalk in front of my house.

It was a city tree, and I viewed it as an extension of City Hall's proclivity to saddle residents with services that increase rather than lower our burdens.

This city tree shaded my front lawn and was dedicated to killing the grass I stubbornly put in every year. Its roots buckled my sidewalk, causing among other things the inability to draw a decent outline for a hopscotch game for my kids.

Its branches raked across the roof of my porch, causing leaks. Twice this year its fallen branches damaged my property, first taking out the right side of my fence and then the left side.

When we got hit by the Asian longhorned beetle, I silently prayed that my city tree would be one of the ones taken out.

So, I am no tree-hugger, but I have to admit to a sinking feeling as I watched the tree-cutting machines and their attendant humans take out my tree and the others condemned on my street Monday.

Sixteen trees fell that day on my short sleeve of a road.

It was a cold, clinical job. A harness was placed around the uppermost branches to hold in place a main limb while it was being sawed or around the trunk of the tree while it was being severed

from its roots.

The severed trunks and sawed-off limbs are prostrated at the mouth of a growling machine that grabs and chips and spits bits of the convulsing limbs, trunks and branches into a covered container.

And when the machines and their attendant humans had destroyed in one morning what nature had taken generations to create and nurture, I looked up and down my street and realized that the machines had not only taken the trees, they had also taken the street I had known for so many years.

It was suddenly clear now how the trees had softened the lines on the street, how they had framed each house uniquely and protected each individual's space from the full stare of the sun and other prying eyes.

It is the same stretch of road, the same sidewalks, the same houses, but the lines are now different - harsher, more confrontational; the space feels uncomfortable now, too open, too public.

I guess I will get used to it in time. In time I will forget about how it used to be.

But I can't help but think how the de-treeing of my street is such a microcosm of the times - the subprime mess, the banking scandal, all involving gatekeepers falling asleep at the switch, allowing some insidious parasite to eat away at the foundations of our lives.

No one notices the danger until the foundation crumbles, and then it is too late to save what was. We can only try to manage the new reality. They say experience is the best teacher, and the assumption is that we often learn from our mistakes.

I can't speak for the powers that be, but will the loss of 16 trees on my street make me more conscious of our ecosystem, the sacking of a rain forest in Brazil?

It should, perhaps, but I honestly don't know.

With everything on my plate these days, I was actually thinking of capitalizing on the loss of my city tree by petitioning for an abatement of my property tax. I think I could make a fair case that taking so many trees off my street reduces my property value.

In any case, I am sort of relieved that I won't have to worry about my city tree forcing me to spend money that I don't have on my roof and on my lawn anymore.

And for me to feel that way is a terrible thing, because I truly understand a little more now what I had in my city tree. Its departure will diminish the annual fall color show on my street.

My bedroom with its windows next to and level with the canopy of my fallen city tree was a private theater to the morning symphony of birds using the tree to usher in spring or a new day.

The voices of the birds will not be entirely silent, at least not yet, but their songs will be coming from somewhere farther off, like a dying serenade, like the way so many things are fading now - a good job, an honest politician, the good life.

Full Text

(1247 words)

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WESTMINSTER - Tree cutting in Worcester and surrounding communities because of Asian longhorned beetles may be an environmental tragedy, but the hardwoods that once graced people's yards and defined local avenues will find new value in lighting and heating homes in the Fitchburg area.

The loss of trees by the time the beetle eradication program is complete is expected to rewrite the landscape of Worcester and parts of Holden, Boylston, Shrewsbury and West Boylston, but the trees lost are not being wasted. The trees being cut will replace thousands of gallons of oil that might have been used to generate electricity.

Since Jan. 5, trucks loaded with wood chips have been traveling in a steady flow from Worcester to the Pinetree Power Fitchburg storage area on Route 31 in Westminster. There the chips are being held for use when the plant needs extra fuel to keep the boiler in its large generator burning.

The wood is not good for lumber because the risk of spreading the destructive beetles, and it is of limited use for firewood because the wood cannot be taken out of the quarantine area.

But the bulk of the now junk trees will go to a higher good: creating energy for the electric grid.

Chips from most of the beetle-infested trees being ground up in Worcester are being shipped either to Pinetree Power in Westminster, a plant owned by Suez Energy Generation, or two plants in Maine, Sappi Fine Paper North America in Westbrook and Boralex-Livermore Falls in Livermore Falls where they will be burned to create energy. The trees are being ground up in Worcester into matchbook-size pieces to ensure any beetle larvae in them are destroyed. Northern Tree service is then shipping the trees it harvests to the Pinetree power plant while Mayer Tree Service ships to Maine.

Northern Tree is one of many tree services and logging companies supplying the plant with the raw material it uses to create more than 17 megawatts of energy per hour. The company also is getting a bonus of wood chips this winter because of

trees and branches brought down by the December ice storm in communities outside the quarantine area.

How much wood the Westminster plant will receive from the beetle-infested trees is uncertain. It depends on how many trees are cut down and how long the tree services will be cutting this year.

Wendy Fox, a spokeswoman for the state Department of Conservation and Recreation, said it is estimated that 9,000 trees, including infested and host trees, will be cut by April in the quarantine area. Host trees are those that the beetles favor in seeking something to infest, including those not yet infested. She said the cutting has to stop in April because that is when the beetles will become active and there is a risk they could escape from the trees they are

living in during the cutting and cause more damage.

Once cut, the trees are being ground up as a precaution. Cutting trees for lumber in the quarantine area is prohibited and even removal of firewood from uninfested host trees is prohibited. Storing firewood from uninfested trees in the quarantine area is allowed. Taking chips out of the area is acceptable once they have gone through the grinding process required by state and federal biologists.

"Once they are chipped to one inch, they can't sustain any Asian longhorned beetle larvae," said Suzanne M. Bond of the U.S. Department of Agriculture.

The tree-cutting program escalated this year after the Dec. 11-12 ice storm that brought down limbs and trees throughout the region. Special precautions were taken to ensure wood from downed limbs did not leave the quarantine area. The first areas being cut in the tree removal program are along Greendale Avenue, Fairhaven Road, property owned by Quinsigamond Community College and Kendrick Field. Compromised trees in that 2.2 square mile area are being cut and chipped.

At Pinetree Power, James C. Dammann, a procurement forester for Suez Energy, owner of the Westminster plant, said the beetle-infested tree wood chips will become part of the 20 to 25 tons of wood received there each day to be burned to produce energy. The beetle wood in the plant's storage area is being mixed with wood from other sources to be used as needed to power the plant's generator.

"It's actually a higher quality wood than much of the other wood," Mr. Dammann said.

The trees being cut to eliminate the beetles are all hardwoods: maples, ash, birch, horse chestnut and other trees favored by the destructive insects. The chips normally sent to the plant come from a variety of grades of wood.

Pinetree Power gets about 90 percent of its wood from sources in Massachusetts and about 5 percent from Vermont and New Hampshire. All of it is renewable energy. A report by the state Executive Office of Energy Affairs in 2007 found that there are about 3.9 million acres of timberland within a 61-mile radius of Worcester and new timber growth still exceeds that which is removed by 1.4 million tons per year.

Mr. Pannell said wood burned by the Pinetree Power plant replaces 32,380 gallons of number two fuel oil per day or 11.8 million gallons per year. The power from the plant, typically 17.3 megawatts per hour, is transmitted to Unitil's Flag Pond substation. It is then distributed by the utility to its customers, including residents and businesses in Fitchburg, Lunenburg, Ashby and Townsend. The plant provides enough energy each day to power about one-third of Fitchburg homes and businesses while using about 180,000 tons of wood per year. It also is fueled on a smaller scale by methane from the nearby Fitchburg landfill and by cubes of recycled paper from paper mills.

At present, Pinetree Power is not qualified to meet the state's renewable energy portfolio standard, but plant manager Tom Pannell said changes in the law under consideration would permit the company to make changes to meet that standard. It burns almost pollution-free, he said. Little but steam gets up its 180-foot-tall smokestack and before the wood gets to the

boiler, using a large magnet, the plant pulls out for recycling any metal mixed in with the chips as they go down a conveyor. Even the ash from the burning process can be reused for some agricultural purposes, but because the plant was built before 1998, it falls under a different standard from

more modern plants and would have to be upgraded to qualify for the state's renewable energy standards.

The beetle-tree

wood is a welcome addition to what Pinetree Power takes in. Mr. Dammann said although wood supplies are plentiful in the winter, when spring hits the supplies will drop as mud will make it difficult for forestry companies to operate in the woods.

The supply of wood also depends on economic factors. He said if the price is too low, wood lot owners are likely to leave their trees standing, rather than sell it for too little money.

The stored wood helps fill the gaps.

Full Text

(756 words)

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As the chainsaws and wood chippers scream across the Greendale and Burncoat sections of the city, the magnitude of the Asian longhorned beetle infestation is becoming painfully clear. The current federal recommendation is to remove 20,000 trees in those neighborhoods and surrounding towns, effectively clear-cutting large swaths of our urban forest.

Streets that for generations were sheltered by a mature green canopy are being stripped bare. Favorite trees that have stood for decades in yards and along sidewalks are being taken, and with them part of the fabric of the neighborhoods will be lost. The tree damage done by the recent ice storm will pale in comparison.

We understand the problem, and we accept the need to act to protect the great hardwood forests of the Northeast. While we must continue to monitor the infestation and make sure the tree-cutting plan is reasonable, that is not enough. Now is the time to mobilize for what must happen when the chainsaws fall silent and the trees are gone. And that, we believe, is an aggressive reforestation program that will restore, for future generations, the green streetscapes of Worcester and the affected towns.

Government can't do this alone. These are difficult economic times. Government budgets at all levels are tight and will get tighter. Cities and towns are struggling just to maintain basic public services and don't have the resources the reforestation will require.

That's why we believe this crisis requires a community-wide response. It is up to all of us: residents, business owners large and small, elected officials and leaders of the many non-profit institutions in our community to step up and come together in a new spirit of environmental stewardship to restore our urban forest.

In her important book "Trees at Risk, Reclaiming an Urban Forest" (Chandler House Press 2001) Worcester author Evelyn Herwitz documents the history of Worcester's urban forest, its contribution to the quality of life in our city, and how community leaders in years past rallied to the cause of planting trees to enhance the city's environment.

The first great reforestation effort came in the middle of the 19th century, as civic leaders planted thousands of trees to mitigate the impact of the Industrial Revolution. Others followed in the 20th century as the community mobilized to replace thousands of trees lost to Dutch Elm disease and to the devastating hurricane of 1938 and tornado of 1953.

For most of our lives, we have enjoyed a city of mature trees because of the foresight and commitment of those previous generations. Now it's our turn to make sure our community stays green - and our work must not be confined to the Burncoat and Greendale neighborhoods or the bordering towns.

Long before we ever heard of the Asian longhorned beetle, public trees all across Worcester were in crisis. Herwitz's research found that over the past 30 to 40 years, Worcester lost nearly half of its publicly owned trees, and the decline was accelerating.

Can you imagine this community without tree-lined streets, small neighborhood parks, or large wooded public spaces like Elm Park, Green Hill Park, Nick's Woods or Broad Meadow Brook? Neither can we. But that's what we face if we sit back and do nothing.

If there is a glimmer of a silver lining to the beetle infestation, it is a renewed focus on the plight of our urban forest. Now, it's up to all of us to plant the seeds that will blossom in future generations, so that our children and grandchildren will live in a place filled with healthy trees and all the benefits they provide.

As a first step, we will convene a public meeting in the coming weeks to engage the community in this discussion, propose a framework for the reforestation effort and set into motion a plan to meet this challenge.

We imagine a community-based effort that works closely with federal, state and municipal officials and reaches from grammar schools to college classrooms, from corporate boardrooms to coffee shops, and to the front doors and porches of homes in every neighborhood of the city and affected towns.

We challenge the community to commit itself to planting 30,000 trees over the next five years. Admittedly, it's a lofty goal, but the good news is that the people of Worcester have faced similar challenges before, and have risen to the occasion. Now, the obligation is ours, and we must do our part.

Timothy P. Murray is lieutenant governor of Massachusetts. James P. McGovern is U.S. Representative for the 3rd Massachusetts District.

Full Text

(956 words)

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The following correction was published Jan. 15, 2009 in the Telegram & Gazette.

Peggy Middaugh, who is helping implement a program to replace trees lost to the Asian longhorned beetle infestation, is no longer executive director of the Regional Environmental Council. Because of a reporter's error, she was described as executive director of REC in a story in Monday's Telegram & Gazette.

WORCESTER - While the federal government is going to help replace many of the thousands of trees coming down to eradicate the Asian longhorned beetle in Worcester and four adjacent towns, a homegrown initiative with additional tree plantings over the next five years is being organized by community groups.

Lt. Gov. Timothy P. Murray and U.S. Rep. James P. McGovern, D-Worcester, who have been working with local organizations to launch the effort, said the public-private partnership will involve school groups, neighborhood organizations, local environmental and civic and business groups to raise money to plant on streets, in yards and park areas.

"We think it is time to undertake a massive public-private tree planting initiative and we are going to call on community and neighborhood organizations and foundations to participate," said Mr. Murray, a former Worcester mayor.

"Government can't do this alone, and we think people are galvanized and want to do something," in response to the extraordinary tree-cutting to combat the beetle, he said.

"The goal is to plant 30,000 trees over the next five years," Mr. Murray said.

The program is being launched just as the state and U.S. Department of Agriculture have begun cutting down as many as 300 trees per day to deal with the infestation. Residents are seeing neighborhoods long lined with treasured trees being cut nearly bare in some places, officials said.

While initially some 6,000 infested trees have been targeted, state officials have said as many as 16,000 trees could be cut down over the next several years in Worcester, Shrewsbury, West Boylston, Boylston and Holden.

In the Burncoat area of the city, where substantial cutting got started last week, Mr. Murray said, "We can now see the visual impact from what is coming down and it is stunning."

"Everyone in the city of Worcester and the impacted towns can relate to what is at stake here," he added.

"We are not going to just sit by and sulk. We are going to respond in a positive way," Mr. McGovern said, adding that he and Mr. Murray will try to maximize state and federal contributions. Over the next five years, the congressman said, the federal government expects to spend more than \$100 million on cutting and replacing trees in the project area.

Mr. Murray and Mr. McGovern together are donating \$10,000 from their campaign funds to seed the project and have committed to raising money from local groups and businesses.

Mr. Murray said the initial planning and development will be coordinated by Peggy Middaugh,

executive director of the Regional Environmental Council, and Paul Belsito of Worcester, most recently an aide to former state Sen. Edward M. Augustus Jr.

State and federal agencies are also expected to assist in the project.

While the USDA plans to replace cut trees with small, young saplings, residents are concerned it may take decades for them to grow to full size. Mr. Murray said state and federal money also has limitations, and the supplemental public-private effort will provide more flexibility over the number, size and types of trees that can be used to restore the urban forest.

Mr. McGovern said the supplemental community effort will allow neighborhoods and communities to take control of the tree replenishment steps instead of having "someone from Washington" determining what trees will be planted and how many.

"This will let neighborhoods and cities and towns be involved in deciding what happens next," Mr. McGovern said, while also providing educational and environmental benefits that will be long lived.

A community meeting will be held Jan. 29 for people to offer ideas and guide the program's development, Mr. McGovern said.

Mr. Murray said talks are under way with the Massachusetts Audubon Society, the Greater Worcester Land Trust and REC for using their organization's nontaxable contribution accounts for donations. The donations will be raised in a variety of ways, from lunch counter cans to school drives and potluck suppers, as well as donations from local businesses and civic organizations.

"No contribution of time or money will be too small," he said, and area children and adults are going to be able to pitch in, "get their hands dirty" and do some of the actual planting work.

Even before the beetle eradication program began last year, Mr. Murray said, the city was experiencing heavy losses in the tree canopy that has accented neighborhoods, shaded streets and sidewalks and enhanced the quality of public and private property across the city.

He cited local author Evelyn Herwitz's 2001 book, "Trees at Risk: Reclaiming the Urban Forest," which estimated that the city had steadily lost publicly owned trees through much of the 20th century as the numbers fell from 50,000 to only 20,000 at the turn of the millennium.

Fiscal restraints limited Worcester to replanting only one tree for every four that were removed or died.

That call to restore the city's trees, Mr. Murray said, showed a need for the tree planting push even before the beetles from Asia were discovered last year.

He said community tree planting programs were undertaken in the past in Worcester, once after a major ice storm in 1923 and again after the 1953 tornado destroyed trees in a wide swath across the city.

Full Text

(746 words)

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WORCESTER - The crack of tumbling timber sounded in Worcester neighborhoods yesterday as crews began removing trees infested with the destructive Asian longhorned beetle.

Cranes wedged into driveways and backyards lifted limbs and sometimes entire trees into cleared spaces so that workers could feed the wood into chipping machines, a process intended to destroy the insects' larvae and halt the spread of the pests that have doomed about 6,000 area trees.

"Cutting down trees and chipping them are the only ways we can make sure we catch the beetle at all its life stages," said Suzanne M. Bond, a spokeswoman for the U.S. Department of Agriculture.

The sawing and chipping marked the newest phase in federal, state and local officials' efforts to halt the spread of the beetle, a native of Asia that was found in Brooklyn, N.Y., in 1996 and may have entered the United States in wood pallets. The insect was discovered in Worcester in August 2008, and authorities have declared all of Worcester and parts of Holden, West Boylston, Boylston and Shrewsbury a regulated area. Wood material may not be moved out of the area.

In recent months, workers used red paint to mark infested trees for removal and waited for cold weather to kill off the adult beetles. The state hired contractors to cut down and chip the trees, and that work is expected to take five to six weeks.

A total of \$24 million in emergency funding has been budgeted for expenses in the first year, according to Ms. Bond.

Yesterday, 10 tree removal crews were scheduled to work in a 2.2-square-mile area including Quinsigamond Community College, Kendrick Field off Brooks Street and nearby Mount Avenue. At Quinsigamond Community College, workers driving large trucks scooped up branches and deposited them onto a growing debris pile in a parking lot.

"We do have a lot of fine trees," said Victor A. Somma Jr., director of public affairs and community relations for the college, which was told that 100 trees were marked by authorities. "Unfortunately, the infestation went beyond what we originally thought."

Workers in hard hats and reflective vests spread out across the Kendrick Field park property. Some climbed high into trees to attach lines that cranes used to pull over the trees. Workers also fed branches and trunks into a chipper that turned the wood into small pieces. Ms. Bond said the chips were destined for co-generation plants in Fitchburg and Maine where they would be burned to generate power.

On Mount Avenue, another crane maneuvered tree limbs around homes and down to a worker who fed the wood into a chipper. Other workers walked through backyards and climbed into trees.

James P. Doherty, who lives at 3 Mount Ave., called the loss of the trees "sad" and said he thought it unfortunate that people had not been educated earlier about the beetles so they could have detected the insect before so many trees became infested.

He was "pretty much just waiting for this day to come," Mr. Doherty said. "Knew it was

coming."

Officials have offered property owners in the 2.2-square-mile area the option of having "host" trees removed, too. Host trees are those that have not

been infested and are favored by the beetle. Ms. Bond said that as of Sunday night, the USDA had received permission slips from 777 property owners authorizing the removal of "high-risk" host trees and 94 slips from owners requesting that only infested trees be removed.

The beginning: The sawing and chipping marked the newest phase in federal, state and local officials' efforts to halt the spread of the beetle.

The cost: A total of \$24 million in emergency funding has been budgeted for expenses in the first year.

Full Text

(766 words)

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WORCESTER - The Asian longhorned beetle will begin reshaping parts of Worcester tomorrow as workers start cutting and removing the first of thousands of trees infested with the invasive Chinese insect.

Three sections of the city will be the initial focus for tree removal as workers from Northern Tree Service and Mayer Tree Service take chain saws and chippers to infested trees in a 2.2-square-mile area in hopes of halting the beetle's spread.

Workers will begin felling trees on Fairhaven Road and Greendale Avenue, on Quinsigamond Community College property and at Kendrick Field, according to the federal-state-city partnership overseeing the eradication effort.

Several Northern Tree Service trucks were visible in the Greendale section yesterday, and residents said tree workers carrying clipboards had been in the neighborhood Friday.

"I figured something would be starting soon," said Ronald Rucci of 133 Fairhaven Road. "It looked like they were having a meeting and discussing plans."

Five months after the pest was discovered in the city's Greendale section, the first of approximately 6,000 trees will be cut down and chipped into half-inch pieces, part of a \$24 million effort to keep the beetles from spreading into nearby hardwood forests.

A large tree in front of Mr. Rucci's property is marked with the red-paint dot of a tree destined to be removed. Mr. Rucci said his neighbor had several trees marked, including one that came down on top of Mr. Rucci's chimney during the Dec. 11-12 ice storm.

"All the beetle trees came down in the storm," he said. "It's a good thing that they are taking them down, because any tree with giant holes is a big liability. If the tree in front of my house came down it would be devastating. Winter just started, and we don't want round two to be worse."

The last major Asian longhorned beetle infestation in the United States was in central New

Jersey. The eradication effort there included cutting down not just infested trees but tens of thousands of healthy trees, called host trees, meaning hardwoods vulnerable to the pests that happened to be within a quarter-mile of infested trees.

In Worcester, for now, only infested trees are targeted for removal. Officials, however, are permitting residents in the 2.2-square-mile area to also have host trees removed at no cost.

Lining the front entrance of Quinsigamond Community College are 19 trees and all are marked to come down. Posted at the corner of West Boylston Street and Greendale Avenue, a sign warns "Asian longhorned beetle eradication in progress. No parking. Local traffic only."

All along Greendale Avenue, many trees are marked with a red dot, including one at Leeds Street. William M. Falcone of 108 Leeds St. said he will miss the shade that the big tree in front of his house provided in the summer but admitted that many of the trees on the street no longer sprouted leaves.

"I definitely think the trees were compromised by the beetles," Mr. Falcone said. "Something was making them suffer."

Officials say it will take up to 10 years to complete the eradication process within the full 64-square-mile regulated area, which covers all of Worcester and parts of Shrewsbury, Boylston, West Boylston and Holden.

Work in the first three areas will likely take five or six weeks, weather permitting, according to the Massachusetts Asian Longhorned Beetle Cooperative Eradication Program, a partnership that includes the U.S. Department of Agriculture, the state Department of Conservation and Recreation, the U.S. Forest Service and the city of Worcester.

The partnership has contracted with two companies to provide 10 tree removal crews. Each crew has a chipper truck, a bucket truck, a chipper machine and three or four workers. Tree stumps will also be ground to ensure all life stages of the insect are addressed.

All tree removals and chipping will be performed at no charge to the homeowner. Residents with infested trees were notified by certified mail and asked to return a signed release form. Door-hangers announcing the operations have also been distributed to impacted homes, and Asian longhorned beetle program employees have visited communities to answer questions and collect the property access permission forms required for tree removals on private property.

Jerry Sealey of 44A Greendale Ave. said he signed the papers for the removal of two trees on his property and that he had received several communications from officials both on paper and in person.

"Everything has been going good," Mr. Sealey said. "It stinks to lose the trees but we've got no choice."

Full Text

(1151 words)

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WORCESTER - Red paint subtly colors trees that line streets and yards throughout the northern side of the city. A death sentence for those marked with it, the paint identifies trees infested by the Asian longhorned beetle.

In the months leading up to an announcement officials may chop down as many as 20,000 infested and susceptible trees within a 2-square-mile section of the Burncoat and Greendale areas, many local residents crossed their collective fingers that their trees could be saved. Others saw the beetles had taken a toll on their yard, and look forward to being rid of what they view as an eyesore. Mostly, however, the impending removal of 3 percent of the quarantined area's trees won't come without frustration, regret and even tears.

The red paint marks sugar maples that have provided beautiful foliage year after year, groups of backyard trees that offer shade and privacy, and trees that contribute to a neighborhood's character. Here are stories from some people who'll be losing them.

The Donhams, Kalmar Street

Two hours after the forestry crews left her yard in October, Kimber M. Donham started crying.

"I thought, 'What is wrong with me?'" she said. "I was crying over a tree."

The subject of Mrs. Donham's sorrow is a large sugar maple tree in the front yard, marked with a tennis ball-sized red dot. "The prettiest tree on the street," according to Mrs. Donham, the maple had one of its limbs infested by beetles. It will be cut down by the end of the year.

The Donhams have taken care of their trees: In the 10 years that they've lived on Kalmar Street, they've had several of them pruned. The five trees in the backyard have provided shade for their bulldogs, Bailey and Pearl. Four are marked for removal.

Scott A. Donham said he understands that the trees must go "for the greater good in the long run," because it will prevent further infestation.

"But it doesn't make you happy," he said.

Mrs. Donham plans to plant a lilac tree once the sugar maple is gone.

"I can't just leave a hole there," she said. "It'd be a constant reminder, you know?"

The Fedorczuks, Hillcroft Avenue

When Heidi J. and Brian M. Fedorczuk were looking in the spring to buy their first home, they narrowed their search to one in Worcester and another in Holden.

Worcester won them over, and they moved to Hillcroft Avenue July 1.

Had they known that within months they were going to lose most of the trees in their yard, they may have chosen Holden.

"The number one thing that drew us here was the way the maples hung over the street," Mrs. Fedorczuk said. "We had such an emotional connection when we drove through here. I can't say for sure if we wouldn't have moved here, but the trees definitely contributed to our decision."

Mrs. Fedorczuk is grateful that their largest tree, an oak in the backyard, is not targeted for

removal. Standing in his backyard, Mr. Fedorczuk joked that there is one benefit of the trees' impending destruction: he'll have fewer leaves to rake.

"We love this house and the neighborhood still will have its charms," Mrs. Fedorczuk said. "My hope is that in 10 to 20 years, we'll have more trees back."

Helen M. Brennan, Assumption Street

The landscaping around the base of several of Helen M. Brennan's trees is evidence that the trees were at one time the focus of her yard.

Today, however, she just wants them gone.

"Ours are the most infested in the neighborhood," Ms. Brennan said. "My daughter gathered some of the beetles, put them in the jar and gave them to one of the (forestry) agencies."

Ms. Brennan has lived on Assumption Street for nearly 50 years. At one time, she enjoyed the trees.

Now, she said, "They're really ugly looking."

She will, however, miss the large tree in her neighbor's yard.

"It's terrible that's going to be cut down," she said. "I will miss the shade."

The Tenczars, Sunrise Avenue

Andrew and Melissa Tenczar were told by U.S. Department of Agriculture inspectors to keep away from the trees that are part of conservation land that abuts their property.

"One of the trees suddenly fell down this week," Mrs. Tenczar said. "They said it was in the worst shape that they've seen because of the beetles."

Mr. and Mrs. Tenczar said they bought their lot and built a house on it in 2001 because it was surrounded by trees, but now that may be its downfall.

"With the conservation land, we knew no one would ever be able to build behind our house," Mr. Tenczar said.

"I love this location, it's a hidden treasure because it feels like we're in the country but we're right off the highway and accessible to everything," Mrs. Tenczar said. "I never wanted to live by a highway - but this didn't feel like it was across from a highway."

Many of the trees across their street separate the neighborhood from Interstate-190 and several neighbors said even if trees on their property aren't sprayed with the red dots that determine which trees are being cut down, they will be affected.

"They serve as a great barrier from the highway noise," said Mr. Tenczar.

Sitting near the large sliding glass door and bay window that overlook the woods behind the house, Mrs. Tenczar grew more upset as she considered what the view would look like without the trees.

"It scares me," she said. "It took forever for those trees to grow. What are they going to do so it doesn't happen again?"

Hafida Faiz, Sunrise Avenue

Hafida Faiz was unaware of the Asian longhorned beetle infestation in the trees behind her yard and those that extended beyond her cul-de-sac from the front yard.

"This is why I bought this house, so I can be free outside," Mrs. Faiz said. "I love it because it gives me more privacy."

She explained that as a Muslim woman she is required to wear a hijab, or scarf around her head, and burka in public at all times, but from the deck in her backyard no one can see her so she can remove the coverings.

"It looks so beautiful here," Mrs. Faiz said. "I love it, especially in the summertime. There's lots

Full Text

(535 words)

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Art takes many forms - painting, dance, drama, music, sculpture, writing, gardening - but in all cases, whatever the medium employed, there are certain underlying principles commonly expressed. A lyrical unity of form and style joins them. To explore the parallels that exist between fine paintings and garden design, Gordon Hayward has written "Art and the Garden: Fine Painting as Inspiration for Garden Design" as a guide for us to better understand both fine painting and fine gardening.

This \$40 book was released by the publishing house of Gibbs Smith, www.gibbs-smith.com, in October. Hayward has spent almost 15 years researching. He has interviewed painters, visited museums and gardens, and produced an object of informative value and beauty. Francis Bacon, 17th-century English philosopher wrote, "Some books are to be tasted; others swallowed; and some to be chewed and digested."

Hayward serves up a multi-course banquet that will satisfy the hunger of aspiring gardeners for knowledge and understanding. Just as the study of a painting by Cezanne, Monet, Matisse or van Gogh will reveal layers of data concerning the artist, his times, and his style - so too do we learn universal principals governing artistic expression. To create any form of art, it is necessary to focus on scale, composition, contrast, texture, form, harmony, color, and the dynamics of combinations in any production.

Mr. Hayward writes of the value of "taking the time to see." Yet, this extraordinary book teaches us that we require the services of a knowledgeable guide. This book can be read and reread. The better it is "chewed and digested," the better fed will be our minds and the richer our gardens.

There is a saying; "No one misses the water until the well runs dry." Considering the havoc that the Asian longhorned beetle is bringing to our neighborhoods, perhaps it is time for us to look at our trees, learn something of their history, how to properly care for them, and to begin to appreciate them. Evelyn Herwitz in 2001 wrote a splendid wake-up call to the citizens of Worcester, and by extension, all peoples who live in urban areas.

"Trees at Risk, Reclaiming an Urban Forest" is a case history of Worcester, published by Chandler House Press. I purchased my copy from the gift shop at Tower Hill Botanic Garden. Make no mistake: Our trees are under attack. It is not just the Asian longhorned beetle or the emerald ash borer, or the winter moth (approaching from the east), or the light brown moth (coming from the west), rather it is our disregard for our arboreal heritage.

We have underfunded, underappreciated and largely ignored our trees. Read first Evelyn's book to gain a historical perspective of the urban forest.

Then, acquire a copy of the Brooklyn Botanic Garden Guide "The Tree Care Primer." As with each of the "guides" or "handbooks" published over the years, this primer contains a condensed course in the most current knowledge available concerning trees.

Pay particular attention to pages 66 and 67, but read, absorb and implement the facts learned.

We all have much to learn about the trees on streets, in parks, and yards. There are no instant experts, but there should be concerned citizens.

Full Text

(398 words)

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The latest report on the efforts to eradicate Asian longhorned beetles in Worcester and several surrounding towns was sobering. While wiping out susceptible trees may prove necessary in some areas, as federal officials recommended Wednesday, the eradication team should demonstrate solid science behind its approach before clear-cutting begins.

Although all of Worcester and parts of Holden, West Boylston, Boylston and Shrewsbury are at risk, the Greendale and Burncoat sections in northern Worcester are the epicenter of the infestation. That area is particularly susceptible because two-thirds of the street trees are maples - the beetles' preferred habitat - most of which were planted to replace trees destroyed by the 1953 tornado.

To date, some 4,500 infested trees have been found in that area, and federal officials say many infested trees have yet to be detected. In fact, they are recommending cutting down all infested trees and trees susceptible to infestation in a two-square-mile area in northern Worcester - potentially 20,000 trees.

The stakes are indeed high. Failure to contain the infestation here would put all of New England's hardwood forests at risk. It should go without saying that all infested trees must be cut down and disposed of properly. However, given that the Asian longhorned beetle is a "homebody" that tends to find a suitable tree for egg-laying and stay put, it is not clear that cutting all susceptible trees within a quarter-mile of any infested tree is warranted.

City Manager Michael V. O'Brien has suggested the eradication team study a representative sample of susceptible trees near infested ones to determine how far the beetle is likely to spread. That approach would go a long way to establishing a scientific basis for the eradication effort - both here and in other areas where infestation may be discovered.

The briefing for local officials Wednesday gave some cause for optimism. The state Department of Conservation and Recreation is about to mail notification letters to 750 property owners initially affected and has prepared contracts for tree-cutting that will be put out to bid. Plans to replace trees are under way, with replanting expected to begin next fall. Legislation boosting penalties for moving wood from the regulated zone is moving ahead briskly.

The urgency is warranted, but every effort must be made to ensure that eradicating the Asian longhorned beetle does not unnecessarily wipe out the city's precious stock of urban shade trees.

Full Text

(874 words)

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WORCESTER - The discovery of more trees infested with the Asian longhorned beetle and the unprecedented severity of infestation has officials considering chopping down as many as 20,000 infested and susceptible trees within a 2-square-mile section of the Burncoat and Greendale sections of the city.

After a briefing with area officials at City Hall yesterday, Christine Markham, an official with the U. S. Department of Agriculture, said the recommendation of that agency is to remove the infested trees, as well as the exposed susceptible, or host trees. City officials, however, would like to see removal of any trees not infested done on a case-by-case basis.

"We're talking about a total of 15,000 to 20,000 trees coming down inclusively of the infested. That's what we're considering because what we're seeing is a checkerboard pattern where there are heavily infested trees in that area with 100-plus exit holes in a tree," said Ms. Markham, director of the USDA's National Longhorned Beetle Program. When a tree is over-infested, the beetle will move to another tree.

City Manager Michael V. O'Brien acknowledged the USDA's expertise in the eradication of the invasive beetle, but he is asking that, if possible, only the infested trees be removed and then representative samples of susceptible trees be cut down and studied to determine a protocol specific to New England for the level of removal of uninfested susceptible trees.

Mr. O'Brien said potentially removing 20,000 trees, which is about 3 percent of the 635,000 host trees in the quarantine area, is a "fairly dramatic issue."

"The (neighborhood's) character is shaped by those trees. The environment is obviously conditioned by those trees and the value of that neighborhood is forged on its greenery, so this has to be taken into consideration and weighed," he said.

Two infested trees found on Lynnwood Lane near Salisbury Street last week expanded the quarantine area one square mile farther into Holden and increased the footprint of the area from 62 square miles to 63 square miles. In addition to all of the city and a section of Holden, the quarantine area also includes parts of West Boylston, Boylston and Shrewsbury. The total number of infested trees in the area to date has climbed from 3,200 in the first part of

November to 4,500. Infestation is primarily in the Greendale and Burncoat sections of the city. Tree removal is scheduled to begin mid-December. Bids will be issued this week. To facilitate the project, some city staff will work with the contracted team. The estimated cost of the first year of the project is between \$32 million and \$34 million.

Mr. O'Brien said he expected a final decision would be reached by mid-December on the number of trees to be removed from the Burncoat-Greendale area. He urged the USDA to develop science and modeling specific to the Worcester infestation because the protocol will ultimately be used throughout the quarantine area.

Mr. O'Brien described yesterday's meeting as "frank and difficult" and said the level of potential tree removal makes it critical for the USDA to back up its recommendations.

"I have clearly not been comfortable with blanket host removal," he said.

"There should be caution before we act," he said. "They (USDA) have never been in an environment like Worcester," he said. "There's no parallels anywhere else. And if there's no parallels, there's no science."

He said another meeting would likely be held in two weeks in hopes of reaching some consensus on the issue.

"We want science specific to our area," he said. "Once those trees come down, there's no glue that can put them back."

Jeffrey R. Daley, senior policy adviser for the state Department of Conservation and Recreation, said legal notification forms will soon go out to the approximately 750 property owners affected so far. The mailings will include answers to frequently asked questions and a telephone number for additional information. Some group meetings are also planned. Property owners are expected to read the information and sign and return the form, giving workers permission to come onto their property to remove designated trees.

Property owners will also be notified by a door-hanging seven to 10 days prior to work beginning on their street. Follow-up calls or visits will be made to property owners who don't return the forms in a timely fashion.

"If, in fact at that time, they don't want to sign it or refuse to, because of the state of emergency and the necessity to get this eradicated we've been working with the attorney general's office to get a court order from Superior Court to enter onto the property ... to take down the infected trees," Mr. Daley said.

Replanting of trees not susceptible to the beetle will begin next fall. Homeowners will have some input, but the final tree selection will be based on whether it's a good fit for the particular site.

When a tree comes down there is "great emotional and physical loss. We want to engage them as much as we can in the process to make the transition as easy and as comfortable as possible," Mr. O'Brien said.

Full Text

(592 words)

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HOLDEN - The blue spruce was 10 feet tall in 1992, when Wayne and Carrie Boisselle moved into their home at 72 Paugus Road, but when workers from the Massachusetts Highway Department cut it down yesterday morning to become the official Statehouse Christmas tree, it stood 35 feet.

"It's just perfect," said Tammy E. Kraus, director of Statehouse operations. "It has a beautiful shape and has been well cared for. We won't need to do anything to it once it's transported to the front lawn of the Statehouse," she said.

The Boisselles said they never pruned the tree and it just grew into its classic proportions.

But over the years, as the tree grew in beauty and stature on their side lawn, it began to obstruct other plants in the yard. By the time they started thinking about cutting the tree down, it was blocking the sun from their herb garden and was nearly touching the chimney of their wood stove.

"When the tree was shorter, we would decorate it, but the last few years we could only spotlight it," Mrs. Boisselle said.

"But it was becoming a fire hazard. We thought this was a better solution than using it for firewood," she said. "I'm excited that a lot of people are going to be enjoying it."

"It's great to know the best Christmas tree in the state is from little old Holden," state Rep. Lewis G. Evangelidis, R-Holden, said just as the tree was cut down.

Extended family and a good representation of the neighborhood joined Mr. and Mrs. Boisselle and daughters Julia, 13, and Laura, 10, to watch Peter Fallon, director of the Highway Department's equipment and materials division, and his eight-member crew work. It took about two hours to set up, secure the spruce with cables and connect it to a crane.

After the cuts were made, the tree was lifted off its stump and held several feet over the ground before it was gently set down on its side. Some spectators held their breath as it neared the roof, but Mr. Fallon was at ease, saying he has been cutting, wrapping and transporting the annual symbol of holiday cheer for 15 years.

"It's the prettiest tree I've ever seen," he said. "Nice and full, and in perfect shape."

When the tree was safely on the ground, Julia and Laura picked some of the cones that were affixed to its top branches.

"It used to be a great tree to hide under when we played hide and seek, but I really like that it is going to be the state tree," Julia said.

The Boisselles will attend the tree lighting ceremony at the Statehouse Dec. 3. The environmentally conscious family took note when Ms. Kraus told them that last year the state changed from standard outdoor lights to LED lights - the electric bill went from \$700 in 2006 to \$12.85 in 2007.

The spruce was removed from within the 62-square-mile Asian longhorned beetle quarantine area but is not one of the pest's 11 host species.

There's been one confirmed case of the Asian longhorned beetle in Holden, and Mr. Boisselle believes a tree he cut down on a neighbor's lawn a few years ago contained longhorned larvae.

Their neighborhood is off Holden Street and surrounded by dozens of maple trees, the major host species.

Full Text

(656 words)

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The street I live on will be stripped of many of its trees because of the Asian longhorned beetle infestation.

This is a loss that will only be adequately measured in retrospect, but I think at the very least I can say the character of the street will be changed for the worse.

So, I think I understand the gravity of the Asian beetle infestation that has affected trees in Worcester and portions of Shrewsbury, Boylston, West Boylston and Holden. I understand the importance of an effective beetle containment and eradication operation.

But do we really need a beetle patriot act?

In case you missed it, state conservation and federal agriculture officials succeeded in urging lawmakers to file a bill that would greatly enhance the power of

state and federal agencies to fine and jail individuals determined to be beetle-quarantine nonconformists.

A hearing on the bill, backed by state Sen. Harriette L. Chandler, D-Worcester, and state Rep. James J. O'Day, D-West-Boylston, is being held today.

It would impose a fine of up to \$25,000 per day and imprisonment for up to a year for anyone who violates "any rules, regulations, orders, licenses or permits" issued by the state Department of Conservation and Recreation.

The bill reserves the same penalties for anyone who "resists or obstructs" the "chief superintendent, any local superintendent or employee or authorized agent of any of them, while such person is engaged in suppressing or eradicating the Asian Longhorned beetle."

These proposed penalties seem a bit premature and open-ended, given that the experts have not yet gotten a handle on the problem.

First, infestation was confined to the Greendale and Great Brook Valley areas. Now the entire city is quarantined, some 62 square miles.

This widening infestation area, it would appear, is behind the rush to give more power to the DCR.

Mrs. Chandler said the bill is essential because it would give teeth to the current law, which

prevents live beetles, firewood, lumber, branches, twigs, stumps or other woody materials from being transported out of the quarantine areas.

Currently, the DCR can only level a fine of \$25, and that is hardly a disincentive for those who might profit from breaking the law, she said.

"They need something that will stop people from moving branches and trees from the infested areas, and right now they have nothing on the books," Mrs. Chandler said.

"This (beetle infestation) has the potential to absolutely flatten the land, and the bill will provide Conservation with the regulations that can make a difference."

Mrs. Chandler's concerns are well taken, but we need to guard against agencies using a crisis to greatly and perhaps unnecessarily enhance their powers.

How about first trying a little education?

Worcester has done a good job in getting the word out. The city has conducted at least two community hearings on the issue, and has sent out mailers to residents.

The city also has sent out three business notifications, and is offering compliance training workshops for individuals and companies conducting business in the quarantine areas.

So far, some 250 landscapers, tree removal companies, nurseries and other contractors have completed the required workshop.

Yet a couple of meetings drawing several hundred people pale in comparison to the thousands of people who are impacted by the infestation.

Do homeowners know they should be checking the credentials of the landscapers, nurseries, tree removal companies with whom they are doing business? Do Worcester residents know that tree limbs can only be disposed of at 1065 Millbury St.?

Is everyone aware that the city has a Web site chock full of information about the infestations, including the rules and regulations governing quarantine areas, as well as important contact numbers: (508) 799-8327; (866) 702-9938?

Before we start dragging unsuspecting homeowners to jail, we should concentrate on educating them on the scope of the problem and the role they play in its resolution. Contact Clive McFarlane via e-mail at cmcfarlane@telegram.com

Full Text

(490 words)

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WORCESTER - For 1,700 beetle-infested trees, red means go.

With a can of red spray paint in his right pocket and a can of blue paint in his left, Denis Tucker was among the forestry crews out yesterday marking which trees will be taken down to deal with the Asian longhorned beetle epidemic.

Marking the 1,700 infested trees is expected to take weeks, said city Forestry Department

foreman John K. Grady. Removal of the infested trees - the ones now being marked with tennis ball-sized spots of red paint - will likely begin in December.

On Hillcroft Avenue yesterday morning, Mr. Tucker consulted a PDA into which the locations of affected trees had been programmed. Roger Donais, another climber with the Forestry Department, verified the information with maps.

Those trees mapped as infested were painted red, while others considered vulnerable but not infested were painted blue.

Passing motorists and residents stopped the crew members, who wore identification tags marking them as part of the Asian Longhorned Beetle Cooperative Eradication Program, as they made their way through the neighborhood.

One Hillcroft Avenue woman was worried about the maple trees in her backyard. Mr. Tucker said the trees' fate was still to be determined. Though a scan from ground level showed no evidence of infestation, separate teams of tree-climbing "smoke jumpers" - who typically fight forest fires - were deployed across the target area, continuing their analysis from a higher vantage point.

Richard DeJordy observed the city foresters working on his street and came out with a dead Asian longhorned beetle he said had flown into his backyard about six weeks ago.

Mr. DeJordy said he would rather lose a tree on his property than see a widespread infestation across the city.

"What can you do?" he said.

That attitude - that something has to be done to deal with the invasion - is common, Mr. Tucker said. But some people have voiced concern about the impact on their property values if their large shade trees have to be felled to contain the spread of the invasive insect.

Mr. Grady said he was proud of the cooperation among the local and state agencies and the U.S. Department of Agriculture in the massive effort. Marking the trees to be removed will bring the issue home for the private property owners being affected. Of the 1,700 infested trees, he said, about 300 are on city-owned property.

The trees marked with blue spots are being identified for the next round of inspectors who will survey the trees again next year.

Because of the scope of the infestation - the 62-square-mile regulated area stretches from the city into Holden, West Boylston, Boylston and Shrewsbury - surveying of trees is expected to last several years, Mr. Grady said.

A community meeting on the eradication effort has been scheduled for 6:30 to 8:30 p.m. Wednesday at Worcester Technical High School, 1 Skyline Drive.

Full Text

(953 words)

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LEICESTER - The injection of the pesticide imidacloprid into healthy maples near those infested by the Asian longhorned beetle may be welcome news to shade tree lovers, but Worcester beekeepers are worried and some are planning on moving their hives from "ground zero."

At a meeting Saturday of the Worcester County Beekeepers Association, Jeffrey S. Pettis of the U.S. Department of Agriculture's Agriculture Research Service was fielding questions on *Nosema cerenae*, one of the more common bee diseases, when one member asked about the impact of the pesticide being used in Worcester.

Several cited reports from beekeepers in Europe, particularly in France, suggesting that the pesticide imidacloprid contributed to a significant decline in bee populations.

Mr. Pettis was asked about research and whether studies would be warranted of hives in Worcester, where the pesticide would be injected into maple trees. Such studies would look at mortality rates in hives near the city and in control hives a significant distance from the city.

It was suggested that in the spring, honeybees would be drawn to the pollen of pesticide-injected Norway maples.

Some cited research that when imidacloprid was used as a seed coating for sunflowers, honeybees developed behavioral problems.

Several Worcester beekeepers said they would plan on moving their hives outside of the area being treated for the Asian longhorned beetle.

What impact that would have on pollination in the city remains to be seen.

Mary Duane of Worcester, president of the association, said she was thrilled with the turnout for the daylong program at the Knights of Columbus hall, which featured Mr. Pettis, who heads up the USDA's bee lab in Beltsville, Md., and Kim Flottum, editor of *Bee Culture* magazine.

"We're very fortunate in that Colony Collapse Disease has not hit us in Worcester County; however, *Nosema cerenae* and other viruses and pathogens are not uncommon to beekeepers throughout the region," Ms. Duane said.

Club members are primarily hobbyists, Ms. Duane said, but the association makes every effort to keep members informed of not only local developments, but cutting-edge research being done by Mr. Pettis and others at the bee lab as well as at universities across the country.

"What was once a hobby of having bees has evolved into bee management. Just ask Ken," she said, acknowledging Kenneth M. Warchol of Northbridge, one of three state apiary inspectors and a member of the association.

Ms. Duane said many people don't realize just how crucial bees are to the Massachusetts agricultural economy, as well as the backyard garden, in their role as nature's pollinators.

"Some of our club members may have upwards of 50 to 100 hives and are harvesting the honey for an income. Many of us are just fascinated by the bees; we enjoy beekeeping, and the benefits of having bees for our own pollination needs," she said.

The association president said the hives of association members are widespread throughout Central Massachusetts, with very few people cognizant of the fact.

"Whenever possible, our goal is to educate not only our members but the public as well as to the vital importance of the honeybee to Central Massachusetts," she said.

Mr. Pettis said whether it's Colony Collapse Disorder or parasites or pathogens, researchers have made great strides with "pieces of the puzzle," but don't yet have the big picture.

During his presentation, he cited examples of experiments that were successful in the lab, but could not yet be successfully transferred to an entire bee colony.

"Right now, we're recommending that beekeepers control their hives with the best methods available to them," Mr. Pettis said, admitting to the members present that because of time constraints his unintentional hands-off management of his own hives had resulted in survival of the fittest.

"We don't have right now an ironclad set of recommendations that we can provide hobbyists or commercial beekeepers to prevent Colony Collapse Disorder, or limiting the impact of the bee gut parasite *Nosema cerenae*," he said.

That particular parasite shortens the worker bees' life span and makes them less productive, he said, noting that different methods of dealing with the parasite had yielded different measures of success.

On the positive side, Mr. Pettis said, honeybees are very resilient, beekeepers on the whole are very resourceful, and researchers are continuing to make advances with research in the lab.

He said he had just learned two weeks ago that maples in Worcester would be injected with the systemic insecticide imidacloprid to vaccinate the tree against Asian longhorned beetle larvae and while USDA's Animal and Plant Health Inspection Service said there's "reason for concern" among beekeepers, the degree of concern has not yet been determined.

Mr. Warchol said he had inspected the hives of 48 beekeepers within the area affected by the beetle and everyone is concerned about the impact on the bees, the hives and the honey that's produced.

"They want to know if the imidacloprid is going to show up in their honey," Mr. Warchol said.

He said the state Department of Agricultural Resources is aware of the beekeepers' concerns and would conduct baseline studies to help determine any impact.

Mr. Warchol said that given the five-year timeline for battling the longhorned Asian beetle infestation, beekeepers are wondering if the impact of the imidacloprid will be cumulative.

"Is this the tip of the iceberg, or over time will this insecticide preventing the spread of the beetle spell trouble for honeybees?" he asked.

The Worcester County Beekeepers Association is the country's oldest association of hobbyist beekeepers, established in 1900 and with 400 members today, Ms. Duane said.

Full Text

(914 words)

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It is still months before taps go into sugar maples on farms throughout the state, but maple syrup producers are already looking closely at their trees, not to gauge next spring's sap flow, but for bug infestation.

Tom McCrumm of the Massachusetts Maple Producers Association said he and other syrup makers have survived invasions by gypsy moths, tent caterpillars and pear thrips and other threats to their livelihoods, and now they are gearing up to deal with the Asian longhorned beetle while hoping it never reaches them.

"This insect has the potential to cause major damage to maple industry," he said.

The maple industry has been doing well in recent years, and Massachusetts producers do not want anything to change that. The state produces about 50,000 gallons of syrup each year, worth about \$2 million. The beetle has been found only in the Worcester area and not detected in trees owned by maple producers, but Mr. McCrumm, who owns South Face Farm Sugar House in Ashfield, is not suffering from overconfidence.

"It's a scary thing," he said. "This is the first time it's been seen in maple syrup country."

The beetle is still limited to suburban areas locally, mostly in Norway maples, which are not often used in syrup making. Maple producers are expecting the best outcome from the state and federal experts investigating the problem, but the insects are attracted to hardwood trees in general and maples especially.

The regulated area for the beetles includes parts of Worcester, Holden, West Boylston, Boylston and Shrewsbury. The nearest large maple syrup producers are in

North Brookfield, Hardwick and Sturbridge, well out of the infested zone. Maple producers are waiting and hoping the insects have not escaped the regulated area.

"Just having this insect anywhere near us is a threat," Mr. McCrumm said.

The Maple Producers Association has been following the reports of the beetle in Chicago, New York, New Jersey and Ontario, Canada, for the past few years along with the more recent effort to eradicate the beetles in Worcester. Mr. McCrumm said the key right now for maple producers is to educate people so that when they see a bug that looks like the Asian longhorned beetle, they report it.

State agricultural officials are also involved in the battle against the beetle. "We're very concerned," said Douglas W. Petersen, commissioner of the state Department of Food and Agriculture. "We have a viable maple sugaring business in this state."

Mr. Petersen said the beetles could also affect the tourism and hardwood industries.

The beetles are featured on the Department of Food and Agriculture's Web site. They are a focus of the Pests Outreach Project, a joint effort of the Department of Food and Agriculture and the UMass Extension Agriculture and Landscape Program to track insects and animals that could damage agricultural products. On the Web site, a form is available to report Asian longhorned beetle sightings.

Janice and Dale Wentworth of the Warren Farm and Sugar House in North Brookfield view

education and early detection as the best defenses against the beetle. They have been trying to educate people about the beetle since they first learned of the problem before the insects were discovered in Worcester.

The Wentworths give out cards to customers showing the beetle and a similar-looking, but less damaging, white spotted pine sawyer beetle. The cards were created by the University of Vermont with the help of the Massachusetts Maple Producers Association.

"To find it on our doorstep, literally, is very disconcerting," Mrs. Wentworth said, adding that she believes the situation in Worcester is well in hand with all the agencies working on it.

Mrs. Wentworth said she and her husband are watching their trees carefully, not just because of the beetle, but for general indicators of health.

"Leafiness is a good indicator," she said. "You look at them all year long."

Although she knows the destructiveness of the beetles, she favors a measured approach to getting rid of them.

"We can't just start flinging pesticides at the problem," she said. "There are always going to be threats to crops. How you deal with it is almost as important as the threat itself."

The first step needed, she said, is to examine quarantine methods used at ports and other places where goods are brought into this country. She said the entry point is the best place to stop invasive species, not once they get into the environment.

"Let's do what we know works, but also go back and see where it is coming in," she said.

Maple producers large and small are watching the efforts in Worcester.

"We're hoping that Holden and Worcester people throw a lot at it," said Kerry Hertel of Maple Heights Farm in Westminster.

Mrs. Hertel and her husband, Andy, produce a small amount of syrup each year for sale, but she also fears the aesthetic damage to their area if large maple trees and other hardwoods must be removed.

Scott Amburgy taps about 1,500 maple trees in three different areas of Ashburnham. He said they are looking for signs of the beetle, but are not worried at this point.

"They're committed to wiping it out," he said.

Contact George Barnes by e-mail at gbarnes@telegram.com.

Full Text

(761 words)

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Worcester made Wikipedia!

The heart of the commonwealth, long known for urban blight, the invention of barbed wire and the valentine, has now distinguished itself as among a handful of North American cities to play unwilling host to the Asian longhorned beetle.

"A 13-square-mile quarantine area in Worcester, Massachusetts was recently established when the insect was discovered in August, 2008," reads Wikipedia, the online encyclopedia that's up-to-date on all the latest insect infestations, except that the quarantine zone has already grown to 32 square miles. "Eradication is expected to begin this autumn."

That's right, eradication. Just ask take-charge City Manager Michael O'Brien, who hasn't had a nemesis like this since the dreaded and extremely repulsive gypsy moth. At a packed meeting Wednesday at Quinsigamond Community College, he whipped an already-angry crowd into a frenzy, and all I can say is that it's a good thing no longhorned beetles were in attendance, because they would have been torn from antennae to antennae.

"And that's the key word: eradication!" boomed Mr. O'Brien, who has been spotted of late sporting a pencil-thin mustache and bowl-shaped haircut. "We have no choice but to eradicate this insect!"

True, but I detect some insect racism at play. During the 1960s, we had a British invasion of The Beatles, and everyone bought their records and fainted on the Ed Sullivan Show. Now that the Asian beetle has hit our shores, people just want to whomp them on the head with a rock.

According to Wikipedia, beetles are "large, showy insects," not unlike those underage Chinese gymnasts. They cause widespread mortality of poplar, willow, elm and maple trees. They'll likely change the look of streets and neighborhoods for years to come, and they should definitely give back those gold medals because they lied about their age.

Granted, there's nothing funny about wide-scale forest decimation, but if we don't laugh, it means the longhorned beetle wins. Hey, Holden, look on the bright side - you may finally have room for that Wal-Mart, after all!

And because Worcester is home to the valentine, I think it only fitting that we write one to the beetle:

You came here uninvited from a land so far away.

You eat our trees and gross us out and larvae you do lay

You've met your match in Worcester, eradication is our quest

Just ask the vendors what we do when we encounter pests.

Or maybe this:

Roses are red, violets are blue.

You, on the other hand, are disgusting.

Recently retired ace T&G editor John Fraser, meanwhile, believes we should serenade the beetle with an eye toward a different British invasion, sung to the tune of "Satisfaction:"

I can't get no eradication

When I'm ridin' in my car and a man comes on the radio,

Scaring me more and more 'bout some nasty infestation

Meant to cloud my imagination

I can't get no etc.

When I'm watchin' my TV and that Fed comes on to tell me

Say "bye" to that ol' tree. But he can't help at all

'Cause he doesn't take the same dried-out leaf as me ...

The ALB was first discovered in the United States in 1996 in Brooklyn. Shortly after, another infestation was found in Amityville on Long Island, home to that fine insect documentary, "The Amityville Horror." In April, Chicago's Ravenswood area actually had a party to mark the official eradication of the beetle, none of whom were invited.

When we throw our end-of-beetle bash, can we please not invite Judith Light?

Meanwhile, we may as well get used to the feds, because they'll be an occupying presence for at least five years. I'm thinking we welcome them, as long as they don't mess with our women. And I'm picturing Tommy Lee Jones and Will Smith showing up on our doorsteps, armed with a contract we're ordered to sign before they remove our trees. If we refuse to sign, we somehow ... disappear.

I don't mean to scare people, but T&G reporter Tom Caywood was recently dispatched to New Jersey and found nothing but strip malls, desolation and blighted landscapes. Then the beetle showed up. Ha, ha! Nothing like a little Asian longhorned beetle humor!

I know, it's not funny. It's bad. Again, though, let's show the world what we're made of. Let's crush the Asian longhorned beetle with our famous resilience, along with an industrial-strength wood chipper and large federal subsidies. We don't deserve this, Worcester, but we're up to the challenge.

As for Holden, well, I'm thinking divine retribution.

Full Text

(2456 words)

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LINDEN, N.J. - Two years after the height of the bare-knuckled fight to eradicate the Asian longhorned beetle from this blue-collar suburb of Manhattan and surrounding communities, a fuzzy sensation that something's not quite right still settles on residents occasionally as they run errands or drive children to school.

Nina R. Mendelson, a real estate agent who has lived in Rahway, N.J., for more than two decades, has sensed it. She described a nagging feeling that something is off - something that she can't quite identify at first.

"You say to yourself, 'What happened to this street?'" Ms. Mendelson explained. "Then, because it's so bright, you realize all the trees are gone. You could tell something was missing. It's the trees."

John Witkowski of Carteret, N.J, where the central New Jersey infestation was first discovered in 2004, described the feeling this way: "You're driving around, and you're like, 'What

happened?'"

That's a question residents of Worcester and neighboring towns may find themselves asking during the next few years as logging crews arrive to deprive the beetles of their favorite homes: maple trees and other species of hardwoods. Tens of thousands of healthy trees could be cut down to contain the infestation.

The U.S. Department of Agriculture's campaign to stamp out Asian longhorned beetles in the Worcester area is scheduled to begin in earnest tomorrow with a tree-by-tree search for more infested hardwoods. In the meantime, a glimpse of what's to come can be found in central New Jersey.

In the quarantine zone

A first-time visitor to the adjoining communities of Linden, Rahway, Carteret and Woodbridge likely wouldn't know a pitched battle against the Asian longhorned beetle was fought here throughout 2005 and 2006.

It's not as if the landscape has been swept clear of foliage. Some neighborhoods were completely spared. Even in those that weren't, there are still pockets of tall oaks, a species not susceptible to the destructive insects, and other mature trees on many blocks. But an observant visitor might wonder about the hundreds of sapling ornamental trees supported by wooden stakes and wires in certain neighborhoods.

Entire streets are lined by saplings planted in rows along the sidewalks, one or two per yard for blocks in every direction, without a scrap of shade in sight. Where each scrawny pear tree or dogwood sprouts today - and most are smaller than a limb from a mature tree - there once stood a strapping maple or sycamore or some other variety of hardwood favored by the invading beetles, residents say.

All told, 21,520 hardwood trees were cut down under federal government orders in the four communities. Because of their proximity to the infested area, parts of two other towns were included in the roughly 25-square-mile quarantine zone. In the Worcester area, the quarantine zone already has grown to 32 square miles during the past two weeks.

Only a small fraction of the thousands of trees cut down in New Jersey, less than 3 percent, were infested with the white-speckled beetles that strike fear into the hearts of federal agriculture regulators. The rest were simply too close - within a quarter of a mile - to the infested trees to be left standing, according to the USDA, which will lead the beetle eradication effort in the Worcester area as it did in New Jersey.

USDA officials say the extreme steps are necessary to prevent the beetle from spreading across much of the country and blighting hardwood forests, a potential apocalypse for timber and maple syrup industries. So trees were felled here day after day, block by block, for two years.

'These beetles don't mess around'

Edward Kennedy of Rahway, who runs a landscaping company, said he once passed right by a longtime client's home in his truck because he didn't recognize the house without the big shade trees that had been in the front yard for decades. It didn't look like the same house.

"The street was completely stripped out," Mr. Kennedy recalled.

Today, a row of roughly 7-foot-tall saplings line front yards of that street. The neighborhood feels like a new subdivision, but, oddly, one with homes built in the style of the 1950s.

Two years ago, amid the height of the eradication effort, Mr. Kennedy and his son were at a job trimming a tree for a customer when his son noticed a white-flecked black insect crawling on his shoulder.

They captured the bug in a cup and took it to the war room the USDA had set up in a Rahway business park, an office that remains open today more than four years after the beetles were discovered in the area. A few hours after they dropped off the beetle, loggers showed up at the customer's house and cut down the tree Mr. Kennedy and his son had been pruning.

"It was like a SWAT team descended on us," he recalled.

While the overwhelming majority of the trees cut down were healthy, Mr. Kennedy got a close look at one infested tree in Carteret. There was no mistaking the damage caused by the beetles boring dime-size holes into the trunk and branches, he said.

"It looked like somebody had driven past and blasted it with a shotgun. That thing was riddled with holes," he said. "These beetles don't mess around."

Neither does the USDA.

'It was sad'

A number of people who live in the New Jersey quarantine area described the eradication effort as an operation carried out with militarylike efficiency and speed. One day, men and women in harnesses were scaling trees in their yards checking for bore holes, and a few months later logging trucks swept through, felling trees by the dozens.

Residents sometimes drove down shady streets on their way to work and returned home that evening to find all the maples and other susceptible hardwoods gone.

"It was a little depressing right after it happened," said Eric Miles of Rahway. "They took every single tree down on some streets. For a six-month period, you could tell the area had been devastated. It was sad."

Crews cut down one tree in front of his home and two in the backyard.

"When you first lose your shade, it's like, 'Oh, I miss it,'" said his wife, Joanna Miles.

But a few months after the loggers left, an official dropped off a list of choices for replacement trees, mostly flowering ornamentals

just a few years old. The Mileses researched each species in a tree book and settled on a holly tree for the front yard and two emerald greens for the backyard.

While the tree-cutting crews were on their block, Mrs. Miles said she was sometimes mesmerized by the odd sight of a decades-old tree, suspended from an unseen crane, seemingly hovering in midair out one of her windows.

"You're lying in bed, and you see this tree floating by the window. It's like, 'Whoa,'" she

recalled.

Survey crews marked trees to be cut down with a dot of orange spray paint on the base of each trunk.

Mr. Miles' mother, who lives a few miles away, tried unsuccessfully to scrub the ominous mark off the bark of a condemned tree in her yard.

"They got it anyway," he said.

Cemetery infested

The living weren't the only ones to lose their shade here.

An infested tree found in the Rosehill Cemetery in Linden, and another infested tree nearby, prompted the logging crews contracted by the USDA to cut down 65 trees, mostly maples, in the tranquil burial ground. In some cases, a cemetery official said, crews had to lay down a path of thick sheets of plywood, weaving among the tombstones, to get heavy equipment to a tree marked for removal without disturbing gravesites.

The quarter-mile radius cutdown zones drawn around infested trees meant that people on the outskirts of each zone lost their hardwoods, while neighbors just on the other side of the line didn't.

"The people right next door to me didn't have any trees taken down," said Mr. Kennedy, the Rahway landscaper.

But he lost four, none of which were infested with the beetle, he said. Like most residents of affected areas of New Jersey, Mr. Kennedy took the loss in stride. He figured it was all for the best if the destructive pest could be stamped out before spreading across the state.

"It's not exactly like you had a choice," Mr. Kennedy added.

'Horrendous choice'

Judy England-McCarthy of Linden learned that lesson the hard way.

She was among the last people to sign a USDA release form allowing access to her property for trees to be inspected and cut. She said she had no intention of signing a death warrant for her healthy trees until she was ultimately threatened with legal action by the government.

She had gone to City Hall armed with Internet research she said proved that the wholesale destruction of hardwood trees within a quarter-mile radius of an infested tree wasn't necessary. While she tried to make her case the logging continued all around her, and, in the end, she blinked when faced with a costly court battle.

But Ms. England-McCarthy said she hopes people in Worcester and surrounding towns will ask questions and demand answers from the USDA before signing the release form when their time comes.

"Maybe another community can be saved from this horrendous choice," she said. "What they did here was not necessary."

All told, 111 infested trees were cut down in Linden over two years, as well as 14,887 healthy

trees within the quarter-mile cutdown zones around the infested ones. Three of the latter variety once stood on Ms. England-McCarthy's property, shading her house and draping a screen of privacy across her backyard.

Ms. England-McCarthy's neighborhood, Tremley Point, is a small residential island wedged into the middle of a sprawling tract of white, cylindrical natural gas tanks, each several stories tall. She said she never felt like she was living in the shadow of the New Jersey petrochemical industry until the maples and hardwoods disappeared from her street.

"These were beautiful trees, and they were healthy," she said.

USDA officials note that Asian longhorned beetles haven't been found in the area for more than a year. While it may be drastic, they say, the eradication protocol so far appears to have worked in New Jersey.

Getting used to it

In west Carteret, a neighborhood that lost hundreds of trees, people go about their lives as they had before they even knew there was such a thing as an Asian longhorned beetle.

Julius Kamichoff, an 86-year-old retiree who moved into the neighborhood after he was discharged from the Navy at the end of World War II, sets up his folding chair in the shade of a neighbor's tree now.

"It's like anything else, you get used to it," said Mr. Kamichoff, who lost three trees, including a maple that shaded his golf practice area in the backyard. "Now when I hit golf balls, I do it in the sun."

A few blocks away, Arlene Carnevale lost a large sycamore that had shaded the front of her house. She now goes across the street in the late afternoons to sit on her neighbor's front porch because the front of her own home is scorched by the intense summer sunshine.

On sunny days, she keeps her blinds shut tight all day against the relentless onslaught.

"It's like a dungeon in there now," Ms. Carnevale said, sitting in the shade with her neighbor early last week. "I don't open the shades until after 8 p.m. or it gets too hot in there."

Beauty lost

While the USDA led the eradication campaign, Linden Public Works Superintendent John Mesler III was in the thick of the beetle battle for years. Because the area is still under quarantine, trees the city cuts down for any reason, as well as those toppled by storms, are brought to a city facility near an old landfill and fed into a voracious industrial wood chipper.

Four years after the infestation was first detected in the area, thick sections of entire tree trunks are still fed into the noisy machine by a front-end loader. A jet of woodchips not much more substantial than sawdust shoots out the other end and rains to the ground. The front-end loader then scoops them up and adds them to a towering heap waiting to be trucked off.

As of early last week, 375,962 tons of wood from the quarantine zone had been fed into the machine and 299,738 tons of resulting mulch had been trucked away to an incinerator and burned, according to city figures. That would be the equivalent of about 24 million standard

bags of mulch sold in home stores and garden centers.

Mr. Mesler, who followed in his father's and grandfather's footsteps to become DPW superintendent of Linden, grew up with those trees, and he misses them dearly.

A drive down Cranford Street with him today is a guided tour of beauty lost.

"It was like a canopy. Not a speck of sun. Beautiful. The tree tops touched each other in the middle. It was almost like a tunnel, a leaf tunnel," Mr. Mesler gushed as he drove to the area in his city SUV.

Then he put on the turn signal and pulled onto Cranford Street, now a sun-bathed residential street lined with saplings. Some large oaks and other mature trees remain, but the leafy canopy that arched overhead for most of his life has been replaced by open, blue sky.

"We would have been riding in a tunnel just a year, a year-and-a-half, ago," Mr. Mesler said. "I feel a great loss."

Contact Thomas Caywood by e-mail at tcaywood@telegram.com.

Full Text

(263 words)

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Worcester property owners are faced with the heart-rending prospect of losing treasured shade trees because of the discovery of a viciously destructive foreign insect in the Greendale neighborhood.

While it's easy to joke about a new beetles invasion, U.S. Forest Service officials say the pest's potential to undermine the forestry and tourism industries is alarming. Before and after photos of a shady street attacked by Asian longhorned beetles show their awesome potential for devastation. The beetles favor valuable hardwoods, especially maples, and kill trees within six or seven years.

Urban homeowners cherish yard trees, and some may be tempted to conceal, rather than report, a beetle infestation, or to deal with it on their own. Experts warn destruction of affected trees is the only answer. Thousands had to be cut down in Metropolitan New York and Chicago, other sites of Asian longhorned attacks.

In compensation, the government provided thousands of healthy, young trees. City Manager Michael V. O'Brien says that should be the case in Worcester.

Long-term prospects for eradication of the beetles are not guaranteed. Older residents may remember futile campaigns to eliminate tent caterpillars and imported gypsy moths. However, tree-lovers have some advantages in the beetle battle: The beetles' large size makes them easier to spot than many insects and they don't disperse quickly.

The public must cooperate with authorities' request to be observant and to report any longhorned beetles to the city Department of Public Works or www.massnrc.org/pests.

While the effort to eradicate the pest will be painful, the havoc it could wreak on the

Northeast's woodlands would be worse.

Full Text

(892 words)

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WORCESTER - Kerri Boyd grimaced with disgust and pointed to the shiny black culprits she says have destroyed the shade trees in her backyard.

The two male Asian longhorned beetles, about an inch long and bristling with elongated antennas, floated dead in a cooler next to Ms. Boyd's pool in the Greendale neighborhood.

"It's awful. One dive-bombed my brother the other day. I thought they were June bugs," said Ms. Boyd, whose Leeds Street home has been attacked by the insect pests, which have mysteriously infested what officials say is a 1.5-square-mile area near the Saint-Gobain Abrasives plant in the northern section of the city.

The neighborhood yesterday was swarming with more than the giant flying beetles that are endangering dozens, if not hundreds, of trees.

Federal, state and local officials also appeared on the scene, some armed with nets and collection bottles as a part of an apparent concerted effort to identify threatened trees and deal with the insect onslaught.

Ms. Boyd reacted angrily to plans announced Wednesday by city and U.S. Department of Agriculture officials to wait until the fall frost kills the bugs before chopping down infested trees, saying the bugs have been boring through trees in her yard and destroying them for at least two years.

While a few tall pines appeared heavily damaged, others that are affected look fairly healthy, and Ms. Boyd said she is unsure about having them removed, as she was told would probably have to happen.

"If I had cockroaches in my home, I'd have an exterminator come in, but the USDA told me to sit tight," she said.

Ms. Boyd said her sons, ages 9, 14 and 16, kill some nearly every day, and that family members have seen them in the pool, on trees and in the house.

She said she called a city phone number and was told to file a report on a Web site.

"I didn't know this was something to report. I'm not an expert on insects," she said. "If I see a bug, I run."

Officials this week said they didn't know where the beetles - which had previously been known to only infest New York and Chicago - came from. Ms. Boyd speculated that because officials have said that they likely arrived from overseas in packing crates or pallets they could have come from the sprawling Saint-Gobain plant a few blocks away.

Mark A. Rayfield, vice president of the French-owned company's North American operations, said the company learned about the situation yesterday and that he immediately spoke with

Worcester City Manager Michael V. O'Brien about it and offered the company's help.

However, Mr. Rayfield said not enough is known about the problem to pinpoint a single source. He also noted that the USDA enforces health standards for wooden pallets at international points of entry into the country and Saint-Gobain abides by those requirements.

"While it is true we have a very large campus and receive shipments from all over the world, we're certainly not the only international source of pallets in the area," he said. "There are pallets traveling by train through here all the time. It is too soon to determine the source until the USDA has had time to study the situation."

Around the corner from Ms. Boyd's house, on Whitmarsh Avenue, homeowner Wendy Connor said she hasn't seen the beetles, but was told by USDA employees this week that two big, apparently healthy, trees in her yard have been infested by them and must come down. She said she wouldn't mind seeing one of them go, but the other provides shade for her backyard and she'd prefer to keep it.

"I'd rather have them chop the trees down than have them come into the house and start eating all the stuff," Ms. Connor said.

Just before noon, a USDA field biologist and two assistants from the USDA regional office in Wallingford, Conn., roamed across the nearby Joe Schwartz Little League baseball complex, closely examining trees and looking for the telltale bore holes that indicate a tree is being destroyed.

With Saint-Gobain smokestacks towering over the fields, the biologist, holding a net and bottle and dressed in a black field vest with USDA insignia, said there was evidence of the deadly beetles.

"We've seen signs," he said, declining to give his name.

One of the two assistants said a large maple near one of the fields had several bore holes, and a nearby oak appeared to have them as well.

Robert C. Antonelli, the city's assistant commissioner of parks, recreation and cemetery, was leaving the area after visiting the city pool on Brooks Street.

He said two trees next to the pool were pockmarked by the Asian beetles' bore holes.

Contact Shaun Sutner by e-mail at ssutner@telegram.com.

 On the Web: To report beetles, go to www.massnrc.org/pests

 Codes from the Articles for the Content Analysis

Article 1

He lists replanting (biodiversity) trees lost to the Asian longhorned beetle infestation as a main goal.

Article 2

the results would be catastrophic to the landscape, the forests of the Northeast, and local economies.

Article 3

Reforestation will be the way Worcester copes in the wake of the 2008 ice storm and the continuing Asian longhorned beetle battle.

"Replanting trees is a healing process,"

Walking along a heavily cut street in the city, it is easy to notice the deterioration of its aesthetics, officials said.

"Trees bring shade, cooling, tranquility and higher property value,\

Trees are a major capital asset in Worcester."

Carefully chosen locations for planting will help avoid future problems, officials said.

Article 4

Locally, concerns also include effects on soil and groundwater.

Article 5

"the goal of the program is to preserve trees"

Article 6

Sean McCall remembers a time when he could cook a burger on his grill and the whole Bourne Street neighborhood couldn't see what he was cooking

Now the street, once adorned in trees, is open to the winds, thanks to the Asian longhorned beetle and ice storm damage.

"It's a wind tunnel now. There are no trees left on our street," said Mr. McCall, an arborist by trade. "When the wind goes, that's all you can hear."

Initiative's goal to help the city's tree population flourish again.

saw the drastic change in landscape after the removal of thousands of trees. "

Federal money and, it is hoped, \$500,000 in city cash if special legislation is allowed, will help the city recoup its lost trees, which shielded neighborhoods from heat and wind and provided urban beauty.

said people coming to the event were ready to replant.

"A lot of people took the springtime to assess what their yards were going to be like, what the sun was going to do and what their grass was going to do," she said. "They are ready now. I think the panic has died down."

"We really want to make sure people fall in love with their trees," she said. "Now that they are missing, people are realizing how important they are."

and the beetle and ice storm destroyed several areas once flush with trees. The replanting effort is for future generations, he said.

Article 7

The Department of Agriculture is directing nearly \$4.49 million in federal stimulus money to Central Massachusetts to restore foliage lost in the battle against the Asian longhorned beetle.

This bounty is good news for all who appreciate the beauty and value of trees

Article 8

Nearly \$4.49 million in federal stimulus money will go to plant trees in Central Massachusetts, an effort aimed at restoring foliage to an area hit hard by the Asian longhorned beetle.

She declined to estimate how many trees might be planted with the stimulus money, saying it would depend on the cost of the trees

"The more, the better. That's just great,"

"we will begin to restore the shade and natural beauty that comes from tree-lined streets and yards."

Article 9

"We've already lost far too many trees, some of which were taken down even though they weren't infested.

Article 10

Worcester has just experienced the worst environmental disaster in its history from these two events.

It will be decades before new planting will restore Worcester's urban forest to provide the same environmental benefits that existed before these events.

It will take the combined efforts of the government, university researchers, private industry and private citizens.

come in the form of understanding the important contributions that trees makes to the urban environment and quality of life in cities.

Article 11

"Within five seconds I knew life in Worcester was going to change."

"The landscape has changed for generations to come,"

Article 12

"What people want to do is re-create a little of the natural forest floor in their back yard with a coarse mulch,"

particularly those shadeless streets and backyards where trees were removed to eradicate the Asian longhorned beetle.

Article 13

He said the project will be a model for communities across the state to reforest and to educate people about the importance of trees to our habitat and ecosystem.

"With every tree that is planted we make a statement that we believe in this city ... we believe in this region and we're committed to its future,"

"And, equally important, it gives us one of those teachable moments to educate ... our young people about environmental stewardship."

"The place looks awful. It really does. Now we've just got to start from square one again. It's depressing."

"It's devastating," Mr. Katsoudas said. "It feels like we were raped. You come home and your trees are gone."

Article 14

"You need to come back," Mr. McFarland said. "You need to start that healing process as soon as you can."

Shade trees such as oaks will grow tall and produce a large canopy, he said, while ornamental trees will remain smaller and produce flowers or fruit.

Article 15

In Worcester, people are scouring trees, waiting for the latest appearance of the Asian longhorned beetle that has already forced the destruction of many beautiful trees found to be hosting the destructive insects.

Article 16

many individuals who have been painful witnesses to the loss of their cherished shade trees, particularly in the city's Greendale and Burncoat neighborhoods

Article 17

The group's plan, which will require individuals to complete a short educational session on tree care before they can obtain a free tree, is a reaction partly to the Asian longhorned beetle. Group officials said they also want to address the general decline of the Worcester area's "urban forest" in recent years and build a more tree-savvy citizenry.

Cutting down and chipping the trees has left some neighborhoods looking barren

"We want to make sure the trees live long term," Ms. Middaugh said. "We don't just want to put them in the ground and go

Article 18

"Every one of the hundreds of trees that once blocked our neighborhood from QCC have been totally removed, leaving many of our backyards totally exposed to Assumption Avenue, where the 'Loop Road' is planned," states a letter from a group of affected neighbors in the Greendale and Burncoat sections of Worcester.

Neighbors of the college, who already have lost trees around their homes because of the Asian longhorned beetle infestation, say they don't want more noisy activity in their neighborhood.

which they say will bring more noise and traffic to what used to be a pleasant part of the city.

Article 19

Mr. Lautzenheiser said the infestation has not been detected in the New England forest area to the north, but, if it is, it could cause serious damage to the logging, maple sugar and tourism industries.

The park now looks as if the property were thinned by selective cutting. It no longer offers much of a barrier from Interstate 190. Invasive plant species already are moving into the logged

area, and Mr. Novick said more work is needed. But those in the park with him discovered some signs of hope. Vernal pools on the property were teeming with wood frogs calling out with their unusual clucking sound.

"It's still a forest. There are still trees. There are wood frogs in the pools," Mr. Novick said, pointing to one pool that seemed to be bubbling with frogs.

Article 20

she's quite upset about the squirrels

been lost to the Asian longhorned beetle, squirrels and other wildlife are sneaking into houses in Greendale

already-beleaguered residents to set fire to their homes and flee to places where squirrels are not only unwelcome, they're baked into kebabs

I've been informed that because of the tree loss in Greendale, squirrels are now trying to find their way into the homes of the residents there. I'm horrified not only for the families of Greendale, but for the rest of mankind. I didn't understand that the trees were the squirrels' homes. I never really thought about where squirrels lived and frankly never cared. But now all the squirrels born and bred in Greendale for generations are faced with homelessness and are understandably confused and probably very angry. My concern is that their discombobulation could lead to unruliness and aggression as they struggle for survival. Little children are probably most at risk since they are closest to the ground and are creature-like themselves. Attacks at the school bus stop could become the norm.

Article 21

May days when the trees unfurl their foliage and the air grows heavy with sweetness and warmth will pass some neighborhoods by this year, replaced by a season of cutting, chopping and clearing away nature's fallen.

At the end of the first year of open warfare between beetles and humans, it is arguable that this pest has taken as heavy a toll on the values of some properties as the sins of greedy Wall Street barons.

It all has residents of once tree-lined streets yearning for some good, green news close to home.

Current law apparently does not allow abatements on the basis of a beetle attack, although the ugly truth is that as property values have fallen with the lopping of limbs, some decline in tax bills also can be expected.

That is small compensation for the loss of shade trees and memories, but the city needs to approach the question of compensation carefully.

And residents are right to press for a return - with the help of neighbors and nature - to something resembling the neighborhoods, and seasons, they have long cherished.

Article 22

You were sent to assess our capability to destroy the Earth's ecosystem by studying the politics of a small Earth city.

Article 23

grant real estate tax abatements to owners whose residential properties declined in values from the impact of the beetles.

Because the landscape in that part of the city has changed so dramatically, he said, it may take years for homeowners to regain the value of their homes.

neighborhoods have been devastated by the loss of so many trees. He said that has impacted the quality of life for residents, and their home values as well.

Mr. Smith recalled a story in which a homeowner living on one of the streets that has been clear-cut recently held an open house; he hoped to sell his home. He said the homeowner told him that while many vehicles pulled up in front of the home that day, no one ever got out of their car and not one person bothered to go inside his home

clear-cutting of trees in that area has wreaked havoc with the ecosystem. He said the significant loss of trees has displaced wildlife, such as squirrels and chipmunks, which are now seeking refuge in homes.

He added that some homes will also probably experience water runoff problems for many years because of the significant change to the landscape.

Article 24

more than 17,000 trees have been taken down through an aggressive tree-cutting program that has significantly altered the landscape.

What has drawn the ire of so many people is the way their streets have been virtually clear-cut of trees. Their once tree-lined neighborhood streets are now unrecognizable.

You'll be able to fry an egg right on Hillcroft Avenue because there's no trees left."

They want more than having new trees planted in their neighborhoods; they want some kind of reparations for the damage sustained to their properties and the expected decline in their property values.

"Those neighborhoods have pretty much been devastated," he added. "This is probably one of

the biggest quality-of-life issues facing this city and we certainly owed it to them to at least look into this."

Article 25

The program to eradicate the Asian longhorned beetle is negatively affecting the overall ecology of the Burncoat and Greendale neighborhoods.

With the massive loss of trees, displaced wildlife, including squirrels, chipmunks and birds, are seeking refuge in homes located within the 2.2-square-mile target area, forcing some homeowners to hire exterminators to clear their dwellings of the unwanted visitors.

will have on run-off and other related environmental issues.

many streets are no longer recognizable because of the tree clearing.

This is more than a tree-loss issue

Mr. O'Brien said the city has begun investigating the long-term effects of the loss of the tree canopy.

He said city officials need to know what will happen in the event of a big rainstorm and whether there will be temperature swings as a result of the loss of shade.

Some residents also have reported higher wind gusts since the trees were cut down.

Article 26

"It's like somebody died in your family," Ms. Evans said of the devastation that the eradication team left behind.

This is collateral damage, unnecessary damage that takes down healthy trees and devalued our land.

Article 27

The loss of so many shade trees is a sad and painful chapter for Worcester

Worcester enjoys a rebirth of the urban shade trees that the community rightly cherishes and now so longs to save.

Article 28

I'm also anxious to see both the immediate and long-term impact to bird nesting sites

Article 29

Newly impeccable lines of sight reveal views across entire neighborhoods, most with front and back yards now barren and exposed.

"It's almost a surreal experience to drive into my neighborhood and up to my house with virtually no trees lining the streets," said Fales Street resident Kate Davenport. "It looks like a new housing development with old houses."

"I've lived here for 10 years, and I've never seen the neighborhood look like such a mess,"

"It's just empty, it's depressing,"

"I loved the trees in the spring."

"I can't live in a plain, boring, flat lot,"

he looks forward to a lot less raking in the fall.

she looks forward to seeing how big her flower and vegetable garden gets with a lot more sun this summer;

"It's time," he said. "In forestry, the big ones go, and the young ones stay. They have room and space to grow and replenish."

Article 30

These people were already going to lose a lot of trees. Now, all the tops are broken. Some people may not own any trees."

But people are asking me for my opinions to strengthen the value of their landscape, aesthetic value.

They'll call to cut a tree because they don't want to rake leaves.

Article 31

'How do we get involved?' It's time for a city and central Mass-wide network for people to plug into without bureaucracy,"

the Asian longhorned beetle is the latest threat to Worcester's urban landscape.

Article 32

To be honest, I had very little appreciation for the tree that stood on the sidewalk in front of my house.

This city tree shaded my front lawn and was dedicated to killing the grass I stubbornly put in every year. Its roots buckled my sidewalk, causing among other things the inability to draw a decent outline for a hopscotch game for my kids.

Its branches raked across the roof of my porch, causing leaks. Twice this year its fallen branches damaged my property, first taking out the right side of my fence and then the left side.

So, I am no tree-hugger, but I have to admit to a sinking feeling as I watched the tree-cutting machines and their attendant humans take out my tree

It was suddenly clear now how the trees had softened the lines on the street, how they had framed each house uniquely and protected each individual's space from the full stare of the sun and other prying eyes.

It is the same stretch of road, the same sidewalks, the same houses, but the lines are now different - harsher, more confrontational; the space feels uncomfortable now, too open, too public.

but will the loss of 16 trees on my street make me more conscious of our ecosystem, the sacking of a rain forest in Brazil?

I think I could make a fair case that taking so many trees off my street reduces my property value.

My bedroom with its windows next to and level with the canopy of my fallen city tree was a private theater to the morning symphony of birds using the tree to usher in spring or a new day.

Article 33

the hardwoods that once graced people's yards and defined local avenues will find new value in lighting and heating homes in the Fitchburg area.

The trees being cut will replace thousands of gallons of oil that might have been used to generate electricity.

Article 34

Streets that for generations were sheltered by a mature green canopy are being stripped bare.

we believe, is an aggressive reforestation program that will restore, for future generations, the green streetscapes of Worcester and the affected towns.

That's why we believe this crisis requires a community-wide response

its contribution to the quality of life in our city,

Article 35

"We think it is time to undertake a massive public-private tree planting initiative and we are going to call on community and neighborhood organizations and foundations to participate," said Mr. Murray, a former Worcester mayor.

Government can't do this alone, and we think people are galvanized and want to do something," in response to the extraordinary tree-cutting to combat the beetle, he said.

"We can now see the visual impact from what is coming down and it is stunning."

Mr. McGovern said the supplemental community effort will allow neighborhoods and communities to take control of the tree replenishment steps instead of having "someone from Washington" determining what trees will be planted and how many.

Article 36

"We do have a lot of fine trees," said Victor A. Somma Jr., director of public affairs and community relations for the college, which was told that 100 trees were marked by authorities.

"Unfortunately, the infestation went beyond what we originally thought."

Article 37

If the tree in front of my house came down it would be devastating.

he will miss the shade that the big tree in front of his house provided in the summer but admitted that many of the trees on the street no longer sprouted leaves.

"Everything has been going good," Mr. Sealey said. "It stinks to lose the trees but we've got no choice."

Article 38

The red paint marks sugar maples that have provided beautiful foliage year after year, groups of backyard trees that offer shade and privacy,

and trees that contribute to a neighborhood's character

Two hours after the forestry crews left her yard in October, Kimber M. Donham started crying.

"I thought, 'What is wrong with me?'" she said. "I was crying over a tree."

"The prettiest tree on the street,"

The five trees in the backyard have provided shade for their bulldogs, Bailey and Pearl.

"for the greater good in the long run,"

"The number one thing that drew us here was the way the maples hung over the street,"

"We had such an emotional connection when we drove through here. I can't say for sure if we wouldn't have moved here, but the trees definitely contributed to our decision."

"We love this house and the neighborhood still will have its charms," Mrs. Fedorczyk said. "My hope is that in 10 to 20 years, we'll have more trees back."

At one time, she enjoyed the trees.

"They're really ugly looking."

She will, however, miss the large tree in her neighbor's yard.

"It's terrible that's going to be cut down," she said. "I will miss the shade."

"With the conservation land, we knew no one would ever be able to build behind our house," Mr.

"I love this location, it's a hidden treasure because it feels like we're in the country but we're right off the highway and accessible to everything," Mrs. Tenczar said. "I never wanted to live by a highway - but this didn't feel like it was across from a highway."

Many of the trees across their street separate the neighborhood from Interstate-190 and several neighbors said even if trees on their property aren't sprayed with the red dots that determine which trees are being cut down, they will be affected.

"They serve as a great barrier from the highway noise

"This is why I bought this house, so I can be free outside," Mrs. Faiz said. "I love it because it gives me more privacy."

She explained that as a Muslim woman she is required to wear a hijab, or scarf around her head, and burka in public at all times, but from the deck in her backyard no one can see her so she can remove the coverings.

"It looks so beautiful here," Mrs. Faiz said. "I love it, especially in the summertime. There's lots

Article 39

Failure to contain the infestation here would put all of New England's hardwood forests at risk. wipe out the city's precious stock of urban shade trees

Article 40

"The (neighborhood's) character is shaped by those trees. The environment is obviously conditioned by those trees and the value of that neighborhood is forged on its greenery, so this has to be taken into consideration and weighed," he said.

great emotional and physical loss. We want to engage them as much as we can in the process to make the transition as easy and as comfortable as possible,"

Article 41

it was blocking the sun from their herb garden and was nearly touching the chimney of their wood stove.

"When the tree was shorter, we would decorate it, but the last few years we could only spotlight it,"

"But it was becoming a fire hazard. We thought this was a better solution than using it for firewood,"

"It's the prettiest tree I've ever seen," he said. "Nice and full, and in perfect shape."

"It used to be a great tree to hide under when we played hide and seek, but I really like that it is going to be the state tree,"

Article 42

The street I live on will be stripped of many of its trees because of the Asian longhorned beetle I think at the very least I can say the character of the street will be changed for the worse.

"This (beetle infestation) has the potential to absolutely flatten the land,

But some people have voiced concern about the impact on their property values if their large shade trees have to be felled to contain the spread of the invasive insect.

Article 43

New Jersey and found nothing but strip malls, desolation and blighted landscapes.

Article 44

“They’ll likely change the look of streets and neighborhoods for years to come,”

“desolation and blighted landscapes”

Article 45

“Urban homeowners cherish yard trees, and some may be tempted to conceal”

Article 46

she wouldn't mind seeing one of them go, but the other provides shade for her backyard and she'd prefer to keep it.

"I'd rather have them chop the trees down than