Municipal Arborist Exchange – Southern Exposure

By Tami Sadonoja

From left to right, Dr. Bruce Fraedrich, Plant Pathologist/Vice President Research, Bartlett Tree Research Laboratories, Tami Sadonoja, and Steve Ketner, Tree Management Supervisor, City of Charlotte.

The SMA Municipal Arborist Exchange Program brought me from my office in Hamilton, Ontario to Charlotte, North Carolina this summer. Charlotte is located in Mecklenburg County and has a population of 615,000. It is a very clean and green city with an extensive tree canopy coverage, which would be desired by many municipalities in southern Ontario.

My exchange partner, Sarah Anderson, is one of five Urban Forestry Specialists with the City of Charlotte. Sarah and her colleagues work in Land Development Services and are responsible for the plan review of commercial and single family developments.

I soon learned that one of the major differences between the Cities of Hamilton and Charlotte is in the existence of a tree ordinance for commercial property and single-family developments. The City of Hamilton presently has no jurisdiction to protect trees located on private property and only has the authority to have developers replant trees on municipal property. Charlotte is far ahead of Hamilton in this regard because their tree ordinance requirement for commercial properties requires the preservation of all trees 8" dbh or greater growing within the property set back. This distance, based on zoning, is between 20' and 40' beyond the City right-of-way. All trees 2" dbh and greater growing within this right-of-way must be preserved.

One of the problems associated with this ordinance is that it is often difficult to save trees within this area as the space soon becomes shared with hard surface treatments and utilities. Commercial tree planting requirements include a continuous perimeter planting strip, with large maturing trees planted for every 40 feet of frontage. Internal planting requirements dictate that within parking areas trees must be planted so that each parking space is no more than 60' from a tree trunk, with 75% of these trees being large maturing shade trees. It was very inspiring to see an environmentally motivated ordinance in action. It should be a goal for all municipalities to adopt such strategies for the promotion and protection of our urban forests.

For proposed single-family developments where the site has an existing tree canopy greater than 10% of the total land area, the

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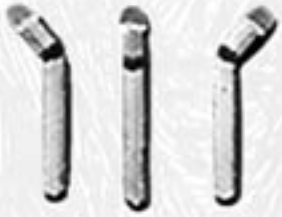

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ordinance requires that at least 10% of the total property area be a tree-save area. If the total property area contains less than a 10% canopy, the entire existing tree canopy must be saved and the developer is required to plant the required number of trees to reach the 10% canopy mark. Developers appear to be reasonably compliant with this aspect of the ordinance as the City provides density incentives for increasing the tree save area. It is always a challenge, however, to convince developers of the importance of maintaining the existing tree canopy as opposed to clearing the entire site and replanting to mitigate the loss.

The City of Charlotte utilizes two software applications, CITYgreen® and a tree inventory database, which are invaluable in the management of its urban forest. CITYgreen® is a software program resulting from the efforts of American Forests performing an Urban Ecosystem Analysis. This study analyzed 17 years (1984 – 2001) of satellite imagery and the changing land cover in Mecklenburg County. The results indicate an existing 53% tree cover; however analyses show a 22% loss in both tree canopy and open space during this same time period with the County's impervious surfaces having increased by 127%. CITYgreen® uses a 'green' infrastructure data layer derived from satellite imagery and aerial photographs. It calculates stormwater retention capacity and air quality benefits from the existing urban forest and allows for future representations to be calculated. This information is beneficial in assisting municipal staff in their decision making for land use planning and growth management, setting tree canopy goals, and attaching a dollar value to the urban forest.

Photo: American Forests

As part of their contractual services, the City of Charlotte has enlisted Davey Tree to complete a tree inventory. This is the third year of a predicted five-year project with 70,000 trees currently catalogued. Inventory data is collected from January to March and is maintained on Davey's database, with the City of Charlotte paying a yearly fee to access this information.

The Landscape Management Division oversees forestry operations. This Division has five employees involved in tree management and ten employees dedicated to tree maintenance. Tree management staff is engaged in all aspects of hard and soft surface tree planting, forest health management, and construction project review. Tree maintenance staff is responsible for maintaining 120,000 street trees along 2800 miles of City roads. In addition, the trees in one downtown park fall under their mandate. County staff maintains all other park trees.

I was fortunate to spend a day with Steve Ketner, Charlotte's tree management supervisor who oversees the maintenance operations. I was impressed with Steve's operations and the fact they have a manageable amount of outstanding work orders. Steve explained to me that when Hurricane Hugo hit North Carolina in 1989, Charlotte lost more than 4,000 street trees. This disaster effectively allowed the Division to wipe out all of its outstanding work orders. Once the storm damage was cleaned up, the Division started fresh.

Steve was able to arrange a tour of Bartlett Tree Research Laboratories and Experimental Grounds with Dr. Bruce Fraedrich, Vice President of Research. We were provided with a partial tour of the 350-acre grounds, which include an ever-expanding 125-acre arboretum. Dr. Fraedrich explained some of Bartlett's ongoing research, which includes determination of disease resistance varieties of flowering crab (*Malus* spp.) and Elm (*Ulmus* spp.) and how these varieties perform in the southeastern states. One ongoing research initiative, now it its eighth year, shows the effects of tree roots and upheaval of concrete sidewalks. The sidewalks are laid on top of various sub-base mediums and London Planes (*Platanus x acerifolia* 'Bloodgood') line both sides. As the trees mature, it is becoming evident which sub-bases appear to facilitate tree root upheaval and which ones help to discourage it.

Vital Statistics, Charlotte, North Carolina

- **Population:** *573,079*
- **Tree population:** *120,000*
- **Full-time park forestry staff:** *6*
- **Management plan:** *yes*
- **Street Tree Inventory:** *in progress*
- **Pruning cycle:** *5 years*
- **Volunteers:** *Cooperative Tree Planting Program*
- **Ten most common trees:** *Acer rubrum, Betula nigra, Carpinus betulus, Lagerstroemia indica, Prunus x yedoensis, Quercus phellos, Quercus shumardii, Taxodium distichum, Ulmus parvifolia, Zelkova serrata*
- **Biggest challenge:** *Tree protection in the face of increasing growth and development.*
- **Source of pride:** *A significant population of huge Willow Oaks that help define the city.*

Steve took me to Queens Road West, where the streetscape boasts seven rows of majestic Willow Oaks (*Quercus phellos*). These stately trees define the City. In the 1920's, 20,000 of these trees were planted within one mile of the City's inner core. The monoculture within this area is evident and Steve is attempting to diversify species in current plantings; however in a location such as this, Willow Oaks are replaced as the exclusive tree species. Fall Cankerworm (*Alsophila pometaria*) is the major tree pest in Charlotte's urban forest. The City uses Tanglefoot® banding in an effort to trap females en route to lay their eggs thereby controlling cankerworm population size and reducing damage. The banding is erected at the end of November and removed the following spring. Although traditionally cyclic in nature, the City of Charlotte has experienced ten years of heavy infestations. It is unknown as to why natural controls haven't reduced the population size, but entomologists believe that the large concentration of willow oaks may encourage infestations.

During my visit, I was provided with the opportunity to give a presentation to the City Arborist, Don McSween, Steve, and to the Urban Forestry Specialists on Ontario's recent pest threats, the Asian Longhorned Beetle (*Anoplophora glabripennis*) and the Emerald Ash Borer (*Agrilus planipennis*). These are serious exotic insect pests that are threatening the integrity of our urban forests. The importance of diversification has never been more evident to urban foresters in Ontario after having witnessed the removal of tens of thousands of infested and host trees in our efforts toward eradication.

I would like to sincerely thank the SMA for the development, promotion, and funding that made this experience possible, and I encourage all municipal arborists to apply for this invaluable program. It presents wonderful opportunities for professional development through the enhancement of technical knowledge of operational issues as they relate to municipal arboriculture. I would also like to take this opportunity to thank the City of Charlotte's staff for their warm and friendly southern hospitality.

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The SMA is the sole sponsor of this year's highly successful Arborists Exchange Program.