

Street Tree Master Plan: City of Sault Ste. Marie, Michigan

Trees play an integral role in the infrastructure of urban environments and their numerous benefits are often overlooked. A master plan is used to inform and guide urban forest management so as to allow a city to enhance the services that trees provide. With the completion of a tree inventory a master plan was developed for the City of Sault Ste. Marie, MI. The master plan will aid the City's tree commission in properly managing and maintaining a healthy urban forest.

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Services Provided by Urban Trees

Urban trees provide many ecological, aesthetic, and economic benefits to cities and townships. In an era of increasing economic scarcity maintaining these services will require a greater focus on urban forest management and more efficient planning. Any management plan is only as good as the information on hand. An urban tree plan requires an inventory which informs planners as to size, composition, and condition of the existing resource. The collection of this information, along with a street tree master plan will enable the City of Sault Ste. Marie to obtain the goal of becoming a certified Tree City USA.

Urban trees can improve aesthetics in a community by creating a natural appearance, buffering sounds and creating a sense of community. Trees serve as a noise buffer along highways and industrial sites (Kenney & Rusak, ND), and make property more appealing. Patients that have a view of a green landscape from their hospital room require less medication and recover faster than those with a view of a brick wall (World Forestry Center, 1993). Trees provide more than just a visual experience; they can help reduce the harmful effects of urbanization. A Chicago based study found that residents of an apartment building that had views of trees were less aggressive towards their family members, making fewer insults and threats, than those with a view of other buildings or asphalt (Davey Tree Expert Company, 2012). Trees also create habitat for wildlife, in particular bird species, which provides a benefit for those seeking a more natural setting in the urban environment.

The urban environment with its high amount of paved and impermeable surfaces tends to be hotter and windier than forested areas. Urban trees can reduce this heat island effect by providing shade (U.S. Environmental Protection Agency, 2011). In addition, trees moderate the effects of harsh winds and reduce the impacts of rain, snow, and ice. Trees filter water,

reduce soil erosion, and slow water movement in the event of a flood (Davey Tree, 2011). Trees can also improve air quality by sequestering carbon and releasing oxygen (Nowak 1993). For these reasons, the urban forest should be considered an important infrastructural asset (Nowak *et al.* 2002).

Urban trees also provide historic benefits as they can live for hundreds of years and provide a symbolic connection to people and events long past. If planted for ceremonial purposes, trees serve as a lasting reminder of a person or event. Large and locally significant trees can simultaneously increase public awareness on the benefits of trees while serving the community. Tree species can also be culturally significant, for example, Native Americans use ash trees for basket weaving.

On a more pragmatic note, trees have many economic benefits. Trees reduce heating and cooling costs by serving as a wind break and providing shade (International Society of Arboriculture, 2005). Trees, depending on size and species, have been estimated to account for 10-23 percent of a property's value (World Forestry Center, 1993). Properly placed around buildings, trees can reduce air conditioning needs by 30 percent and can save 20–50 percent in energy used for heating (World Forestry Center, 1993). A National Tree Benefit Calculator, developed by Casey Trees and The Davey Tree Expert Company computes the annual economic benefits of a given tree (Davey Tree Expert Company, 2012). This value comes from a breakdown of the benefits the tree provides, such as storm water reduction, increased air quality and property value. The tree calculator also provides explanations of how trees reduce storm water flows, increase property value, conserve energy, improve air quality and reduce carbon dioxide (Davey Tree Expert Company, 2012). One needs only to enter the zip code, tree species, and diameter at breast height (dbh). For example, a 12 inch Norway maple, (which

accounts for 15% of all the right of way trees in Sault Ste. Marie) provides \$110 in annual benefits to the community. Obviously, as the tree grows, its annual benefits will increase. A quick calculation using data from the 2011 street tree inventory reveals that the economic benefits from the Norway maple street trees in Sault Sainte Marie is just over \$35,000 annually.

Approach

City of Sault Ste. Marie officials recognized a need for a street tree Master Plan and began the process on May 3rd, 2010 by implementing Ordinance No. 516-10, the street tree ordinance (see Appendix A). The ordinance explicitly defines the trees the city is responsible for and establishes a Tree Commission with clear responsibilities for all activities related to street trees. The Tree Commission will be composed of knowledgeable, interested persons in the field of forestry, maintenance, management and policy.

In 2010, the Tree Commission applied for a grant from the Great Lakes Restoration Initiative, to fund a tree inventory as well as to plant new trees along the streets within city limits. In the summer of 2011, when the funding for the project was approved, a city-wide tree inventory was undertaken and a street tree master plan was developed.

Street Tree Master Plan for the City of Sault Sainte Marie, Michigan

Since no two master plans are identical, plans from other cities were examined to figure out what information needed to be collected and how to analyze it in order to fit Sault Ste. Marie's needs. The master plan should provide basic management guidelines for the Tree Commission so they have the knowledge to make better decisions when choosing which species

to plant, where to plant them, and how to care for and maintain not only the urban forest, but also at the level of the individual tree (Ricard, ND).

The master plan provides a long term direction to improve the environmental, economic and social benefits that the trees of Sault Ste. Marie have to offer by analyzing information on species, size, condition and location of the urban street trees and matching these to developed goals for future management actions. This master plan includes removals, pruning, plantings, future concerns, education and goals. With an urban forestry management plan, the City can employ a more rational decision making process in the management of its existing urban forest.

Definitions

Street trees are defined as any woody vegetation, with a diameter (dbh) greater than 1 inch, on land lying between property lines on either side of all streets, avenues, alleys or right of ways within the city. A park tree is defined as any woody vegetation in public parks which have individual names, and all other areas owned by the City upon which the public has free access as a park. These definitions are found in the Tree Ordinance (Appendix A).

Responsibilities

As laid out in the Tree Ordinance, the Tree Commission has the ultimate responsibility for policies regarding all street trees. This includes authorization and prioritization of all activities related to planting, maintaining, and removing of street trees in the City of Sault Sainte Marie. The Tree Commission shall review and, if needed, modify the Master plan on a biennial basis to ensure it remains a meaningful document.

The tree commission will forward requests for tree removals to the City of Sault Sainte Marie Department of Public Works who will handle general tree removals; Cloverland Electric for trees in immediate proximity to the electric intra-structure; and Tree Commission approved tree removal specialists for unexpected removal needs.

The Tree Commission will receive annual updates on the tree inventory database. The responsibility for this is yet undefined. There is the strong possibility that some sort of a new part time position or internship should be established to ensure that data entry of tree maintenance, removal, and plantings are kept up to date. This is a vital component for any future planning.

The Tree Commission should decide on the best way of communicating and coordinating with other maintainers of street trees immediately adjacent to the City of Sault Sainte Marie, Michigan. A contact list should be developed and maintained for interested parties including but not limited to:

The SSM Department of Public Works

The Downtown Development Authority

The Chippewa/Luce/Macinae Conservation District

The Sault Tribe of Chippewa Indians

The Soo Locks Facility

The Michigan Department of Natural Resources

Sault Beautification Committee

Lake Superior State University Grounds Department

Street Tree Inventory

The street tree inventory is a keystone to the creation of a master plan. A contract between the city of The Sault Sainte Marie and the Chippewa/Luce/Mackinac Conservation District provided oversight for the inventory process. Mr. Todd Insley, of the Conservation District supervised the work of two Lake Superior State University student interns, Helen-Ann Prince and Lauren Davison. The survey began in May and was completed in August of 2011. Each tree was identified to species, its size was measured using a diameter tape, and it was evaluated for overall health based on the condition of the wood, leaves and percent of the wood that was dead. The data sheet used in the survey can be found in Appendix C. Data was collected and recorded using handheld GPS units, in addition a hard copy data was recorded on the data sheets. A maintenance recommendation was determined for each tree to help prioritize future action.

The location of the tree was recorded both by street address and by GPS location. The GPS points collected were entered into the city GIS database. GIS mapping and data will be used to perform more in depth analysis, such as determining which streets need more trees, where the potential problem trees are located and what species of trees should be planted to maintain a diversity of trees on any given Street. The inventory included both street and park trees within the city limits.

Street Tree Inventory Overview

The street tree inventory drives the Master Plan because it provides a baseline of the species composition of the urban forest, its condition and most importantly its distribution. The

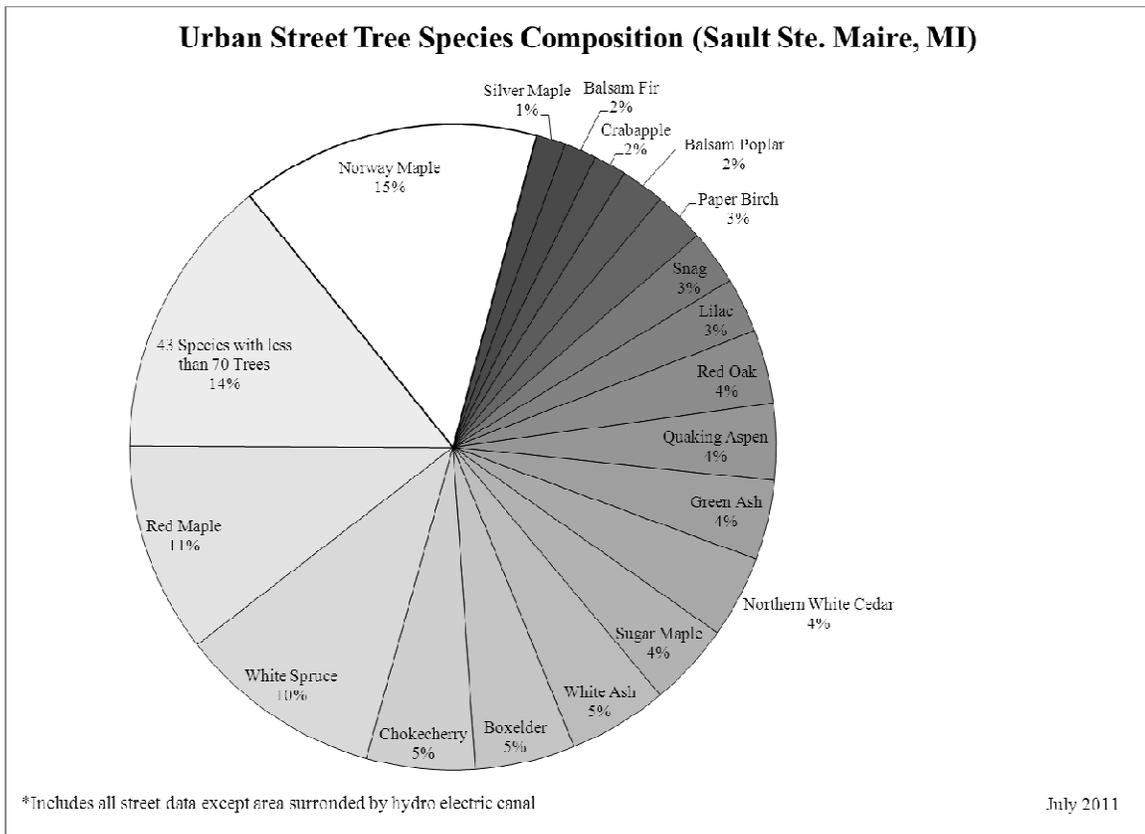


Figure 1. 2011 Street Tree Composition Sault Sainte Marie, Michigan.

overall species composition at the time of the initial survey is presented in Figure 1. The graph shows a relatively even distribution of hardwood tree species in the City and few conifers. As shown in Figure 2, Norway maple are a dominant tree species having the largest proportion of street trees in the city, however, they are an aggressive, non-native, invasive species. One immediate result of the tree inventory is a policy question for the Tree Commission, should there be a policy for dealing with non-native and invasive species? The inventory data will also allow the ability to choose future plantings to maintain a more diversified species composition throughout the city.

Removals

Based on the initial data collected, overall, street trees in Sault Sainte Marie can be considered healthy with only about three and a half percent of the street trees having over 50% deadwood. From a practical perspective the City should make plans to remove the trees with over 50% deadwood and prune those with 10-50% deadwood (about another 3%).

Current removal practices are initiated by citizen calls, construction projects, utility maintenance, and natural demise (windstorms, etc.). Trees posing an immediate danger, and general tree removal of dying trees are often removed by the City Department of Public Works (DPW). If the DPW are unable to remove the trees (in utility wires, budget, time, or the need for extensive removals) the work is bid out to Tree Commission approved tree removal specialists. Utility companies assist in tree removal as part of their maintenance.

Pruning

The stresses trees face in the urban environment lead to greater amounts of dieback of branches and general decline of the tree. Because of this street trees need to be maintained (pruned, trained, etc.) in order to improve “the safety, health, and welfare of urban inhabitants” (World Forestry Center, 1993). The maintenance recommendations determined during the inventory will allow scheduling of maintenance on a priority basis. Trees considered a high priority for trimming include those that block a street sign, traffic lights or streetlights. Results of the initial inventory show that, of the trees that need to be pruned, only 7 of the trees are a high priority prune and about five percent need routine pruning.

The Tree Commission should consider the creation of a formal process for tree hazard inspection to help prioritize and schedule maintenance activities. The process could use some combination of City workers and public assistance to carry out the evaluations. The inspections are necessary in order to maintain the trees in a prompt manner to ensure the safety of the public and their property as well as the City's.

Correct pruning practices can ensure a longer life for street trees. Information on effective pruning practices needs to be made available to all arborists working on City street trees (such as found at <http://www.na.fs.fed.us/spfo/pubs/uf/techguide/toc.htm>). Efforts to educate homeowners on maintenance and evaluation of trees should be encouraged by the Tree Commission.

Any maintenance work should be recorded on City forms (see Appendix C) and turned in to the City staff Tree Commission liaison. In this fashion a running record of activities on street trees can be maintained in the GIS. This archive will be a literal history of the tree which will document the City's diligence in maintaining a safer community.

Planting

A healthy urban forest is generally accepted to be one with both a diverse species composition and a diversity of ages and sizes of trees. The devastation to urban forests caused by chestnut blight and Dutch elm disease reinforces the old adage not to keep all your eggs in one basket. A more diverse urban forest has a lower chance of being decimated by any one problem. Keeping a diversity of ages/sizes means that there will always be smaller trees ready to fill in for larger trees as they inevitably die. The stresses to trees from the urban environment result in a generally shorter lifespan for street trees and the City needs to plan for this

eventuality. Species recommended for planting (see Appendix D) should contain species that are robust and relatively free from major pests and diseases. Although it was found that the City has 61 different species of street trees, Figure 2 shows that only 6 species account for nearly half of the trees.

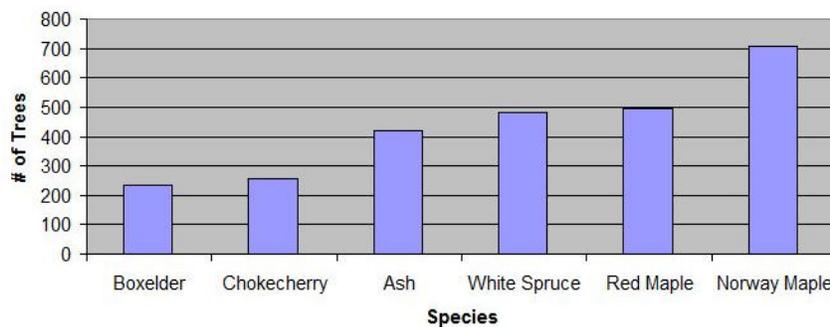


Figure 2: Species with the highest representation in the street tree inventory of Sault Sainte Marie, Michigan.

Norway maple was identified in the Overview section as the species having the largest proportion of City street trees. This presents a challenge to the city as this species is known to be a problematic aggressively invasive non-native species. Another of the top six species is chokecherry which, although a native species is also highly aggressive. If not constantly kept in check it will quickly form an unattractive thicket. An active program of removal of these two species is not warranted, however, measures should be taken to prevent continued introduction of these species into the street tree population. The Tree Commission should have a clear message with regards to the place of non-native and aggressively invasive species in their street tree program.

The planting recommendations of Appendix D should be considered a work in progress. The Tree Commission reserves the right to make additions and deletions to the list.

Future Concerns

The high number of Ash trees shown in Figure 2 presents another challenge to the City street trees. With the Emerald Ash Borer detected in Brimley in 2005 and on the campus of Lake Superior State University in 2010, virtually all of the ash trees in the City are threatened with elimination. Two future actions face the City as a result of this infestation; removal of dead trees and treatment of “legacy” trees. Both actions carry a substantial economic impact. The removal of over 600 trees would have an approximate cost of over \$203,000. Potential treatment options at this time are limited to ash tree injections. Injections were completed in the summer of 2013 on ash trees along the main downtown streets, however this is a small proportion of the overall population of City ash trees

Ash tree injections should be considered on a case by case basis. TREE-age™ is a tree injection that has proven to be 100% effective for at least two years after the initial injection (Herms et al. 2009). In the wake of Dutch elm disease, ash trees became widely planted. It is prudent that the City does not plant any more ash trees and encourages its residents to do the same.

Areas within city limits that have a high concentration of ash trees should be monitored over time (possibly with the hazard tree monitoring). The GIS database should be updated periodically with the monitoring results in order to chart the progress of the problem. As shown in Figure 3, ash trees have almost twice (7%) the amount of deadwood as does the street tree population in general.

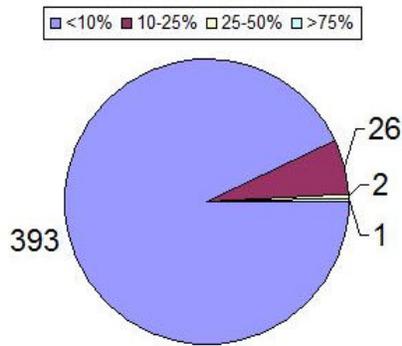


Figure 3: Percent deadwood of Ash trees

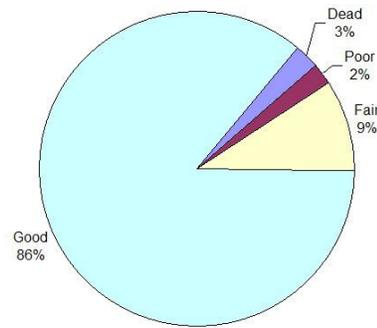


Figure 4: Wood condition of trees in Sherman Park

During the street tree inventory, it was noticed that trees in Sherman Park are in need of attention (see Figure 4). Many of these trees have a greater incidence of crown dieback and dead branches than does the overall street tree population. These trees could present a public hazard and their maintenance schedule needs to be prioritized by the Tree Commission.

The trees located in other city parks were in good condition. However, some parks would benefit from having more trees or a greater diversity.

Education

The City should inform its residents on tree related matters, through an educational seminar or mailing. Education information could include proper pruning practices, Emerald Ash Borer information (and other insects and diseases), planting guidelines and city ordinances that pertain to street and private trees. The City should encourage property owners to contact the City if there are trees in front of their property that need maintenance. The public should also contact the City if they wish to plant a tree in the right of way or have one planted by the City.

In order to keep the public informed year round, a monthly article on a tree related topic might be published in the local newspaper.

Moving Forward

An early action of the Tree Commission was the decision to become a certified Tree City USA by the Arbor Day Foundation. In order to accomplish this, the City has to have a tree board, tree ordinance, a community forestry program with an annual budget of \$2 per capita and an observation of Arbor Day.

Project Treescape was developed by the Tree Commission to both encourage tree planting in the right of ways by offering a 60/40 split of the tree cost with the homeowner. It also is hoped to serve as a way of communicating with the public.

Tree Commission Goals:

This list is a result of the analysis of the tree inventory it should be reviewed yearly by the Tree Commission and updated as necessary.

Short Term Goals:

- Remove dead or dying ash trees
- Educate landowners regarding street trees (ash monitoring, Rent-a-tree, etc)

Medium Term Goals:

- Become a certified Tree City USA
- Education
- Continue to remove trees with 50-75% deadwood
- Determine which streets need more trees or diversity

- Plant a diversity of new trees
- Develop ideas to be used as Tree City USA events
- Training for DPW workers

Long Term Goals:

- Maintain street trees
- Plant new trees
- Update GIS annually
- Continue to monitor areas with high ash count
- Develop fundraising ideas
- Seek external funding
- Develop and fill city arborist position

May 2014 Version

Sources Cited

- Arbor Day Foundation. (ND) *Tree City USA*.
<http://www.arborday.org/programs/treeCityUSA/index.cfm>
- Davey Tree Expert Company. 2012. *National Tree Benefit Calculator*. Available at:
<http://www.davey.com/ask-the-expert/arborist-advice/tree-calculator/national-tree-benefit-calculator.aspx>
- Helms, D. A., D. G. McCullough, D. R. Smitley, C.S. Sadof, R.C. Williamson, P.L. Nixon. 2009. *Insecticide Options for Protecting Ash Trees from Emerald Ash Borer*.
http://www.emeraldashborer.info/files/Multistate_EAB_Insecticide_Fact_Sheet.pdf
- International Society of Arboriculture. 2005. *Tree Care Information*.
http://www.treesaregood.com/treecare/tree_benefits.aspx
- Kenney, A., H. Rusak. (ND) *Urban Forests: An Important Part of our Natural Heritage*.
Federation of Ontario Naturalists.
http://www.ontarionature.org/discover/resources/PDFs/factsheets/urban_forest.pdf
- Nowak, D.J. 1993. Atmospheric carbon reduction by urban trees. *Journal of Environmental Management* 37: 207-217.
- Nowak, D.J., D.E. Crane, J.F. Dwyer. 2002. Compensatory value of urban trees in the United States. *Journal of Arboriculture* 28(4): 194-199.
- Ricard, Robert (ND). *The Tree Inventory*. <http://www.canr.uconn.edu/ces/forest/fact8.htm>
- SLAM (Slowing Ash Mortality). 2009. *Implementation*. Available at
<http://www.slameab.info/implementation/>
- U.S. Environmental Protection Agency. 2011, June 17. *Heat Island Effect*.
<http://www.epa.gov/heatisland/>
- World Forestry Center. *A Technical Guide to Urban and Community Forestry*. 1993.
<http://www.na.fs.fed.us/spfo/pubs/uf/techguide/toc.htm>

Sjc REVISED 4-5-10

ORDINANCE NO. 516-10
ORDINANCE OF THE CITY OF SAULT STE. MARIE MICHIGAN

AN ORDINANCE TO: REPEAL SECTION 25-19 OF CHAPTER 25, ARTICLE II; TO AMEND SECTION 25-18 OF CHAPTER 25, ARTICLE II; AND TO ADD NEW SECTIONS 25-23(1) THROUGH 25-32 TO CHAPTER 25 ARTICLE II OF THE SAULT STE. MARIE CODE OF ORDINANCES.

The City of Sault Ste. Marie ordains:

Section 1.

That Section 25-19 is repealed.

Section 2.

That Section 25-18 is amended to read:

“Sec. 25_18. Permit required to cut, trim, etc., trees in public places. No person shall cut, trim, saw or otherwise mutilate any tree in any public place to make room for telephone, telegraph or electric line wires, moving of buildings or machinery, building a sidewalk, or for any other purpose, without first obtaining a permit from the city.”

Section 3.

That new sections are added as follows:

Section 25-23(1). Definitions.

Street Trees: " Street trees" are defined as trees, and all other woody vegetation on land lying between property lines on either side of all: streets, avenues, alleys, or right of ways within the City.

Park Trees: "Park trees" are herein defined as trees, and all other woody vegetation in public parks which have individual names, and all other areas owned by the City upon which the public has free access as a park.

Section 25-23(2). Creation and Establishment of a City Tree Commission.

There is hereby created and established a City Tree Commission for the City of Sault Ste. Marie, Michigan, which shall consist of seven members, each of who shall be appointed by the Mayor and confirmed by the Commission. The City

Commission may appoint one of its members as a nonvoting liaison to the Tree Commission.

Section 25-23(3). Terms of Office.

The term of the seven persons to be appointed by the Mayor shall be four years, except that the first members appointed shall have staggered terms. Two of the members appointed to the first Commission shall be for a one year term, Two of the members appointed to the first Commission shall be for a two year term, Two of the members appointed to the first Commission shall be for a three year term, One member appointed to the first Commission shall be a four year term. Two members of the Commission shall possess a professional background relating to landscaping, tree care, or agriculture. Members appointed to the Commission must be at all times registered voters of the City, except for the two members appointed to the Commission possessing a background related to landscaping, tree care, or agriculture. In the event that a vacancy shall occur during the term of any member the successor shall be appointed for the unexpired portion of the term. Members may be re-appointed without regard to the terms limits prescribed in Section 2-31 of the City Code.

Section 25-23(4). Compensation.

Members of the Commission shall serve without compensation.

Section 25-23(5). Duties and Responsibilities.

It shall be the responsibility of the Commission:

- a) To study, investigate, develop, amend, and administer a written plan for the care, preservation, pruning, planting, replanting, removal or disposition of trees and shrubs in parks, along streets and in other public areas. Such plan will be presented to the City Commission and upon its acceptance and approval shall constitute the official comprehensive City Tree Plan for the City of Sault Ste. Marie, Michigan. The Tree Commission, when requested by the City Commission, shall consider, investigate, make finding, report and recommend upon any special matter of question coming within the scope of its work.
- b) To review plans for tree maintenance for all utility companies planning on conducting tree maintenance within the public right-of-ways.
- c) To recommend an annual budget to the City Manager for various tree activities within the City including anticipated revenues and expenses relating to providing trimming, removal, planting and professional services needed to maintain City trees.
- d) To pursue fund raising activities including obtaining public or private grants or gifts, memorials, honorary tree planting, and the creation of an endowment fund for maintaining trees within the City.

e) To advise the City Manager, City Administration, and other Boards and Commissions on various land use standards relating to tree and landscaping requirements for public and private developments.

f) To advise the City Manager on methods to purchase and produce public trees for street and park planting.

g) To educate City employees, utility companies and private citizens on proper tree planting and renovation activities.

Section 25-23(6). Operation.

The Tree Commission shall choose its own officers, make its own rules and regulations and keep minutes of its proceedings. A majority of the members shall be a quorum for the transaction of business.

Section 25-23(7). Street Tree Species to be Planted.

The Tree Commission shall include in the City Tree Plan for the City of Sault Ste. Marie a comprehensive listing of acceptable street trees that can be planted in the street right-of-way in accordance with the provisions of this Ordinance. The listing of tree species should include small trees with mature height of 15_20 feet (which could include such trees as Flowering Crab-apple and Serviceberry) medium trees with a mature height of 30_50 feet (Honey Locust and Linden), and large trees with a mature height of 50 feet or more (Bur Oak and Sugar Maple). Species of trees included in this list shall have an appropriate branching structure to minimize interference with vehicles and pedestrians utilizing adjacent streets and sidewalks. The root structure of selected tree species shall minimize interference with underground utilities, sidewalks, and streets. Furthermore, the Tree Commission shall include in the City Tree Plan the minimum trunk size for trees to be planted in the public right-of-way.

This section does not prohibit the planting of street trees by adjacent property owners provided that the selection of the tree is in accordance with all sections of Chapter 25 of the city Code.

Section 25-24(1). Spacing.

No trees may be planted closer together than the following: Small Trees, 30 feet; Medium Trees, 40 feet; and Large Trees, 50 feet; except in special plantings designed or approved by a Tree Commission.

Section 25-24(2). Distance from Curb and Sidewalk.

The distance trees may be planted from curbs, curb lines and sidewalks will be in accordance with the three species size classes listed in Section 25-23(7) of this ordinance, and no trees may be planted closer to any curb, curb line, or sidewalk than the following: Small Trees, 2 feet; Medium Trees, 3 feet; and Large Trees, 4 feet.

Section 25-24(3). Distance from Street Corners and Fireplugs.

No Street Tree shall be planted closer than 35 feet of any street corner, measured from the point of nearest intersecting curbs or curb lines. No Street Tree shall be planted closer than 10 feet of any fireplug.

Section 25-24(4). Utilities.

No Street Trees other than those species listed as Small Trees in Section 25-23(7) of this ordinance may be planted under or within 10 lateral feet of any overhead utility wire, or over or within 5 lateral feet of any underground water line, sewer line, transmission line or other utility.

Section 25-25(1). Public Tree Care.

The City shall have the right to plant, prune, and maintain trees, plants and shrubs within the lines of all streets, alleys, avenues, lanes, squares and public grounds, as may be necessary to insure public safety or preserve or enhance the symmetry and beauty of such public grounds.

Section 25-25(2). Public Tree Removal.

The City Tree Commission shall review and determine whether Street Trees should be removed as requested by any City departments or utility companies operating within the right-of-way or the general public after property owners owning property adjacent to, or within 50 feet of the street tree proposed for removal have been provided a minimum seven days written notice and have been given an opportunity to comment at a City Tree Commission meeting. If three or more Street Trees are to be removed from a single block, then all property owners on the block should be notified of this proposal and given an opportunity to appear before the City Tree Commission. If a Street Tree in the sole opinion of the city manager poses an immediate danger, then authorization of the Tree Commission and related notices are not required.

The City Tree Commission may order removal of any tree or part thereof which is in an unsafe condition, or is affected with any injurious fungus, insect or other pest.

Section 25-25(3). Tree Topping.

It shall be unlawful as a normal practice for any person, firm, or City department to top any Street Tree, Park Tree, or other tree on public property. Topping is defined as the severe cutting back of limbs to stubs larger than three inches in diameter within the tree's crown to such a degree so as to remove the normal canopy and disfigure the tree. Trees severely damaged by storms or other causes or certain trees under utility wires or other obstructions where other pruning practices are impractical may be exempted from this ordinance at the determination of the City Tree Commission.

Section 25-26(1). Pruning, Corner Clearance.

Every owner of any tree overhanging any street or right-of-way within the City shall prune the branches so that such branches shall not obstruct the light from any street lamp or obstruct the view of any street intersection and so that there shall be a clear space of eight feet (8') above the surface of the street or sidewalk. Said owners shall remove all dead, diseased or dangerous trees, or broken or decayed limbs which constitute a menace to the safety of the public. The City shall have the right to prune any tree or shrub on private property when it interferes with the proper spread of light along the street from a streetlight or interferes with visibility of any traffic control device or sign.

Section 25-26(2). Dead or Diseased Tree Removal on Private Property.

The City shall have the right to cause the removal of any dead or diseased trees on private property within the City, when such trees constitute a hazard to life and property, or harbor insects or disease which constitutes a potential threat to other trees within the City. The City Tree Commission will direct notification in writing to the owners of such trees in the same manner as prescribed in Article III. Removal shall be done by said owners at their own expense as prescribed in Article III. In the event of failure of the owners to comply with such provisions, the City shall have the authority to remove such trees and charge the cost of removal on the owner's property tax as prescribed in Article III.

Section 25-26(3). Removal of Stumps.

All stumps of Street and Park Trees shall be removed below the surface of the ground so that the top of the stump shall not project above the surface of the ground.

Section 25-28. Interference with City Tree Commission.

It shall be unlawful for any person to prevent, delay or interfere with the City Tree Commission, any of its agents, city employees, or city contractors while engaging in and about the planting, cultivating, mulching, pruning, spraying, or removing of any Street Trees, Park Trees, or trees on private grounds, as authorized in this ordinance.

Section 25-29. Arborists License and Insurance.

It shall be unlawful for any person or firm to engage in the business or occupation of pruning, treating, or removing Street or Park Trees within the City without first applying for and procuring a City license from the City Clerk. The license fee shall be in the amount set annually by resolution of the City Commission as stated in the City Fee Schedule; provided, however, that no license shall be required of any public service company or City employee doing such work in the pursuit of their public service endeavors. Before any license shall be issued, each applicant shall first file evidence of liability insurance in the minimum amounts of \$50,000.00 for bodily injury and \$100,000.00 property damage indemnifying the City or any person injured or damaged resulting from the pursuit of such endeavors.

Section 25-30. Review by City Commission.

The City Commission shall have the right to review the conduct, acts and decisions of the City Tree Commission. Any person may appeal from any ruling or order of the City Tree Commission to the City Commission who may hear the matter and make a final decision. A request for an appeal may only be made by filing a written request with the city Clerk within 10 calendar days of the action of the Tree Commission.

Section 25-31. Penalty.

Violations of this article shall be subject to penalties as outlined in Section 1-6 of the City of Sault Ste. Marie Code.

Section.25-32. Designate Arbor Day.

Arbor Day will be celebrated on the Last Friday in April each year.

Section 4. This ordinance shall take effect ten days after its adoption and publication.

I HEREBY CERTIFY that the foregoing ordinance was adopted by the City Commission of the City of Sault Ste. Marie, Michigan on the 3rd day of May, 2010.

ANTHONY BOSBOUS, MAYOR

ROBIN TROYER, CITY CLERK

I HEREBY CERTIFY that the foregoing ordinance was published in the Evening News, a newspaper printed and circulated in the City of Sault Ste. Marie, Michigan on Wednesday, May 12, 2010.

ROBIN TROYER, CITY CLERK

Appendix B: Tree Hazard Inspections

Most tree hazards can be prevented by regular checkups and proper treatments by tree professionals. To determine the scope of work, a field survey should answer thirteen questions. These questions were taken from *Alex Shigo's Tree Hazards: Your Trees Can Kill*:

1. **Target:** If the tree falls will it hit cars, houses, power lines or people? If so, the need for immediate action becomes much greater.
2. **Architecture:** Has the tree grown beyond its normal form into a dangerous form?
3. **History:** Has the tree lost large branches recently?
4. **Edge Tree:** Were neighboring trees cut away recently leaving tall trees at the edge?
5. **Dead Branches:** Are there dead tops or branches? Is the tree dead?
6. **Cracks:** Are there deep, open cracks in the trunk and branches? Cracks are major starting points for trunk and branch failures. Crack drying is just as important a factor leading to failures as over loading and decaying wood.
7. **Crotch Cracks:** Are there deep, open cracks below joining stems?
8. **Living Branches:** Do living branches bend abruptly upward or downward where tips of large branches were cut off? Living branches may pull out of trunks that are weakened by rot or cracks. Long periods of hot, dry weather may dry out the rot or cracks and weaken the union of the branch on the trunk. Beware of large branches on rotten or cracked trunks.
9. **Topping:** Are large branches growing rapidly from topping cuts on big trees? Sprouts that lean away from topping cuts have weak attachments. Sprouts near the edge of a cut may roll inward as it grows and further weaken the attachment.
10. **Storm Injury:** Are there broken branches, split trunks, or injured roots? Are branches close to power lines?
11. **Root Rot:** Are there fungus fruit bodies (mushrooms) on roots? Were roots injured by construction?
12. **Rots and Cankers:** Are there hollows or cankers (dead spots), some with fungus fruit bodies? is the tree leaning?
13. **Construction Injury:** Have roots, trunk, or branches been injured? Is there a new lawn or garden over injured roots? Water and fertilizer applied to new lawns over injured roots are absorbed by the tree's smaller, non-woody roots. The water and fertilizer stimulate the growth of the fungi that are rotting the injured woody roots. While the woody support roots grow weaker, the tree top gets larger and heavier. Once the root structure is sufficiently weakened, a moderate storm could cause the tree to fall.

(World Forestry Center, 1993)

Appendix C: Tree Hazard Inspection/ Maintenance Reporting Form

Address	GPS Point	Species	DBH	Maintenance Action	Condition

Appendix D: Species Recommendations

One of the foundational principles in urban forests is matching the tree to its location, "The Right Tree in the Right Place". Visibility for traffic, utility placement, and other factors, determine the size of tree appropriate for any given location.

Small Trees (10-20 feet):

- Jane Magnolia: *Magnolia spp.*
- P.G. Hydrangea: *Hydrangea peniculata*
- Flowering Crabapple: *Malus spp.*
 - Red Jade
 - Prairie Fire
 - Indian Summer
 - Snowdrift
 - Robinson
 - Radiant
- Japanese Lilac Tree: *Syringareticulata*
- Weeping Mulberry: *Mortis alba*
- Serviceberry: *Ainelandier spp.*
- Elizabeth or Star Magnolia:

Small to Medium Trees (20-30 feet):

- Bradford Pear: (Note: very pretty shape, brittle in strong winds, flowers have offensive smell upon opening)
- Mountain Ash:

Medium Trees (30-50 feet):

- Honey Locust: *Gleditsiatriacanthos*
- Linden: *Tiliaamericana, Tiliacordata*
- White Spire Birch: *Betulapopulifolia*
- Crimson King Maple: *Acer platanoides* (Grows slowly, up to 40 feet)
- Ginkgo: *Ginkgo biloba*
- European Hornbeam: *Carpinusbetulusfastigiata*
- Amur Maple:

Large Trees (over 50 feet):

- Red Oak: *Quercusrubra*
- Bur Oak: *Quercusmacrocarpa*
- Sugar Maple: *Acer saccharum*
- Autumn Blaze Maple: *Acer freemanii*
- Emerald Queen Norway Maple: *Acer platanoides*
- Crimson King Maple: *Acer platanoidesvar*
- New Horizon Elm: *Ulmus japonica x pumila 'New Horizon' PP 8684*
- Accolade Elm: *Ulmus japonica x wilsoniana 'Accolade'*
- Sycamore: *Platanusoccidentalis*
- Ironwood: *Ostryavirginiana*
- Nor'Easter Sterile Cottonwood: *Populuscanadensis 'Noreaster'*
- Silver Maple: *Acer saccharinum*(with restricted location as such that it cannot be located near water or sewer lines, overhead utility lines or where there is sidewalk)
- Chestnut: (with restricted location as such that it cannot be located near water or sewer lines, overhead utility lines or where there is sidewalk)
- Red Maple: *Acer rubrum*
- White Oak:

New varieties of trees on this list may be substituted with Tree Commission approval.

Small Trees:

Jane Magnolia-Jane Magnolias grow very quickly to a mature height of *10-15 ft.*... the perfect size for a decorative bed or to plant next to a structure. These trees can grow in any soil... no matter if its acidic, loamy, moist, rich, sandy, or well drained.



PeeGee Hydrangea-*PeeGee hydrangeas* will grow anywhere from 10 to 25 feet in *height*; exact *height* and spread will depend on pruning and growing conditions.



Red Jade Flowering Crabapple-Red Jade' is a weeping, white-flowered crabapple that typically matures to 12-15' tall and to 20' wide. It is noted for its weeping shape, white flowers and red fruit. It is susceptible to a number of diseases (see Problems below). White buds tinged with pink open in spring to white flowers (to 1 1/2" diameter).



Prairie Fire Flowering Crabapple-Prairiefire Flowering Crabapple will grow to be *about 20 feet tall* at maturity, with a spread of *20 feet*. It has a low canopy with a typical clearance of 4 feet from the ground, and is suitable for planting under power lines.



Indian Summer Flowering Crabapple- Indian Summer Flowering Crab will grow to be about 20 feet tall at maturity, with a spread of 20 feet. It has a low canopy with a typical clearance of 4 feet from the ground, and is suitable for planting under power lines. It grows at a medium rate, and under ideal conditions can be expected to live for 50 years or more.



Snowdrift Flowering Crabapple- '*Snow Drift*' Crabapple is a splendid tree and little ... The bright white *flowers* in the spring give a refreshing ... *Height*: 15 to 25 feet. *Spread*: 15



Robinson Flowering Crabapple- *Robinson Crabapples* are early bloomers... you get soft pink *flowers* that signal spring is here! Perfect ... They grow up to 15-20 ft. *tall*, but still demand attention.



Radiant Flowering Crabapple- The *Radiant Crabapple* is an ornamental tree with edible fruit. Plant one in sight of ... Mature *Height*, 15 - 20 feet ... *Flower Color*, Single, Deep Pink. Fall Color ...



Japanese Lilac Tree- The habit is graceful, with spreading branches that form an oval to rounded crown. Plants can be grown as large shrubs or small trees. Japanese tree lilac grows **20 to 30 feet tall** with a spread of 15 to 25 feet.



Weeping Mulberry Tree- The *weeping mulberry tree* is also known by its botanical name of "*Morus ...* This cultivar has shiny green leaves, and can reach a *height* of from 10 to 15 feet.



Serviceberry Tree- Mature Height/Spread. Serviceberry usually grows to between 10 and **25 feet tall** and 10 to 15 feet wide. It can however reach upwards of **40 feet**, but this is rare in the landscape. It has a narrow, upright, rounded crown of medium-textured foliage with irregular branching habits.



Elizabeth Magnolia- All *Magnolias* are adaptable and vigorous, but 'Elizabeth' is the expert at handling temperature extremes! Surviving -20 degree ... Mature *height* is 20 to 30 feet.



Medium Trees:

Honey Locust-Honey locusts, *Gleditsia triacanthos*, can reach a height of 20–30 m (66–100 ft), with fast growth, and are relatively short-lived; their life spans are typically about 120 years, though some live up to 150 years. They are prone to losing large branches in windstorms.



Linden Tree-Most often seen at 40 to 50 feet in height with a spread of 35 to 40 feet, American Linden or Basswood is capable of reaching 80 to **100 feet** or more (Fig. 1). The tree is pyramidal when young but develops into a striking specimen with an upright, oval canopy atop a tall, straight trunk.



White Spire Birch-A strain of white birch from UW-Madison which has proven to be highly resistant to the bronze birch borer. Mother plants of this strain have survived over 30 years without any sign of birch borer. Extremely fast growing, reaching a height of 30 to 40 feet with an attractive pyramidal form, pure white bark, and glossy, dark green leaves. It has withstood temperatures ranging from 100 degrees to -30 degrees F, and is adaptable

to a wide range of soil types. For an attractive birch clump plant 3 to 5 trees in a group, 2 to 3 ft. bareroot trees.



Crimson King Maple-'Crimson King' Norway maple grows to a height of **35 to 45 feet** spreading **about 25 to 30 feet** and is quite popular for its purple-green foliage throughout the summer. Leaves turn brown, dark maroon or bronze in the fall before dropping



Ginkgo Tree-ginkgo (maidenhair tree) Oldest living species of gymnosperm, native to temperate regions of China. It dates from the late Permian period. It has fan-shaped leaves, small, foul-smelling fruits and edible, nut-like seeds. Height: to **30m (100ft)**.



European Hornbeam-*European hornbeam* is a deciduous tree growing 10' in 10 years to 40-60' in *height* at maturity. Trees are pyramidal when young becoming rounded with age.



Amur Maple: Is the *Amur maple* the right choice for your landscape? ... Look for this tree to reach a *height* of 15-20' tall and the same distance wide once it is mature

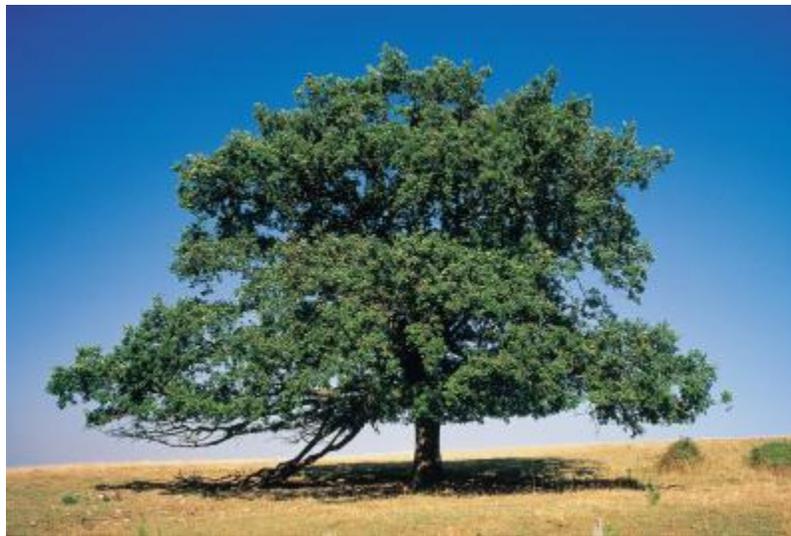


Large Trees:

Red Oak - The red oak is one of the largest and most important timber trees. One of the fastest growing of the oaks, it attains a to **80 feet** and a diameter of **two to three feet**. It has a wide, spreading head with few far reaching branches.



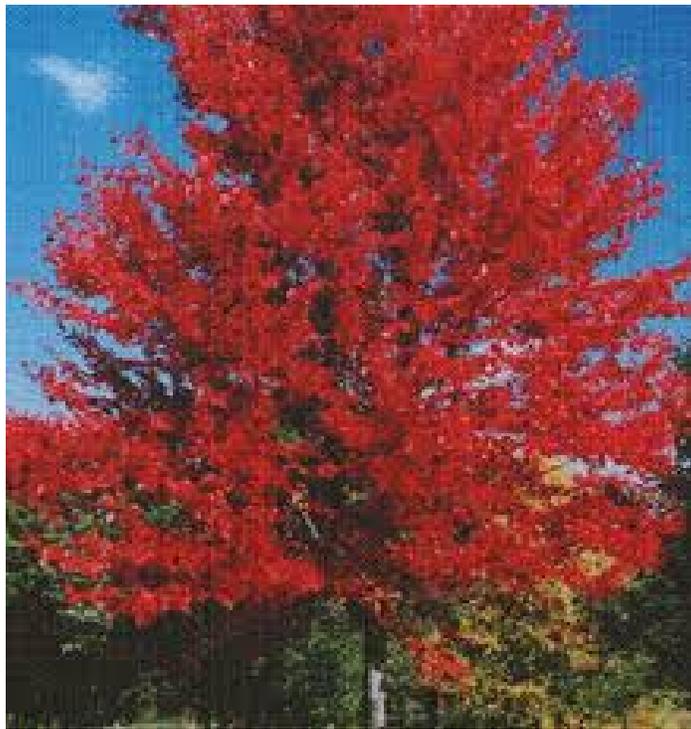
Bur Oak - A member of the Beech Family (Fagaceae), bur oak is a medium-sized to large tree, typically grows from **70 to 80 feet** in height but can grow to **100 feet** or more on better sites, with a massive trunk 2 to 3 feet in diameter and a broad, rounded crown of stout branches (Dirr 1998; Fowles 1965)



Sugar Maple -Under optimal growing conditions, sugar maple can attain heights in excess of **100 feet**. The largest reported individual was found near Bethany, West Virginia; it had a diameter of 5.6 feet, a crown spread of 75 feet, and a height of **110 feet**.



Autumn Blaze Maple -The *height* of an *autumn blaze maple* is approximately 40-50 feet at maturity, whereas the spread is about 30-40 feet.



Emerald Queen Norway Maple -'Emerald Queen' Norway Maple. This cultivar of Norway Maple in cultivation grows to a height of *60 to 70 feet* with a slightly smaller spread (Fig. 1)



Crimson King Maple -'Crimson King' Norway maple grows to a height of *35 to 45 feet* spreading *about 25 to 30 feet* and is quite popular for its purple-green foliage throughout the summer (Fig. 1).



New Horizon Elm -'New Horizon' is a compact, upright, rapid-growing, hybrid elm that typically matures over time to 40' tall and to 25' wide. It is the result of a cross between *Ulmus pumila* (Siberian elm) and *Ulmus davidiana* var. *japonica* (Japanese elm).



Accolade Elm -Accolade demonstrates an ultimate habit that is upright and American elm-like, but more compact. It can be expected to reach 40 to 60 feet (12.2 to 18.3 m) in height and 35 to 40 feet (10.7 to 12.2 m) in spread. It is

reliably hardy to Zone 4.



Sycamore Tree -A sycamore can grow to massive proportions, typically reaching up to *30 to 40 m* (98 to 131 ft) high and *1.5 to 2 m* (4.9 to 6.6 ft) in diameter when grown in deep soils. The largest of the species have been measured to *51 m* (167 ft), and nearly *4 m* (13 ft) in diameter.



Ironwood Tree -The ironwood tree, or American hophornbeam as it is also known, is a tree prized for its wood (sometimes used in longbows), and its buds and catkins, which are a food source for birds like Ruffed Grouse. The Ironwood tree averages just *25-40 feet tall*, so it is often found as part of the forest understory.



Nor Easter' Sterile Cottonwood -This is a *sterile* female sort, it is more than likely cottonless. Hardy to -25°F ...
Noreaster Cottonwood ... Mature Size (generic), TREE (30-50' Tall) • Average Width.



Silver Maple -The silver maple tree is a relatively fast-growing deciduous tree, commonly reaching a height of 15–**25 m** (50–**80 ft**), exceptionally 35 m (115 ft). Its spread will generally be 11–**15 m** (35–**50 ft**) wide. A 10-year-old sapling will stand about 8 m (25 ft) tall.



Chestnut -*Castanea dentata* is a rapidly growing deciduous hardwood tree, historically reaching up to **30 metres** (98 ft) in height, and **3 metres (9.8 ft)** in diameter. It ranged from Maine and southern Ontario to Mississippi, and from the Atlantic coast to the Appalachian Mountains and the Ohio Valley.



Red Maple-Few people know that red maple foliage can turn yellow or orange in the fall too! Size: Red maples are fast-growing trees that usually reach **60 to 90 feet** in height. The largest ones can grow more than **120 feet** tall!



White Oak-**White oak** is a long-lived, slow-growing tree, reaching 60 to 100 feet in **height** with a spread of 50 to 90 feet in its native bottomland soil. Old specimens can be massive, growing to be several hundred years old.

