

Aurora Urban Forest Study

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Outline

1. What is the Aurora Urban Forest Study?
2. Study background and objectives
3. Research results
4. Recommendations

Aurora's Urban Forest

Urban forests provide a host of benefits to the public:



Provide environmental services



Improve livability



Improve mental and physical health



Provide habitat and resources for wildlife



Reduced urban heat island effect

Threats to the Urban Forest

A number of threats to the health of our urban forests have emerged over recent years:



Climate change impacts



Urbanization

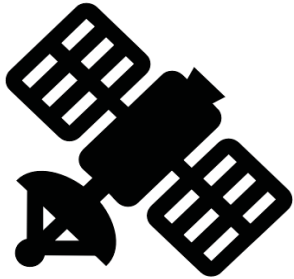


Invasive species

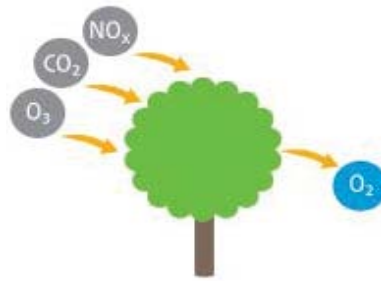


Extreme weather events

What is the Aurora Urban Forest Study?



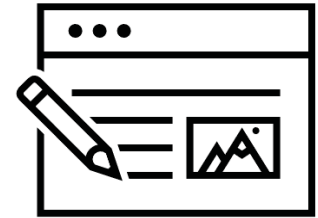
Assessments through remote sensing, GIS tools, and plot-based field surveys



Tells us what Aurora has and where it is, and quantifies services



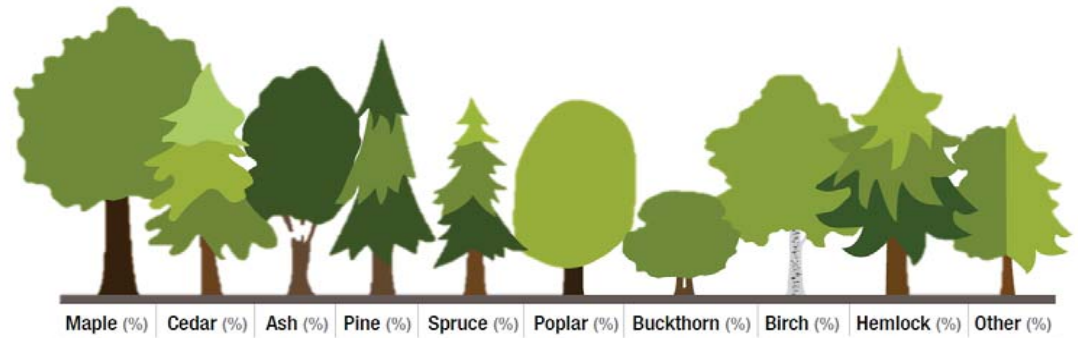
Tells us about the factors that may impact the urban forest



Communication tool

Aurora Urban Forest Study Objectives

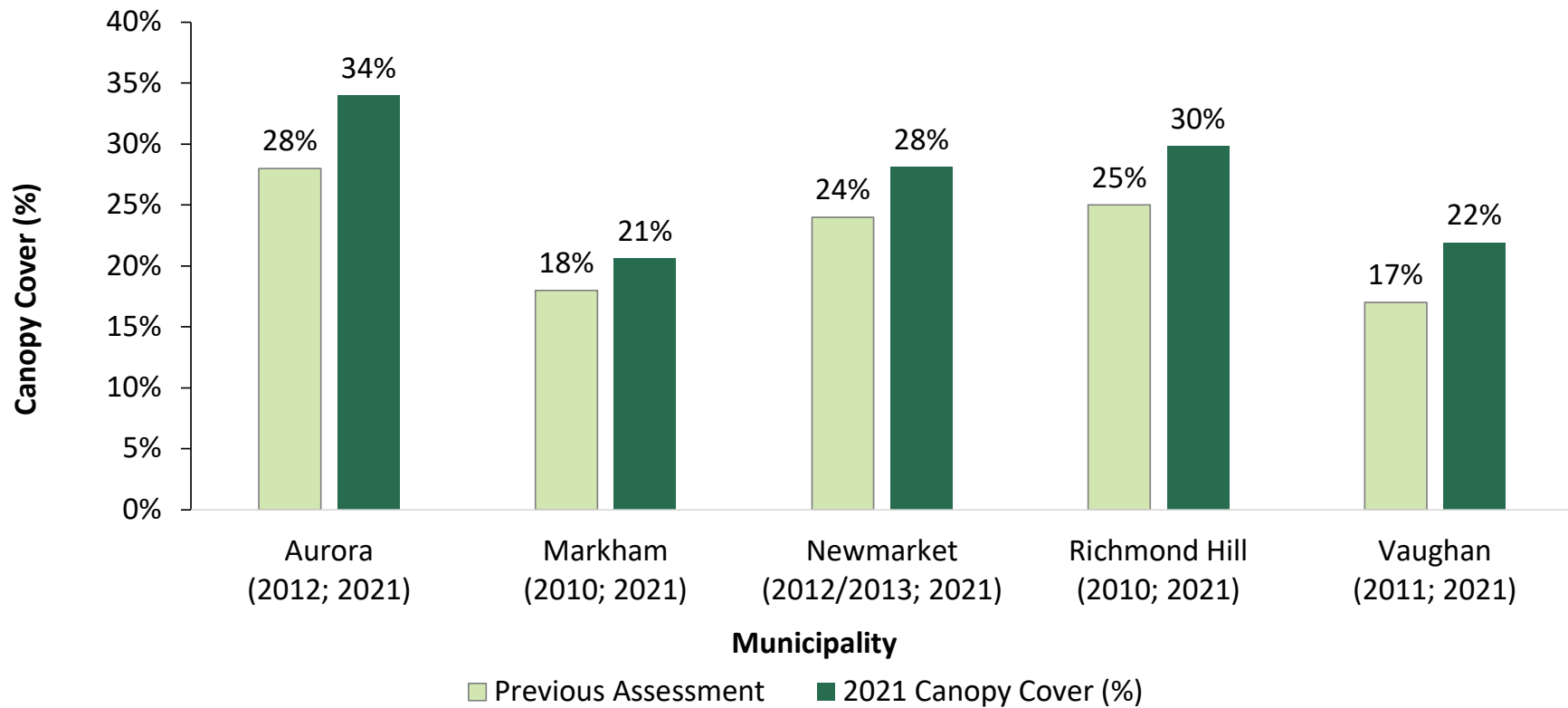
- Quantify and characterize existing distribution, structure and function of the forest, including change since the last study
- Quantify and characterize key factors relating to forest health
 - Soil profile
 - Invasive species
- Assess vulnerability of tree species to climate change
- Update and develop management recommendations



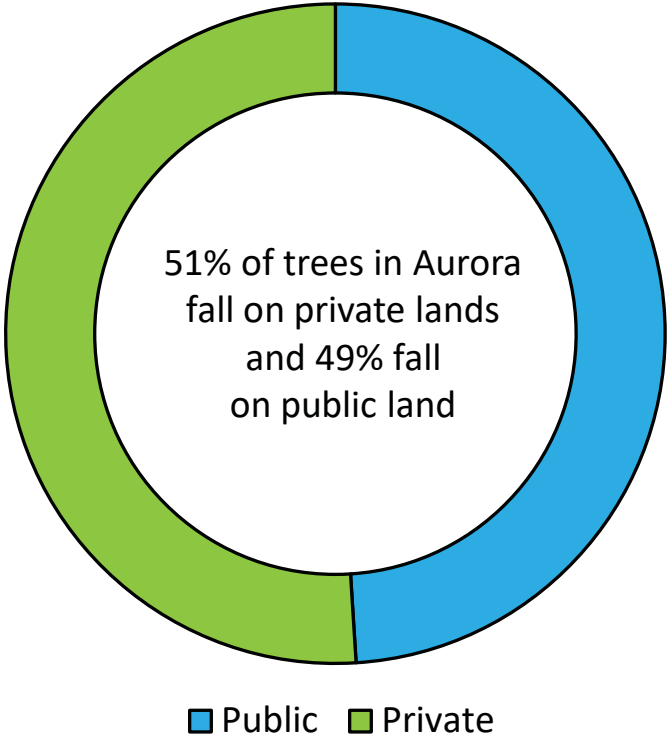
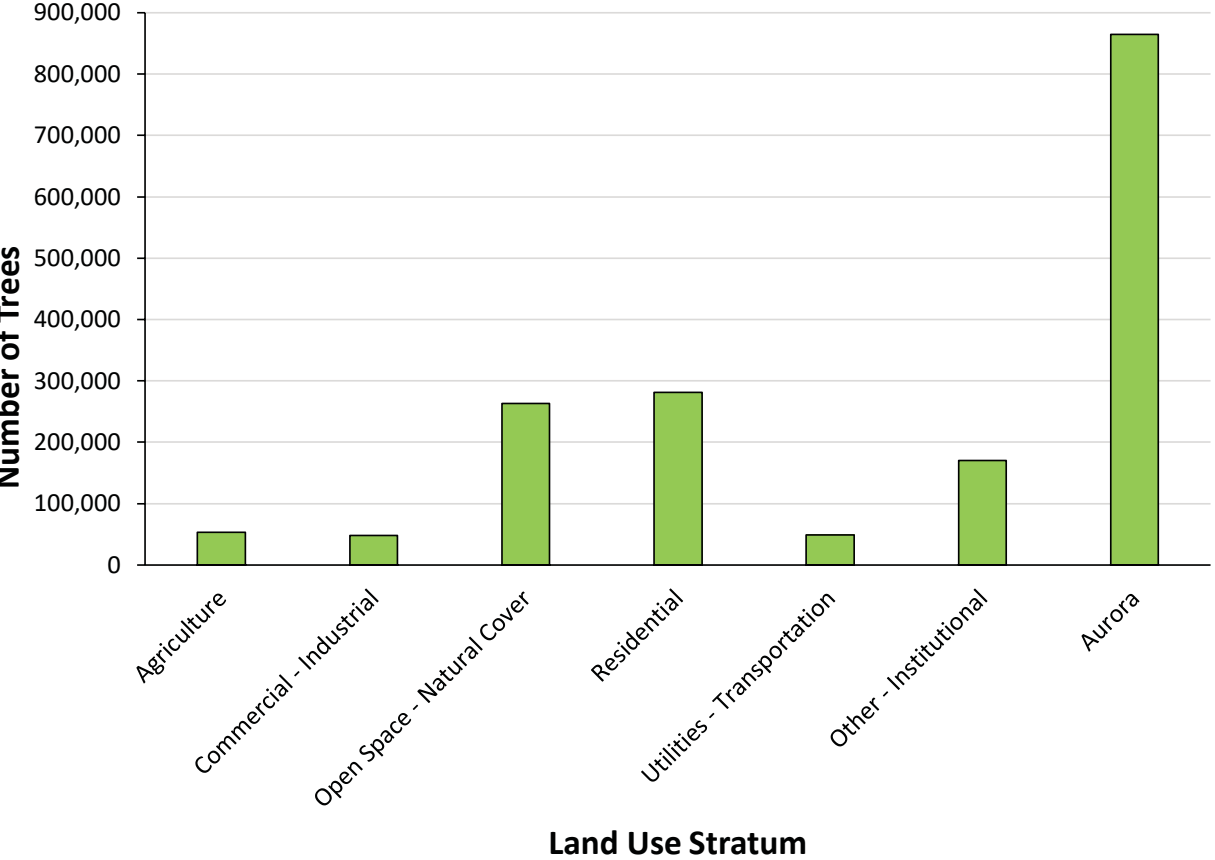
Research Results

2021 Canopy Cover by Municipality

- Previous and current assessment method – land cover mapping

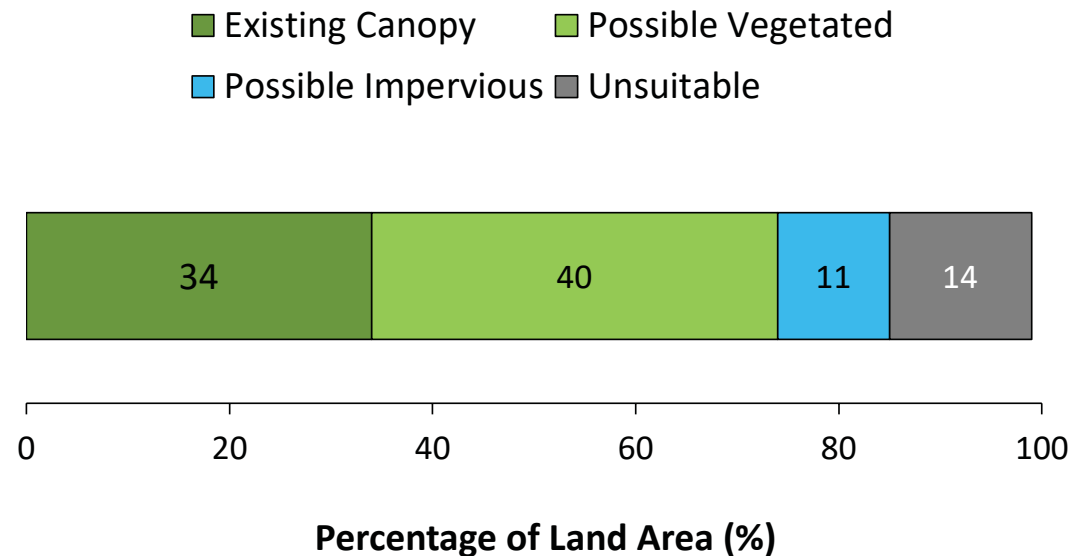


Aurora Tree Population and Distribution

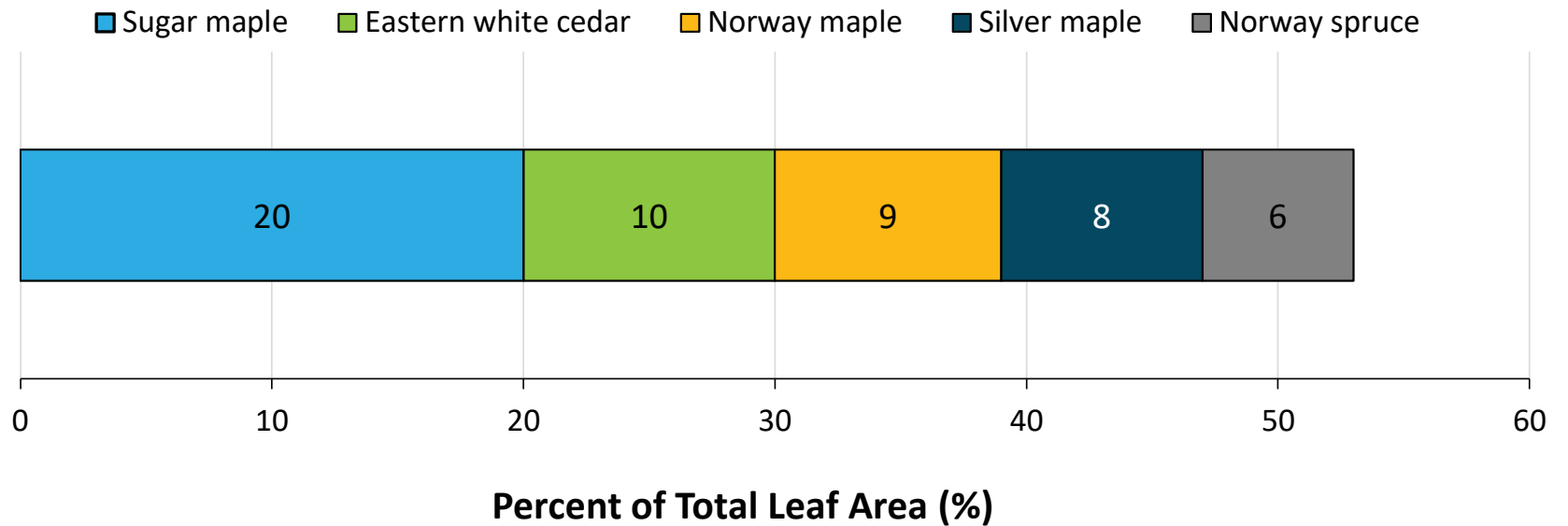


Possible Planting Opportunities

- Excluding agricultural areas, 42 % of Aurora’s land area – 2,068 ha – is potentially available for tree planting.
- Low density residential areas offer the greatest potential planting area with 559 ha

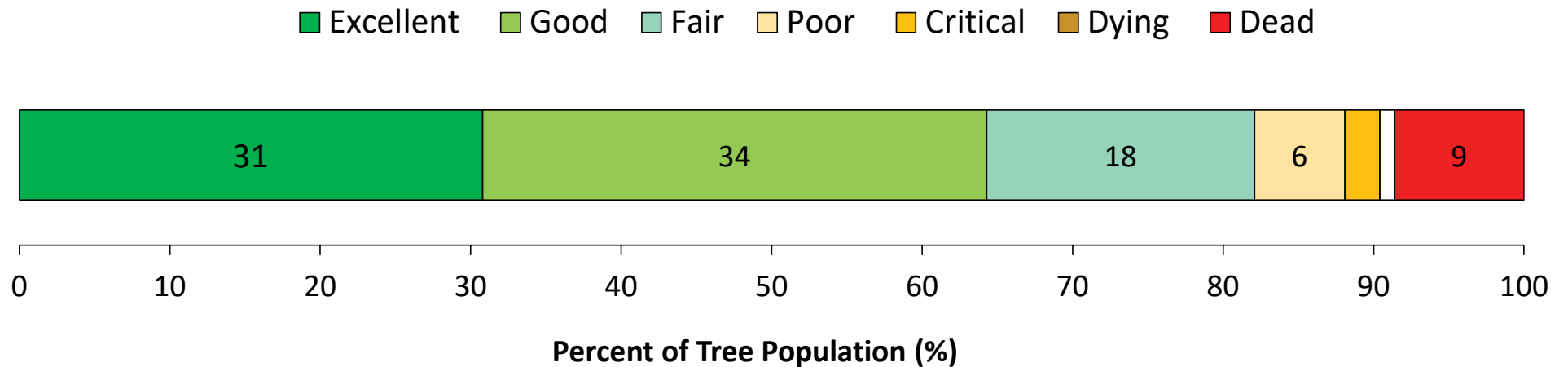


Species Composition: Top Five Species by Leaf Area

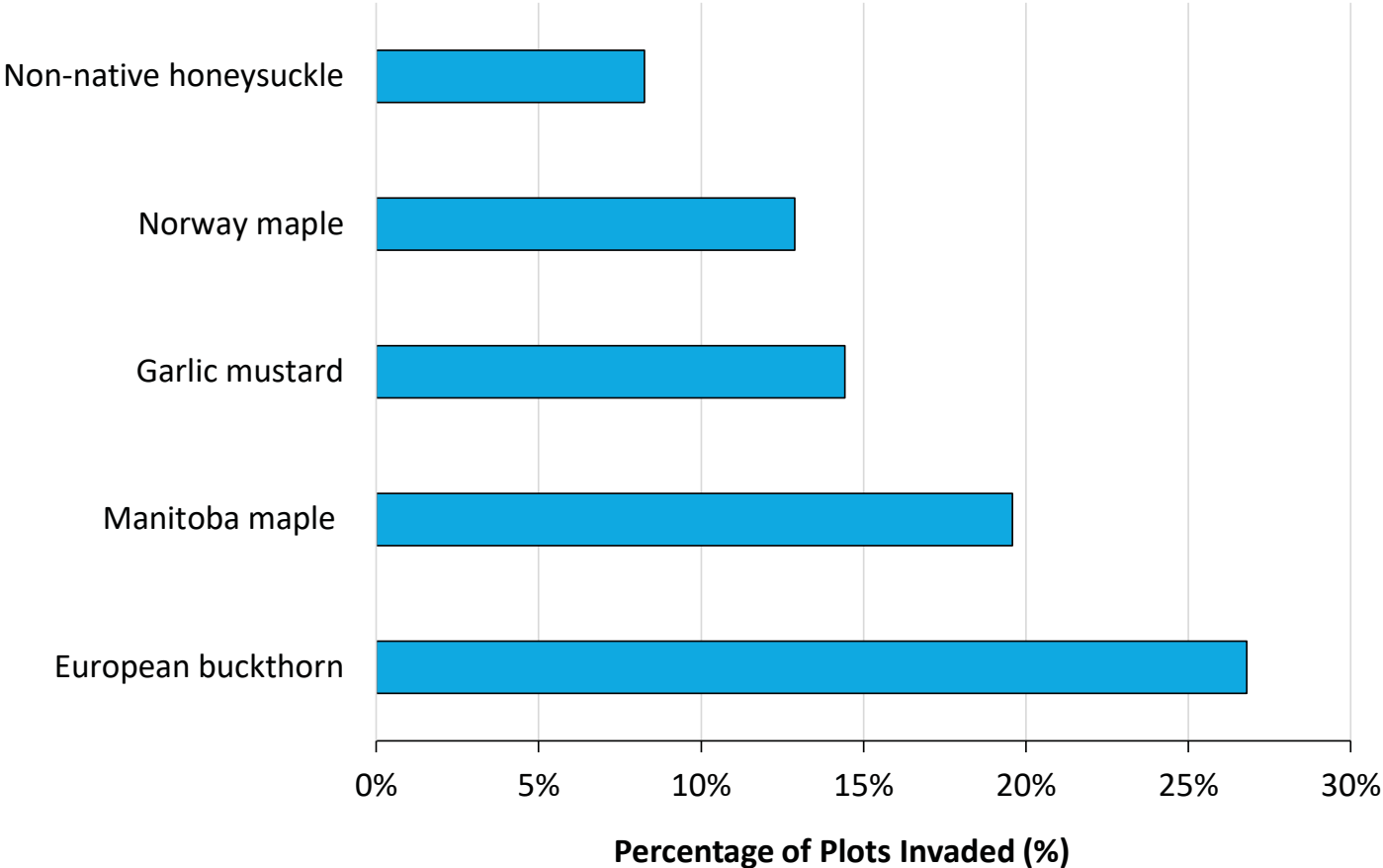


Aurora's Tree Health

- 65% of trees are in good or excellent health



Invasive Plant Presence



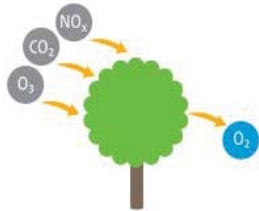
European buckthorn

Invasive Pests and Diseases

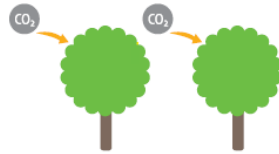
- Impacts of emerald ash borer beetle were observed at 8 % of plots
- Spongy moth was observed at 15 % of plots
- Oak wilt and hemlock woolly adelgid are incoming pests/diseases and are an active concern for the Town



Aurora's Urban Forest provides many Services and Benefits



49 tonnes/year of air pollution removed



97,270 tonnes of carbon stored

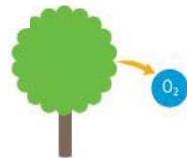
2,988 tonnes/year of carbon sequestered



247,000 m³/year of avoided runoff



\$451,000 saved from reduced heating & cooling



5,574 tonnes of oxygen/year



Shade reduces UV index by 27%

Climate Vulnerability of Aurora's Common Trees

Common Name	Percent of Stems (%)	Vulnerability Score	Tolerances	Sensitivities	Notes
Eastern white cedar	23.4	High	<ul style="list-style-type: none"> High resistance to ice damage 	<ul style="list-style-type: none"> At the southern end of their current range 	
Sugar maple	11.2	Moderate		<ul style="list-style-type: none"> Sensitive to drought 	
European buckthorn	6.5	High			Invasive
Manitoba maple	4.6	Low		<ul style="list-style-type: none"> Low resistance to ice damage 	Invasive
Norway maple	3.8	High			Invasive

Recommendations

Select Recommendations

Expansion of Canopy Cover



Recommendation 2: Include a commitment to at least 35 percent canopy cover target in the next *Official Plan* update. Recommended to aim for a more ambitious target of 40 percent. Additionally, consider the development of a woodland cover target.

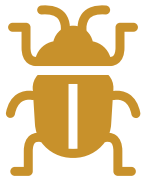
Promoting Mature Trees



Recommendation 12: Continue to promote large, mature trees across Aurora's urban forest by the regulation of tree injury or removal through the application and enforcement of the *Private Tree Protection By-law* and public sector by the *Town of Aurora Tree Removal/Pruning Compensation Policy*.

Select Recommendations

Invasive Species



Recommendation 26: Consider targeted removal of high priority invasive plant species at high priority sites following best practices.

Climate Change



Recommendation 35: Assess the Town's current recommended tree planting list based on the climate vulnerability of each species. Shift recommendations to appropriate species that have a higher tolerance and lower vulnerability to climate change impacts.

Forest Benefits Factsheet

The Benefits of Trees in Aurora

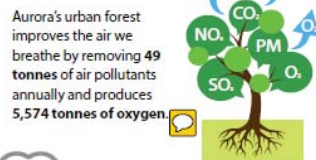
Trees are vital natural assets that provide numerous benefits to Aurora's community. They are the green lungs of the town, enhancing our health and wellbeing, saving us money, and providing food and sanctuary for wildlife. Aurora has approximately **865,000 trees** that cover 34% of the municipality.



The town's trees provide shade and shelter, reducing annual energy demands for owners and tenants, providing a savings of over **\$450,000**.



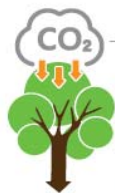
Trees absorb and filter rainwater, which helps improve water quality and reduces flash flooding. The town's urban forest **keeps 247,017 m³ of storm water out** of storm sewers. This is equivalent to 99 Olympic-sized pools.



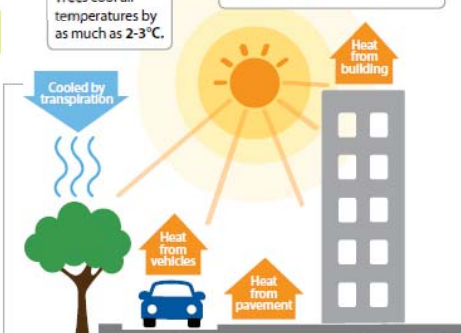
Aurora's urban forest improves the air we breathe by removing **49 tonnes** of air pollutants annually and produces **5,574 tonnes** of oxygen.

Trees cool air temperatures by as much as **2-3°C**.

Roads, buildings, parking lots and hard surfaces make up **25%** of Aurora's area.



Urban forests help Aurora mitigate climate change, **removing 10,955 tonnes** of carbon dioxide per year from the atmosphere. This is equivalent to taking **2,438 vehicles off the road**.



The urban forest provides shade and cooling, **reducing the average UV index by 45%** in residential areas in Aurora. Paved and hard surfaces trap heat, making them warmer than surrounding natural areas. This is called the Urban Heat Island Effect.

Green spaces and woodlands provide opportunities to **enjoy the outdoors**. Spending time outside has been linked to **improved physical, mental, and emotional well-being**.



For more information visit Aurora.ca



Thank You!



www.trca.ca

