| NATIONAL CAPITAL COMMISSION<br>COMMISSION DE LA CAPITALE NATIONALE | | **No.** | 2019-P216 |
|---|---|---|---|
| | | **To** | Board of Directors |
| **For** | INFORMATION | **Date** | 2019-11-21 |

## Subject/Title

Draft Forest Strategy

## Summary


- The trees and forests of the National Capital Region (NCR) are facing multiple challenges including invasive species, urban development, diminishing diversity, and the impacts of a changing climate including drought, extreme heat, and extreme weather events.
- The NCC does not currently have an organization-wide plan to guide tree and forest planting and management on the lands it manages.
- Consultations with staff and the general public were held to gather ideas for a vision, objectives, and actions to guide tree and forest management over the short- and long-term.


## Risk Summary

The NCC would miss opportunities to increase efficiency to respond to stressors on forest and urban trees if it does not adopt an organization-wide strategy, as identified in the Sustainable Development Strategy (2018-2023) and the Plan for Canada's Capital (2017-2067).

## Recommendation

- N/A

**Submitted by:**

Pierre Vaillancourt, A/Vice President, Capital Planning Branch____
Name

_____
Signature

## 1. Strategic Priorities

- For the 2019-2020 to 2023-2024 planning period, the following strategic directions will guide the NCC as it delivers its mandate to build a dynamic, sustainable, inspiring and thriving Capital Region and as it develops a forest strategy.
    - Foster an inclusive and meaningful National Capital Region
    - Ensure a picturesque and natural National Capital Region
    - Contribute to a thriving, connected and sustainable National Capital Region
- The Plan for Canada's Capital (2017-2067) commits the NCC to develop a 30-year capital program to regenerate the forests and the tree canopy on federal lands. In conjunction with the municipal authorities, a regional shared target will be established for 2067 and beyond (Milestone 8).
- The Federal Sustainable Development Strategy is the Government of Canada's primary vehicle for sustainable development planning and reporting for which the NCC will need to comply with as of December 1, 2020. Under the objective Sustainable Managed Lands and Forests, the NCC will have to ensure that the lands and forests it manages support biodiversity and provide a variety of ecosystem services for generations to come.
- Under its Sustainable Development Strategy 2018-2023, one of the six priorities of the NCC, the NCC committed to adopt and implement a forest strategy that considers natural and cultural heritage values and focuses on urban tree protection by 2019. The NCC also committed to planting 100,000 trees by 2022.

## 2. Authority

Section 3.2.1 of the NCC By-laws

## 3. Context

- Managing the vast number of trees under the NCC's care and implementing the forest-related goals laid out in master plans with the resources available is a challenge.
- The NCC has a patchwork of corporate priorities, policies, and practices related to forest management; there is, therefore, a need to formalize existing practices in order to communicate them internally and externally.
- The presence of pests has had a significant impact on the quality of the urban forests in the NCR. Since 2013, the NCC has cut more than 70,000 infested ash trees in the Ontario and Quebec Urban Lands and Greenbelt Portfolios. Thousands of infected elms have also been cut since 2000. This forest cover deficit is estimated to represent approximately 20% of the canopy in urban areas.
- Trees and forests are also subject to several other stresses: soil compaction, de-icing salts, air pollution, mechanical injuries, drought, fire, tornados, invasive non-native plants, construction, events, and urban sprawl.

- The 2016 NCC Natural Capital study found that urban forests provide a value of $9,352/ha/year and rural forests provide $4,183/ha/year and that the total economic value of the services provided by forest ecosystems equals $174 million per year.
- Currently, the NCC performs annual tree planting in urban areas to partially offset tree loss due to natural mortality, invasive species, climate change, urban pressures, etc. The NCC also maintains street trees on Confederation Boulevard and those in urban parks and along official pathways.
- The NCC must, however, define its objectives, and create an action plan to better protect and maintain the trees and forests it manages.
- The NCC has worked collaboratively with the City of Ottawa and the Ville de Gatineau, and the University of Vermont, to develop a high-quality tree canopy assessment (Appendix 2). This assessment has estimated that NCC lands are covered by 74% of trees and forests.
- The NCC has the responsibility to effectively manage this green infrastructure and to maintain this canopy cover.

## 4. Options Analysis

- This organization-wide strategy will complement the land use plans and inform how the NCC manages the forests and urban trees. The status-quo would mean continuing with multiple policies and approaches throughout the various branches.
- The proposed framework presents a long-term vision, a set of goals and objectives. It also includes 19 short-term (5-year) actions which will be prioritized to identify those with the greatest potential impact.
- Multiple NCC divisions will be responsible for implementing the actions in the strategy; the Core Team is in the process of identifying roles and responsibilities for the 19 actions.
- A planting prioritization exercise will also identify potential areas for tree planting based on land use plans and ecological, social, and management criteria.

## 5. Financial Details

### Current funding

- The NCC devotes on average the following budgets for tree management as part of the Lifecycle & Rehabilitation Program.
    - Tree planting ($200,000 per year to plant approximately 1,000 trees);
    - Dutch elm disease injections ($45,000 per year);
    - Emerald ash borer injections ($30,000 per year).

  These amounts are often impacted by extreme events and other priorities which reduces NCC's capacity to apply best practice for tree maintenance.
- Trees in urban areas (including parks and Confederation Boulevard) are maintained through ongoing operations and maintenance contracts of NCC lands and assets. It includes watering, pruning, and removal of dead trees. A deferred maintenance

budget for emerald ash borer removal allowed over the FY2018-2019 and FY 2019-2020 to plant approximately 12,000 trees for a total value of $3.1M. This initiative ends in March 2020.
- Inadequate resources have had a significant effect on the ability to achieve certain results and to effectively manage this essential green infrastructure in the NCR.

**Future funding**

- Staff is in the process of estimating the human and financial resources required to implement the strategy and action plan. This analysis (to be completed in Winter 2020) will inform future financial requests.

## 6. Opportunities and Expected Results

- The forest strategy will be an organization-wide plan to guide tree and forest planting and management on lands managed by the NCC and should result in increased internal capacity.
- The proposed framework will establish shared priorities and processes with the City of Ottawa and the Ville de Gatineau.
- Subsequent five-year forest strategy action plans will provide the opportunity to iteratively adopt new short-term strategies.
- Ample and healthy canopy cover will be a key climate change adaptation strategy to protect human health and shorelines, and lower building energy consumption as average and extreme temperatures rise over the next 60 years.
- At minimum, improving internal capacity over the next 5 years through improved data management and a formalized review cycle will be a significant measure of success.

## 7. Risks and Mitigation Measures

| Risk | Likelihood | Impact | Planned Response |
|---|---|---|---|
| The NCC would miss opportunities to increase efficiency to respond to stressors on forest and urban trees if it does not adopt an organization-wide strategy, as identified in the Sustainable Development Strategy and the Plan for Canada's Capital. | Low | Major | The Forest Strategy will articulate goals for how trees and forests will be managed internally, and with regional partners over the next 30 years. In addition, the strategy will contain a recurring five-year action plan designed to increase the NCC's capacity to effectively manage this important natural infrastructure. |

## 8. Consultations and Communications

- A Core Team and a Director Committee were created and consulted to jointly draft the framework. They provided input at each phase of the strategy development process.
- External consultation to date has included online public consultation from May 31-June 14, 2019. 241 members of the public participated. The consultation report is available in Appendix 3.
- An in-person stakeholder consultation took place on October 9th. Participants were asked to provide input on the draft framework, prioritize the 19 actions and suggest additional actions, and identify new partnership opportunities. The consultation report is available in Appendix 4.
- The strategy project lead met with representatives of Kitigan Zibi Anishinabeg First Nation and the Algonquins of Pikwakanagan, and they have expressed an interest in being involved in the development and implementation of the Forest Strategy.

## 9. Next Steps

| | |
|---|---|
| • Engagement with Kitigan Zibi Anishinabeg First Nation and the Algonquins of Pikwakanagan | Ongoing |
| • Conduct planting potential and prioritization mapping exercises; develop canopy cover and tree planting targets; identify roles, responsibilities and resources for implementation | Fall 2019 – Winter 2020 |
| • Online public consultation and stakeholder consultation on draft strategy | Spring 2020 |
| • Approval of the final strategy by the Board of Directors | September 2020 |

## 10. List of Appendices

Appendix 1 – Draft Forest Strategy
Appendix 2 – Tree Canopy Assessment Report
Appendix 3 – Public Consultation Report May 31-June 14, 2019
Appendix 4 – Stakeholder Consultation Report October 9, 2019

## 11. Authors of the Submission

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# Introduction

The purpose of the Forest Strategy is to provide a blueprint that guides tree and forest management on National Capital Commission (NCC) managed lands over the short and long term. By providing a vision and objectives, the NCC articulates its goals for how trees and forests will be managed internally, and with regional partners over the next 30 years. In addition to long term goals, the strategy contains a five-year action plan designed to increase the NCC's capacity to effectively manage this important natural infrastructure. The Forest Strategy also identifies the NCC's priority planting areas and encourages collaboration with regional partners, including the Ville de Gatineau and the City of Ottawa.

Although the scope of the Forest Strategy includes large tracts of natural forested areas like Gatineau Park and the Greenbelt, the strategy **has a strong emphasis on urban trees and forests** and considers the management of individual trees as well as forested areas. It includes, but is not limited to urban parks, parkways, pathways, agricultural hedgerows, windbreaks, and farm lanes, street trees along scenic boulevards (e.g. Confederation Boulevard, Island Park Drive), natural forests of Gatineau Park and the Greenbelt, and former tree plantations. Trees and forested areas managed by the City of Ottawa, the Ville de Gatineau, or private landowners are not included.

# Importance of Trees and Forests

Trees are more than just a pretty landscape feature; they provide many economic, environmental, social, and cultural benefits and are essential to the perception of Canada's Capital as a scenic and natural place.

## Connection to Prosperity: Economic Benefits

Much of the land in the NCC's care is green space—and much of it in its natural state—consisting of forests, wetlands and freshwater, as well as agricultural lands and urban parkland. These lands and the ecosystem services they provide are invaluable to the Capital Region; they also provide important value in benefits that are not measured according to traditional market metrics. These benefits include air quality control, water filtration, climate regulation, carbon storage, wildlife habitat and erosion control.

In December 2016, the NCC completed the first valuation of the Capital Region's natural capital, in partnership with scientists at the Université du Québec and the David Suzuki Foundation. The study analyzed the ecosystems on NCC lands, and determined their value based on the variety and importance of the ecosystem services they provide, which is as follows:

- wetlands ($59,394/ha/year)
- urban forests ($9,352/ha/year)
- rural forests ($4,183/ha/year)
- prairies and grasslands ($3,338/ha/year)
- croplands ($1,363/ha/year)
- freshwater systems ($137/ha/year).

Urban forests have a significantly higher value per hectare per year due to the importance of isolated urban forests in providing ecosystem services. From the 11 ecosystem services studied, habitat for biodiversity and disturbance prevention have the highest value for both urban and

rural forests. The Natural Capital study found that when considering the mean values for urban and rural forests, the total economic value of the services provided by forest ecosystems equals $174 million per year.

Urban trees yield other economic benefits such as building energy savings, increasing property values, food produced from fruit and nut trees, and avoiding costs of infrastructure damage and renewal. For example, in Halifax, it is estimated that street trees provide about $2.1 million in stormwater reduction services annually[1].

## Connection to Nature: Ecological Benefits

A healthy forest contributes to biodiversity and habitat provision. Even urban forests provide important habitat and support a wide range of resident and migratory species of wildlife, as well as hundreds of native plant species. For example, the Canada warbler, western chorus frog, black bears, coyotes and wolves, and white trillium can all be found on NCC lands. The forest and urban trees are the foundation of the National Capital Region's ecological network.

Large urban centres like the National Capital Region are subject to high levels of pollution which can create and aggravate health issues such as respiratory illnesses. Trees filter the air, removing small particulate matter from the air and releasing oxygen in return. The healthier the tree and the greater its foliage, the more it can remove airborne pollutants.

Carbon dioxide is a greenhouse gas associated with trapping heat in the atmosphere and driving climate change, and the effectiveness with which many trees sequester, and store carbon is considered a key mitigation strategy for reducing levels of atmospheric carbon dioxide. The level of carbon stock per hectare of forest in Canada's temperate bioclimatic zone is estimated at an average of 220 tonnes of carbon per hectare, or about 807 tonnes of $CO_2$[2]. The amount of $CO_2$ stored on NCC lands is estimated at about 32 million tonnes given the forest area of about 40 000 ha. It is estimated that NCC forests sequester approximately 77,200 tonnes of $CO_2$ annually.

Forests and trees play an essential role in moderating stormwater and flood damage, water quality, erosion, and stormwater treatment costs. Healthy tree roots help reduce the nitrogen, phosphorus and heavy metal content in stormwater, keep soil healthy through nutrient cycling, and help manage erosion by stabilizing steep slopes. Tree roots also retain and filter rainwater, and delay the time at which runoff occurs, resulting in decreased stress on sewer systems and rivers at peak flow periods. It is estimated that for every 5% increase in overall canopy cover, total city run-off is reduced by 2%[3].

[1] Halifax Regional Municipality. (2013). Urban Forest Master Plan.
[2] Kurz, W. A. and M.J. Apps (1999). A 70-year retrospective analysis of carbon fluxes in the Canadian forest sector. Ecological Applications, 9(2):526–547.
[3] Coder, K. D. (1996). Identified Benefits of Community Trees and Forests. Athens, GA: University of Georgia Cooperative Extension Service.

## Connection to Health and Well-Being: Social Benefits

One of the most important benefits that trees provide is shade. Through the process of transpiration, trees draw water from the soil and release moisture through their leaves into the air and combined with the provision of shade, they help reduce day and nighttime temperatures, especially during summer. The shade provided by trees on hot summer days helps to reduce localized temperatures by up to 12 degrees Celsius[4,5].

Large urban centres are susceptible to extreme heat due to the urban heat island effect; a phenomenon where temperatures in urban and suburban areas are elevated on average compared to surrounding rural areas as a result of lower tree canopy coverage and higher amounts of roads and buildings. A study by McGill researchers indicates there is a strong correlation between the number of deaths in Montreal and high heat/air pollution events. On average, nearly four excess deaths per day occur on days of poor air quality and extreme heat[6].

Over-exposure to the ultraviolet (UV) radiation in sunlight increases the risk of skin cancer, cataracts, premature skin aging and wrinkling. Children are at greater risk of UV over-exposure because they generally spend more time outdoors and have more sensitive skin than adults[7]. Socially vulnerable communities are also more at risk from extreme heat and UV exposure. The addition of trees and other vegetation to the built environment provides the greatest benefit in mitigating the urban heat island effect and the negative impacts of UV exposure; shade alone can reduce overall exposure to UV radiation by up to 75%[8].

Research has shown that trees enhance the quality of parks and outdoor spaces and encourage physical activity[9]. People are more likely to walk to get their coffee or do errands when there are trees or other natural features along the route. People who use parks and open spaces are three times more likely to reach recommended levels of physical activity, reducing their health risks[10]. Access to, and views of, green spaces and trees have positive effects on people's wellbeing – the more time spent in green spaces, the greater the restorative effect and lower the stress levels. Having plants or nature visible nearby has improved people's coping and healing strategies for a range of illnesses. Studies have found that surgical patients who had a

[4] City of Montreal. (2017). Climate Change Adaptation Plan 2015-2020 – Report.

[5] G. McPherson, Center for Urban Forest Research, USDA Forest Service. (209). Urban Forest Impacts on Carbon, Water and Urban Heat Islands.

[6] Goldberg, M. (2007). Some cascading effects of human lifestyles on the environment: examples of health effects. Class lecture November 2007, McGill University School of Environment.

[7] Toronto Cancer Prevention Coalition. (2017). An Update of the Toronto Cancer Prevention Coalition's Work and Priorities for Action.

[8] Parsons PG, Neale R,. Wolski P., Green A, 1998. Shady side of solar protection medical journal of Australia 168(7), 327-330.

[9] K. Wolf. 2008. City Trees, Nature and Physical Activity: A Research Review. Arborist News, vol. 17, no. 1, pp. 22-24, 2008.

[10] Giles-Corti, B., M.H. Broomhall, M. Knuiman, C. Collins, K. Douglas, K. Ng, A. Lange, and R.J. Donovan. 2005. Increasing Walking: How Important is Distance to, Attractiveness, and Size of Public Open Space? American Journal of Preventive Medicine 28:169-176.

view of trees from their rooms had shorter stays in hospitals[11], and children with Attention Deficit Disorder have less severe symptoms after participating in activities in green settings[12]. Urban trees are also effective noise buffers, which is a major asset for residential neighbourhoods near highways or industrial areas.

## Connection to Place and Culture: Historic & Cultural Benefits

Trees and forests are an essential part of the identity of the Capital of Canada. The iconic natural forests of Gatineau Park and the Greenbelt provide vast tracts of ecosystems and habitats for wildlife and recreation. The character of the capital's landscape is also influenced by its streets and parks accented with big trees and lush vegetation. The urban forest connects the region's streets, parks and communities, creating coherent patterns and comfortable spaces for people to enjoy. Even individual trees and neighbourhood green spaces have a significant impact on people's connection to place.

As the nation's capital, the trees and forests managed by the NCC have the ability to remind citizens of chapters of the capital's history. Owing to age or location, heritage trees and landscapes such as Rideau Hall, Confederation Park, Confederation Boulevard, Mackenzie King Estate, Major's Hill Park, Rideau Canal pathways, stand as a testimony to the NCC's cultural and historic heritage and identity. Management of cultural landscapes is essential to ensure that we conserve their integrity in the long-term and preserve them as links between the past, the present and the future.

For the Anishinabe Algonquin people whose territory includes the National Capital Region, connection to the land is inherent to culture. The canoe is a fitting symbol of the cultural importance of trees and forests to the Anishinabe Algonquin people. Canoes built by the Anishinabe Algonquin people are made from five kinds of trees: white birch (*ALGONQUIN NAME*, *Betula papyrifera)* is used for the exterior, eastern white cedar (*ALGONQUIN NAME*, *Thuja occidentalis)* is used to make the frame, american basswood (*ALGONQUIN NAME*, *Tilia Americana)* bark is used to tie different pieces together, roots of [black?] spruce trees (*ALGONQUIN NAME*, *species name)* are used to sew the birch bark together, and spruce sap is used to make the seams watertight and is applied with a brush made from black ash (*ALGONQUIN NAME*, *Fraxinus nigra)*[13]. Beyond being a fitting symbol, the canoe has also been key to the foundation of Canada. In his recent book "Canoe Country: The Making of Canada", author Roy McGregor says, "no canoe, no Canada." The canoe is how Indigenous communities connected and how Europeans first built relationships with Indigenous people and travelled the "water roads" across the land that was to become Canada. Forests, and products derived from them such as the canoe, have and continue to unify cultures.

*[Introduce the images of the trees of significance to Algonquin culture and Algonquin tree names (potentially text boxes, or text over images.]*

[11] Ulrich, R.S. 1984. View Through A Window May Influence Recovery From Surgery. Science 224:420- 421.
[12] Taylor, A.F., F.E. Kuo, and W.C. Sullivan. 2001. Coping with ADD: The Surprising Connection to Green Play Settings. Environment and Behavior 33:54-77.
[13] International Film Bureau. (1946). How Indians Build Canoes.

## How Much Forest Does the NCC Manage and How is it Distributed?

In 2019, the NCC worked collaboratively with the City of Ottawa, the Ville de Gatineau and the University of Vermont Spatial Analysis Laboratory to develop a high-quality canopy cover assessment for the year 2017.

Using Geographic Information Systems (GIS) tree canopy within the boundaries of the City of Ottawa and Ville de Gatineau, and the lands managed by the NCC has been summarized at various geographical units of analysis, ranging from the regional boundary to neighborhoods. Lands managed by the NCC are covered by about 74 percent of trees and forests. Gatineau Park alone contributes over 30,000 hectares of tree canopy and the Greenbelt contributes to about 7,000 hectares. Although the urban areas managed by the NCC have considerably less total tree canopy compared to Gatineau Park and the Greenbelt, they have higher than average amounts of tree canopy compared with the region as a whole because of the large amount of green space managed by the NCC.

The quantity of the canopy cover is an important metric in forest management, however, the quality of the canopy is also important. For example, the canopy cover assessment measured trees taller than 2 m but did not discriminate amongst different species. Therefore, the canopy cover total includes large specimens of buckthorn, an invasive species, and potentially other invasive or non-native species, which may have value as a part of the canopy cover, however, they are undesirable in terms of the quality of forest composition.

## How We Currently Manage Trees and Forests

As per the Gatineau Park, Greenbelt, Urban Lands and the Capital Core Area Master Plans, trees and forests are not managed the same way. Minimal active forest management practices take place in Gatineau Park as the main objective is an ecosystem management approach that allows ecological processes to follow their natural course. The biodiversity and health of the Greenbelt's vegetation and forests are protected by conserving and enhancing the biodiversity on all Greenbelt lands; by providing long-term health of forest ecosystems; through selective harvesting and thinning, promoting mixed wood native stands; through management of selected plantation areas; by using best management practices to maintain a representative range of vegetation communities across the Greenbelt; and by promoting sustainable agriculture, particularly in the encouragement of hedgerow, and shelterbelts. On urban lands, the NCC aims to reinforce vegetation cover and conserve the Capital's picturesque landscapes.

In an urban context (including the Greenbelt) trees are planted to maintain canopy cover and species diversity. Pests and disease are monitored using an Integrated Pest Management approach. For example, the NCC has programs directly related to Dutch Elm Disease and Emerald Ash Borer. The NCC also has policies and guidelines for construction and events management, including compensation when tree removal is necessary which are implemented via Federal Land Use Approvals and land access permits.

Currently, the NCC performs annual tree planting to partially offset tree loss due to natural mortality, invasive pests, climate change impacts, urban pressures, etc. Over the past 10 years, the NCC has planted approximately 20,000 trees. The presence of Dutch Elm Disease and Emerald Ash Borer have had a significant impact on the quality of urban woodlots. Since 2000, the NCC has cut more than 70,000 infested ash trees and several thousand infested elm trees. This forest cover deficit is estimated to represent about 20% of the canopy in some areas.

Forest management efforts have been focused on the removal of dead trees along edge areas and locations of highest human use, treatment of invasive plants in the forest understory, and replanting. In general, tree removal has increased the use of forested areas by users for recreational purposes and heightens the need for vigilance with respect to hazards.

As part of its mandate and compliance with environmental laws, the NCC screens development projects on federal lands for tree retention and protection. When work is proposed on NCC lands, as authorized under a Federal Approval, Land Access Permit, Event Permit or Maintenance Contract, the proponent and/or contractor is required to identify the location of all trees that may be affected by works and to fully reinstate and/or improve landscapes that are affected or altered by NCC authorized works. Also, they are required to maintain, water and protect all plantings implemented as a result of compensatory and/or mitigation measures to ensure a successful establishment period. Despite being required to fully restore landscapes that are altered during construction, reinstatements are usually inferior to the original condition due to soil compaction from construction equipment and the removal of vegetation which allows for the establishment of weeds which then compete with the restored vegetation.

The NCC is currently steward to a number of cultural landscapes of varying typologies and scales. Examples of NCC-managed cultural landscapes in the National Capital Region are Major's Hill Park, the Sir John A. MacDonald Parkway, Patterson Creek Park, Rideau Hall and the Mackenzie King Estate. To inform the management of cultural landscapes, the NCC has developed tools such as the *Guidelines to the Management and Maintenance of Mackenzie King Estate as a Cultural Landscape* and *Rideau Hall Landscape and Site Management Guidelines*. These tools ensure that landscape elements such as trees, landforms, and other vegetation are conserved for generations to come.

## Collaboration and Partnerships [to be completed with the core team]

The City of Ottawa and the Ville de Gatineau have numerous forest-related strategies, policies and initiatives and through this strategy, we are taking a step towards greater alignment with our regional partners. The NCC already collaborates with the City of Ottawa and the Ville de Gatineau on forest-related initiatives. For example, the NCC partnered with both cities to complete the tree canopy assessment that will allow the three partners to set planting targets and locate areas for planting in the City of Ottawa. The NCC also partners with non-profit groups on forest initiatives. For example, we have collaborated with Le Conseil régional de l'environnement et du développement durable de l'Outaouais, Tree Canada, Scouts Canada, and the Champlain Park Community Association on tree planting and stewardship initiatives.

We have partnered with [XYZ] organizations to conduct scientific research on NCC-managed lands.

## Vision

Trees and forests on federal lands in Canada's Capital region are diverse, connected, and resilient. They provide essential ecosystem services, heritage and cultural landscapes and promote health and well-being equitably for residents and visitors.

## Goals, Objectives and Actions

The goals provide the overarching framework and are linked to the objectives and actions. [More text to come]

1. **Understand** our Trees and Forests
2. **Protect** Existing Canopy Cover
3. **Plant** the Right Trees in the Right Place
4. **Manage** for Resilience, Safety and Efficiency
5. **Engage** with Partners and the Community

Below are the objectives and actions for the NCC's trees and forests. The objectives articulate the long-term tactics the NCC will pursue in order to achieve the vision. Actions are the measures we will undertake to meet the objectives and the vision and increase internal capacity to better manage the trees and forests in the short term. The list of actions will be renewed every five years.

As previously mentioned, although the scope of the strategy includes large tracts of natural forested areas like Gatineau Park and the Greenbelt, it has **a strong emphasis on urban trees and forests** and considers the management of individual trees as well as forested areas.

| Objectives | Actions |
|---|---|
| Improve knowledge of NCC trees and forests through data collection and analysis. | 1. Update the 2017 canopy cover study in 2026. |
| | 2. Develop a GIS forest inventory collection and maintenance plan. |
| Protect large urban trees, heritage trees and cultural landscapes. | 3. Develop heritage tree protection guidelines and identify heritage and cultural landscapes where these guidelines will be applied. |
| | 4. Assess agricultural leased properties for tree management needs and develop tree management plans where applicable. |

| Objectives | Actions |
|---|---|
| Protect trees during development and events and from invasive species. | 5. Compile and streamline NCC guidelines for construction & operational activities and compensation (including cutting & pruning, events, and riparian zones) that recognizes site-specific context. |
| | 6. Compile and streamline NCC guidelines on invasive species, and deliver annual invasive species training presentation to staff, contractors, and partners. |
| Increase survival rates in newly planted trees. | 7. Compile and streamline NCC guidelines on tree planting, establishment, and maintenance. |
| | 8. Conduct a feasibility study to explore options related to the establishment of a tree nursery on NCC lands. |
| Plant diverse species and ages to increase resilience to climate change and quality of life. | 9. Identify tree species, varieties, cultivars, or geographic seed sources that are suited for the National Capital Region's future climate for different land types and functions. |
| | 10. Plant trees strategically: in areas with below-average urban forest cover in alignment with master plans; where economically vulnerable populations are at risk from urban heat islands; as visual and auditory buffers. |
| Improve internal and external compliance with guidelines and policies. | 11. Explore options for improving compliance and enforcement of tree and forest management. |
| Manage trees for public safety and to support tree health. | 12. Develop a risk-based management approach to prioritize dead trees for removal and understand forest fire risk. |
| | 13. Implement an urban tree lifecycle maintenance program (e.g. 7-year review cycle). |
| Recognize the value of trees as assets. | 14. Integrate the value of trees into the NCC's Asset Management Program. |
| Work with local Algonquin communities to integrate traditional knowledge into forest management. *[Actions under this objective to be further developed through engagement with Kitigan Zibi and Pikwakanagan]* | 15. Plant trees species that are important to indigenous people across the NCR. |
| | 16. Use Algonquin tree names in NCC literature and signage. |
| | 17. Create a reconciliation healing forest. |

| Objectives | Actions |
|---|---|
| Raise awareness of the importance of trees and forests and engage community groups, universities, municipalities, and the public in forest stewardship. | 18. Create an educational demonstration site by converting managed forests in the Greenbelt to more native inventory following the forestry cycle. |
| | 19. Continue to welcome forest research on NCC lands |

## Planting Priorities & Targets [*to be completed during Fall 2019 – Winter 2020*]

The NCC undertook a mapping exercise to identify the areas that would most benefit from tree planting. Although the NCC, through this strategy, is seeking to maintain/increase canopy cover, it is important to maintain a diversity of habitats including wetlands, meadows, as well as forests. This planting priority list respects land use defined in the Gatineau Park, Greenbelt, Capital Urban Lands and the Capital Core Area Master Plans.

[Include discussion of criteria used to identify priority planting sites: socio-economic status, urban heat islands, asthma rates, riparian restoration needs, valued ecosystems, maintenance savings, land use, contaminated soils, etc.]

Based on this exercise, the following targets have been identified [list provided below are examples]:

1. Overall canopy cover target for NCC, City of Ottawa and Ville de Gatineau.
2. Portfolio/area-specific targets for the NCC.
3. Number of trees to be planted and where
    a. Plant 100,000 trees by 2022 to replace trees lost to Emerald Ash Borer.
4. Restore or enhance XYZ hectares of natural areas, including forests, by 2030.
5. Double street tree density in below-average blocks within the Capital Urban Lands and the Core Area by 2030.
6. Organize X planting events with community groups annually.

DRAFT

# Annex 1: Trends affecting the NCC's trees and forests

**Urban Development**

Increased development pressure results in fragmentation of available habitat for tree growth, resulting in fewer trees planted and those planted not able to reach their maximum potential size. As the National Capital Region grows and urban density increases, the extent of hard surfaces, including native soils compacted during construction activities, increases, and less water can permeate down into the soil. Impermeability presents challenges for the NCC's trees and forests by limiting:

- Space to plant new or replacement trees
- Soil volume for existing and new trees
- Rainwater soil infiltration and storage

The resulting increase in surface water runoff can impact water quality, soil moisture and flood risk, which further impacts natural ecosystems, forest health and infrastructure. Increased salt levels in soils in urban areas as a result of de-icing roads with salt in winter months causes dehydration in trees, and the use of lime-based aggregate used for sidewalks, roads and paths in urban areas leads to increased soil pH levels.

Increased density of development and utilities infrastructure, both under and above ground, can result in less area for tree root and/or canopy growth, poor conditions and stress for trees in close proximity. In many cases, native trees cannot tolerate or are unsuitable for urban sites (for example, they are too large for the available space or prone to branch breakage). Successful urban trees thrive in modified urban soils, tolerate higher levels of pollution, pruning, compaction and numerous other activities occurring in urban land uses. In some cases, this may mean selecting non-native species that are hardy enough to survive urban conditions. In addition, mechanical injuries, maintenance of hydroelectric lines, construction, de-icing salt, and public events can take their toll on tree and forest health.

Another development-related challenge is that of compensation measures required for trees that are cut down as part of new developments. Determining appropriate compensation measures is complex and is calculated according to the context such as the location of cut trees, the importance of trees, the relative impact of the anticipated loss of ecological functions, etc.

**Invasive Species**

Native trees and forests are under threat as a result of invasive plants and insects. Invasive species spread aggressively and can out-compete native plant species, impacting a wide range of ecological functions in the natural areas in which they occur. Invasive species pose a significant threat to the native biodiversity of the National Capital Region and many parts of eastern Ontario and western Quebec.

DRAFT

Examples of significant losses to native forest diversity because of introduced pest species include:

- the loss of ash species to Emerald Ash Borer (*ALGONQUIN NAME, Agrilus planipennis*);
- the loss of American elm to Dutch Elm Disease (*ALGONQUIN NAME, Ophiostoma ulmi and Ophiostoma novo-ulmi*); and
- the loss of Butternut due to an invasive fungal disease (canker).

On the forest floor, garlic mustard (*ALGONQUIN NAME, Alliaria petiolata*), dog strangling vine (*ALGONQUIN NAME, Vincetoxicum rossicum*) and European buckthorn (*ALGONQUIN NAME, Rhamnus cathartica*) continue to displace the native flora in NCC's forested areas. Pest infestations often spread across political boundaries, therefore partnerships with other organizations, including la Ville de Gatineau and the City of Ottawa, on urgent forest health issues are maintained to allow for collaboration.

**Climate Change**

The NCC recently commissioned a study to develop climate change projections for the National Capital Region in partnership with the City of Ottawa. Improving the level of understanding and certainty about climate change will help to guide the NCC's decisions with respect to tree and forest management. Some of the changes that the National Capital Region is predicted to experience in the future include:

- Increase in average temperature
- Warmer winters accompanied by a decrease in the frequency and intensity of low temperature extremes
- More extreme heat
- Changes to seasons
- Increase in total precipitation
- More frequent and intense precipitation extremes
- Wetter winters
- Less snow & shorter snow season

Although the exact nature of the impacts of climate change on the NCC's forests cannot be forecasted with 100% precision, certain management implications and related effects on required resources can be anticipated. These include the following:

- increased operating resources (or dedicated reserve funds) to deal with extreme weather events and storm response;
- expanded forest health care monitoring and control programs in response to a greater diversity of and more persistent pests;
- increased need for canopy reduction pruning to offset damage to tree root systems;
- increased need for watering and maintenance of drought and heat-stressed trees; and
- expanded education and emergency planning.

Maintaining a diverse and resilient urban forest, as well as the management flexibility to respond quickly to change, are key elements in being able to adapt to the anticipated impacts of climate change. Decision-makers at all levels of government, locally and around the globe are increasingly recognizing that trees and forests are highly vulnerable to climate change and that it is time to put adaptive measures in place.

The urban heat island effect is likely to be exacerbated under future climate conditions. Many of these heat island locations are also priorities for increasing canopy cover because of the expected benefits to people.

A healthy tree will be more resilient to climate change and other threats. To build resilience in the urban forest population, new trees will need to be provided with access to a reasonable volume of good soil, adequate soil moisture and space to grow. Healthy urban forest canopy cover and moist soils in hot spots will also create more continuous cool refuges across the city to reduce people's vulnerability during heat waves, and lower building energy consumption.

**Biodiversity & Tree Diversity**

Building the ecological network — the interconnected system of large to small natural areas across the region — is essential to sustaining the biodiversity of the National Capital Region over the long term. Structurally diverse native forests play a critical role in sustaining biodiversity in the city by providing habitat for native flora and fauna, and by providing people with access to nature. It is important that native trees and forests remain a significant component of the urban forest. Many are also adapted to the region's cold climate.

Maintaining tree diversity and selecting trees that are expected to thrive in future climate is important for the health of the forest. A diverse and well-adapted tree population will be less vulnerable to insect and disease attack, more resilient to climate change, and provide a stable supply of ecosystem services[14].

Genetic diversity is also important for having resilient individuals in the tree population, and for genetic conservation of diversity within tree species. The genetic diversity of the NCC's tree population is largely unknown. However, it is likely to be declining in urban areas because modern nursery practices rely heavily on industrial-scale production of clonal trees of limited types. As cloned trees are genetically identical, stands of clones are highly vulnerable to threats from insects and disease. In addition, the selection of clones from the same climate zone further increases vulnerability. Increasing species and genetic diversity within the NCC's forests and among urban trees over the long term will need to be coordinated with the nursery industry that supplies the tree stock. In addition to species and genetic diversity, we need to work with nurseries to obtain quality specimens in general. For example, circling roots and poor branching structures can also impact the survival of young trees.

Age and size diversity is important for maintaining a relatively stable forest population over time. Using size as a proxy for age, the 40:30:20:10 guideline (based on research in Syracuse, New York) suggests urban tree populations should have the distribution shown below [insert image]. To maximize urban forest benefits and increase resilience, a diversity of predominantly

[14] Paquette, Alain. (2016). Augmentation de la canopée et de la résilience de la forêt urbaine de la région métropolitaine de Montréal. Sous la direction de Cornelia Garbe, Jour de la Terre, et du Comité de reboisement de la CMM.

large, long-lived trees needs to be planted. When planted in the right place, a single large tree provides many times the benefits of a small tree over its lifetime.

**Health and Safety of the Public**

The NCC is responsible for maintaining trees growing along streets and within parks and natural areas. Trees in streetscapes and natural areas generally have different maintenance requirements than trees in natural areas. Maintaining these trees in a safe and healthy condition is an ongoing concern for the NCC. Maintenance and management involve a wide range of activities, including:

- maintenance pruning of street and park trees and trees along some pathways in Gatineau Park and the Greenbelt to eliminate dead or hazardous limbs or branches;
- maintenance and removal of branches and trees that impact infrastructure;
- invasive species and noxious weed control;
- removal of dead trees or trees that can no longer be maintained in a safe condition;
- the clean-up of failed tree limbs and other tree debris following severe weather;
- new tree maintenance to support proper establishment through structural pruning, watering and mulching; and
- seeking mitigation measures to manage identified risks while making every effort to preserve trees – pruning, cabling, retrenchment for veteran trees, improving root zones via decompaction activities.

**Inequitable Distribution of Canopy Cover**

Linking tree canopy with socio-demographic information can help highlight areas where inequities or environmental justice issues may be present. For example, research suggests that areas with lower income also have lower tree canopy cover[15][16][17]. A recent study found that many of the most vulnerable residents of Montreal are exposed to relatively significant urban heat islands[18]. Areas with high proportions of vulnerable individuals are often located in close proximity to industrial and commercial areas where severe urban heat islands occur.

In its recent tree canopy assessment, the NCC explored the relationship between tree canopy and two variables stored within the dissemination area dataset, median income, and population density. A statistically significant relationship exists between median income and the percentage of tree canopy, meaning that areas with wealthy individuals tend to have higher amounts of tree canopy. This relationship does not always hold true, as evident in some lower-income rural areas with high amounts of tree canopy, and wealthy downtown areas with lower amounts of tree canopy. A statistically significant inverse relationship exists between tree canopy and population density. Despite this relationship, there are highly populated areas that have relatively high percentages of tree canopy due to the presence of urban forests.

[15]Schwarz K, et al. (2015) Trees grow on money: Urban tree canopy cover and environmental justice.
[16] Harlan SL, et al. (2008) In the shade of affluence: The inequitable distribution of the urban heat island.
[17] Jenerette GD, Harlan SL, Stefanov WL, Martin CA (2011) Ecosystem services and urban heat riskscape moderation: Water, green spaces, and social inequality in Phoenix, USA.
[18] City of Montreal. (2017). Climate Change Adaptation Plan 2015-2020 – Report.

# Tree Canopy Assessment

## Canada's Capital Region

Fall 2019

Ottawa

Ville de Gatineau

NCC CCN

This assessment provides decision makers with the information needed to better understand and make more informed decisions about the forests and urban trees in the Capital Region. This assessment was completed by the University of Vermont Spatial Analysis Laboratory. This project was made possible through a collaborative partnership between the National Capital Commission (NCC), the City of Ottawa and the Ville de Gatineau.

# THE NEED FOR GREEN

Cities are facing a host of environmental challenges, from stormwater runoff to the urban heat island effect. At the same time, cities are seeking to become more livable and sustainable to attract businesses and residents, while ensuring equitable access to environmental amenities. Trees provide a host of ecosystem services. Their canopies provide habitat for wildlife. The transpiration process reduces summer temperatures. And research has shown that trees can even improve social cohesion and reduce crime. A healthy and robust tree canopy is crucial to the sustainability and livability of our urban areas.

# TREE CANOPY ASSESSMENT

For decades, governments have mapped and monitored their infrastructure to support effective management. That mapping has primarily focused on grey infrastructure, features such as roads and buildings. The tree canopy assessment protocols were developed to help communities develop a better understanding of their green infrastructure through tree canopy mapping and data analytics. **Tree canopy is defined as the layer of tree leaves, branches and stems that provide tree coverage of the ground when viewed from above**. When integrated with other data, such as property land use or demographic variables, tree canopy maps can provide vital information to help governments and their citizens chart a greener future. Tree canopy assessments have been carried out for over 80 communities in North America. This study assessed tree canopy within the boundaries of the City of Ottawa and Ville de Gatineau, and the lands managed by the NCC.

# MAPPING THE TREE CANOPY FROM ABOVE

Tree canopy assessments rely on remotely sensed data in the form of aerial imagery, and light detection and ranging (LiDAR). These data sets, which have been acquired by various governmental agencies in the Capital Region, are the foundational information for tree canopy mapping. Imagery provides information that enables features to be distinguished by their spectral (colour) properties. As trees and shrubs can appear spectrally similar, or obscured by shadow, LiDAR, which consists of 3-D height information, enhances the accuracy of the mapping. Tree canopy mapping is performed using a scientifically rigorous process that integrates cutting-edge automated feature extraction technologies with a detailed manual review and editing. This combination of sensor and mapping technology enabled the mapping of the Capital Region's tree canopy in 1,000 times greater detail than ever before. From the street tree in an Ottawa suburb to an old-growth tree in the forests of Gatineau Park, every tree in the Capital Region was accounted for.

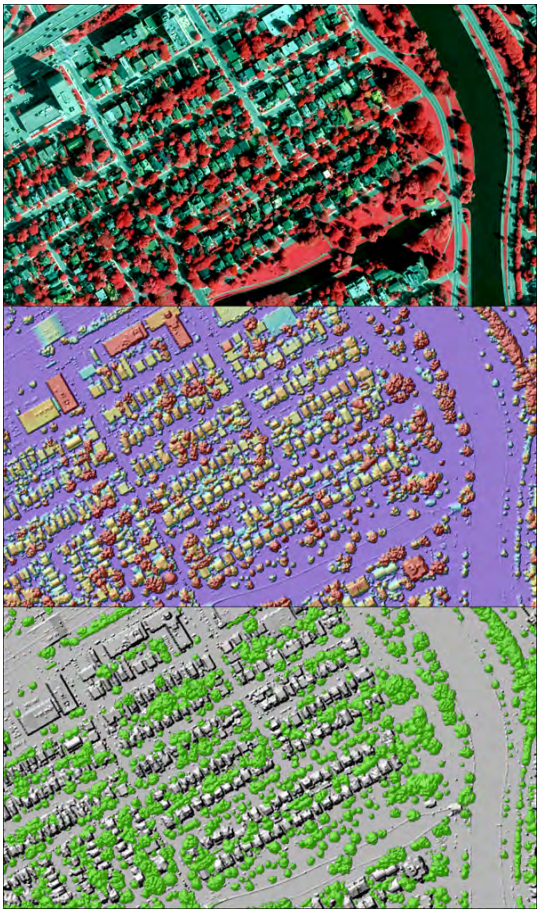
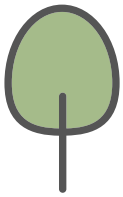


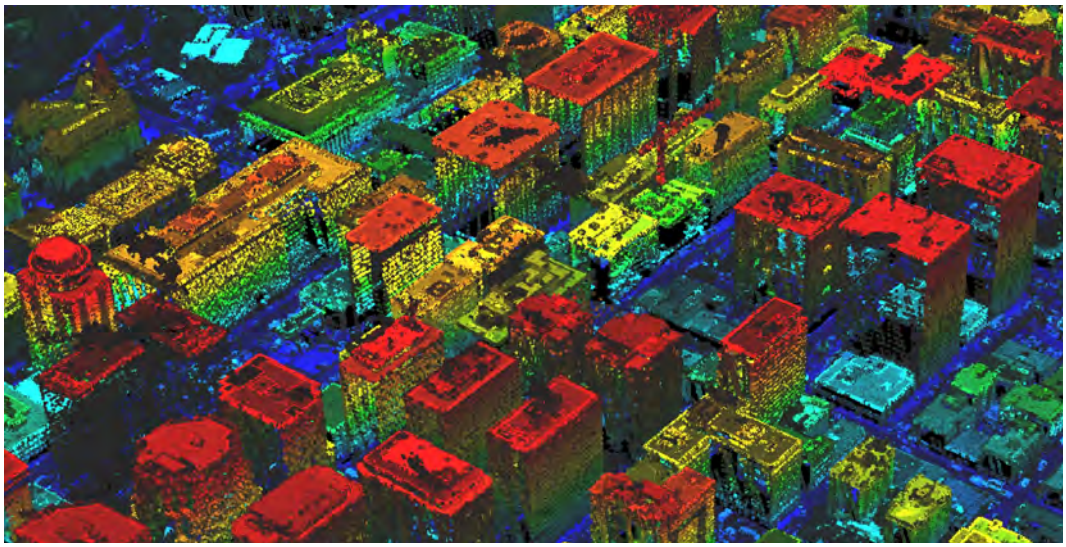
Figure 1: Imagery (top), LiDAR surface model (middle) and high-resolution tree canopy (bottom).



**2m**

The height cut-off used for separating tree canopy from other vegetation was two metres.

LiDAR data are acquired from a plane using a laser sensor. By sending out laser pulses, LiDAR is capable of generating detailed 3-D models. Unlike imagery, LiDAR is not sensitive to shadowing from the sun, making it helpful for mapping trees in downtown areas. LiDAR produces a 3-D point cloud, which is a collection of locations from which the laser has reflected off features on the Earth's surface.



LiDAR point cloud for the Ottawa downtown area. Points are coloured by height above ground, with blue representing the lowest elevation and red, the highest.

# TREE CANOPY METRICS

**46%** of the land is covered by tree canopy within the boundaries of the City of Ottawa, Ville de Gatineau and the lands managed by the NCC.

Using Geographic Information Systems (GIS), the tree canopy of various geographical units was analyzed. The units ranged from the entire defined region to individual neighbourhoods. The tree canopy metrics thus indicate the total area, as well as the percentage of land covered by tree canopy for the defined area and for each geographical unit.

## Partners

Three main partners undertook this tree canopy assessment within the Capital Region: the NCC, Ville de Gatineau and City of Ottawa. Ottawa has the largest area of tree canopy, primarily because of its larger land area. NCC lands have the highest amount of land covered by tree canopy, a result of the number of parks and protected areas under the NCC's management. Compared with Ottawa, Gatineau has a slightly higher percentage of its land covered by tree canopy.

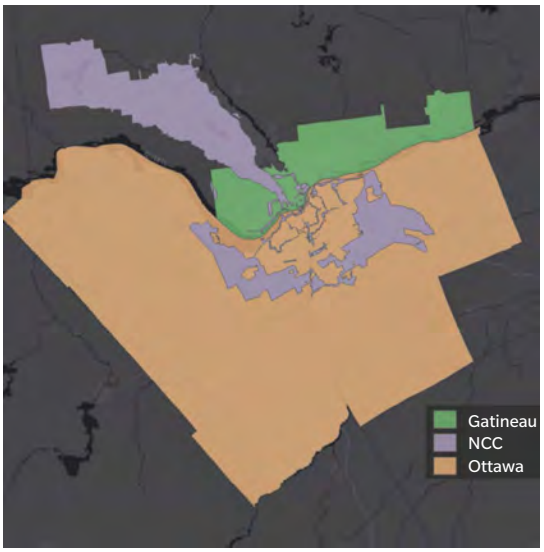



Figure 3: Partner boundaries

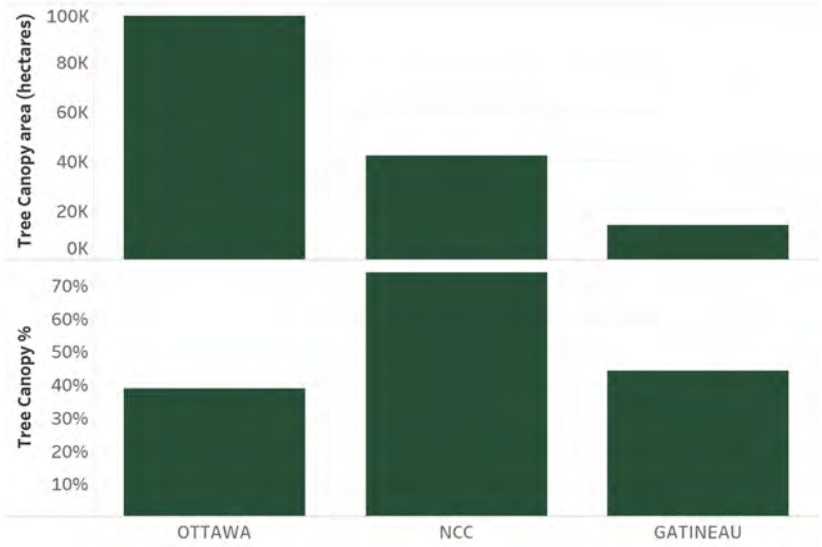



Figure 4: Partner tree canopy metrics

### Gatineau Urban Tree Canopy

45%

### Ottawa Urban Tree Canopy

31%

Urban areas do not make ideal environments for trees to thrive, but urban areas are where trees can have the most significant impact on human health and well-being. Urban density, the number of parks, management practices and land use history are factors that contribute to the percentage of tree canopy in Gatineau's and Ottawa's urban areas. In Gatineau's urban area, which includes farms and green spaces, tree canopy covers 45 percent of the land. In Ottawa's urban area, 31 percent of the land is covered by tree canopy. This includes inner urban areas bounded by the Greenbelt, as well as the suburban areas beyond the Greenbelt.

## Electoral Boundaries (Wards)

Tree canopy information for each electoral boundary (ward in both the City of Ottawa and the Ville de Gatineau) provides the information elected officials need to gain a better understanding of the ecosystem services to which their constituents have access. Figure 6 shows the 10 wards with the lowest percentage of tree canopy coverage. The average tree canopy across all wards is 38 percent. The 10 wards with the lowest percentage have under 30 percent tree canopy. Figure 9 shows the tree canopy coverage for all wards in both the City of Ottawa and the Ville de Gatineau.

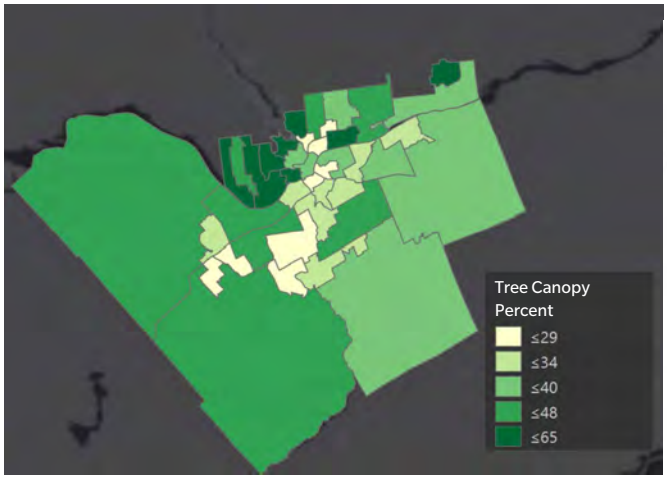



Figure 5: Percentage of tree canopy by ward

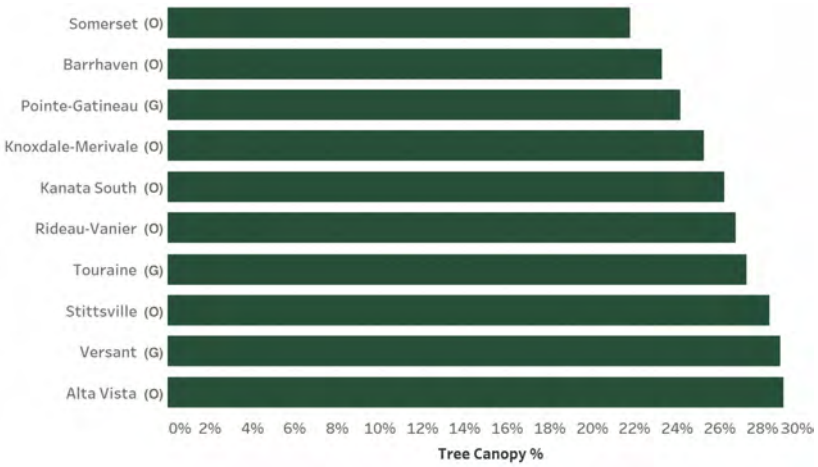



Figure 6: The 10 wards with the lowest percentage of tree canopy: (O) indicates Ottawa and (G) indicates Gatineau

## NCC Lands

The NCC oversees a considerable amount of land within the Capital Region. Gatineau Park alone contributes over 30,000 hectares of tree canopy. Although the areas managed by the NCC within the urbanized region have considerably less total tree canopy, they have higher-than-average amounts of tree canopy compared with the region as a whole. NCC lands are an essential resource that provides access to natural areas for residents of the Capital Region.

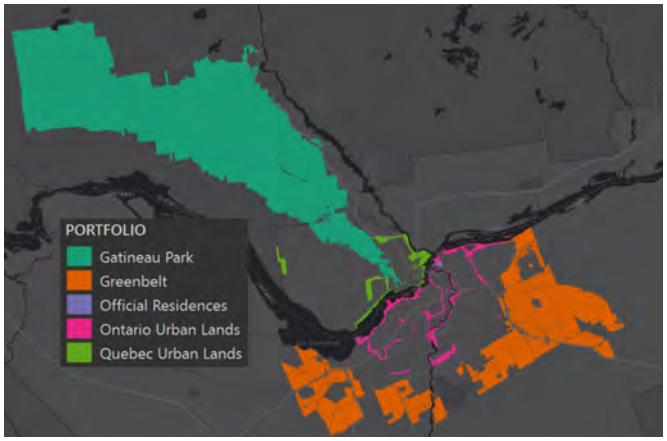



Figure 7: NCC lands by portfolio type

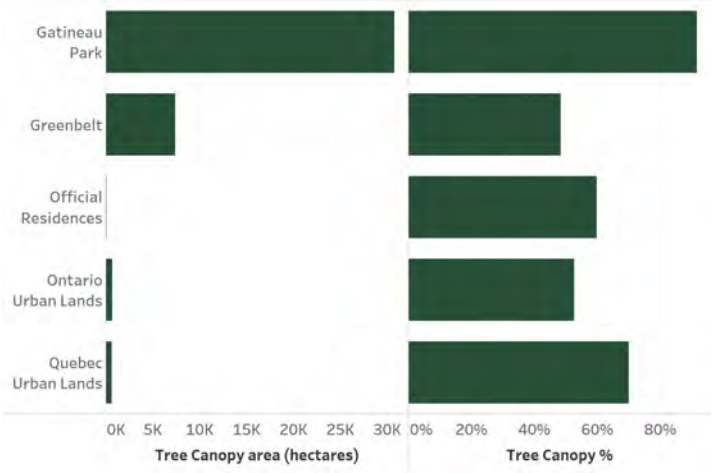



Figure 8: NCC land tree canopy metrics summarized by portfolio

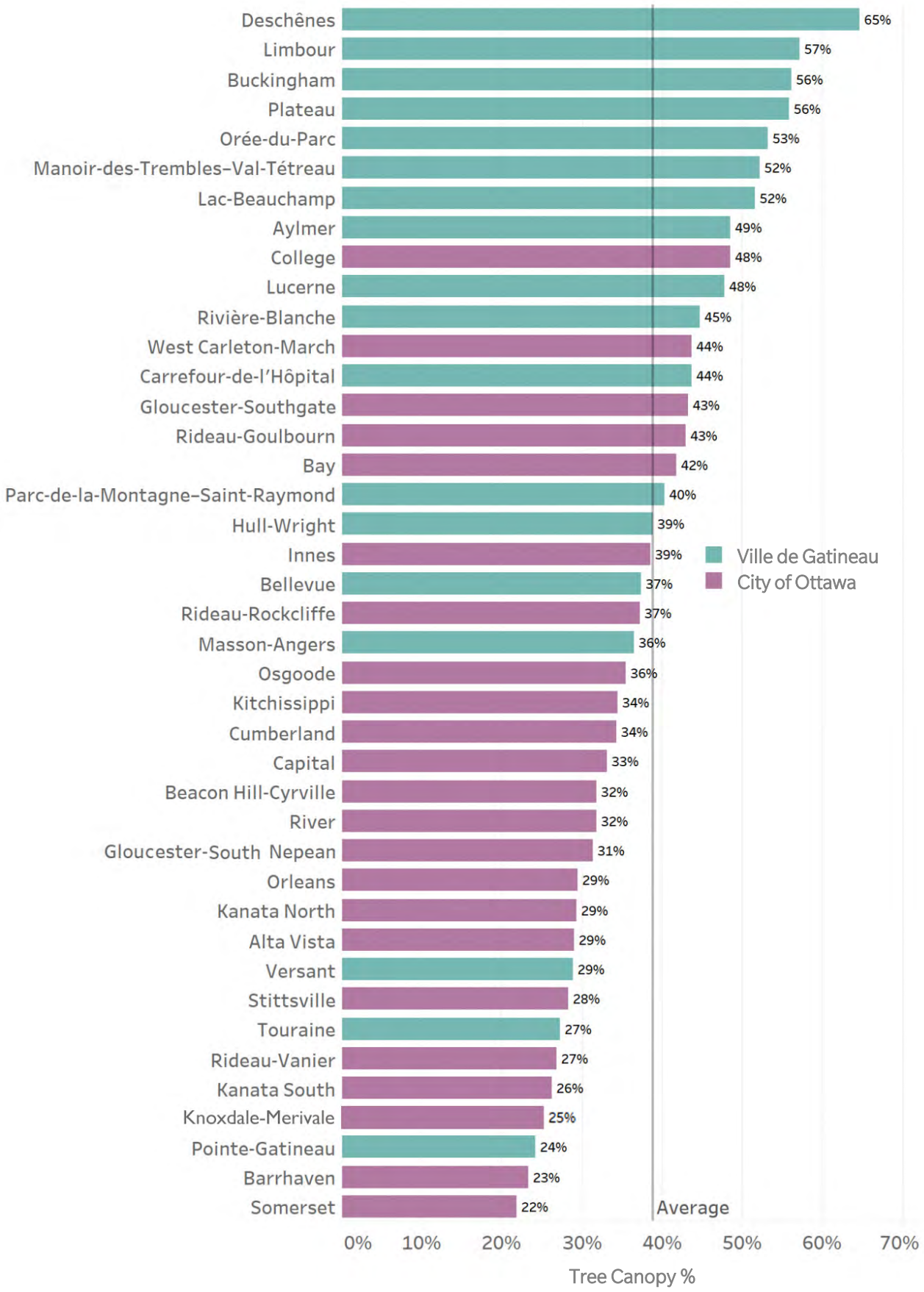



Figure 9: Tree Canopy by Ward

## Neighbourhoods

The desirability of a neighbourhood can depend on layout, urban or rural characteristics, schools, and proximity to things like employment, restaurants and transportation. Research shows that neighbourhoods with higher amounts of tree canopy provide their residents with more ecosystem services, ranging from cooler summer temperatures to improved academic performance in children. Not surprisingly, tree canopy is considered a desirable neighbourhood trait. Within Canada's Capital Region, there are wide-ranging differences in the percentage of tree canopy in the various neighbourhoods. Some of this variation is due to the degree of urbanization and the current land use, but other factors such as housing age also play a role. For example, in Constance Bay, in Ottawa, nearly 80 percent of the land is covered by tree canopy, whereas the Orléans industrial neighbourhood has less than 10 percent tree canopy.

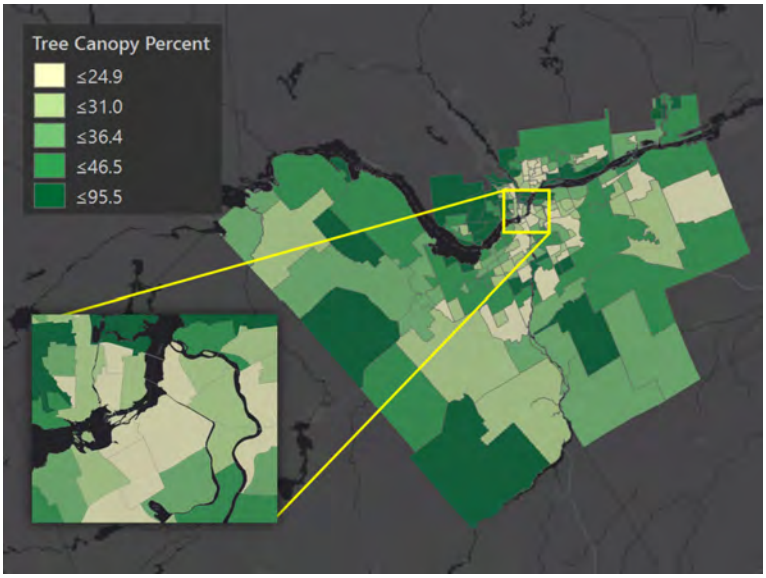



Figure 10: Percentage of tree canopy by neighbourhood

Figure 11: Neighbourhood examples: Constance Bay (80%, top left), Limbour (65%, top right), Val-D'Oise (16%, bottom left), Orléans Industrial (10%, bottom right)

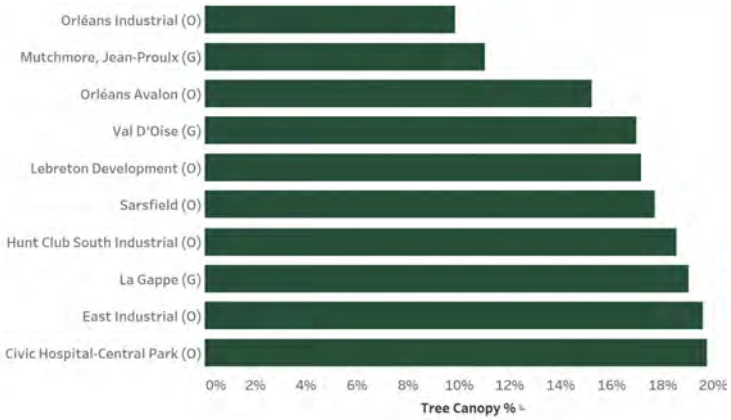



Figure 12: The 10 neighbourhoods with the lowest percentage of tree canopy: (O) indicates Ottawa and (G) indicates Gatineau

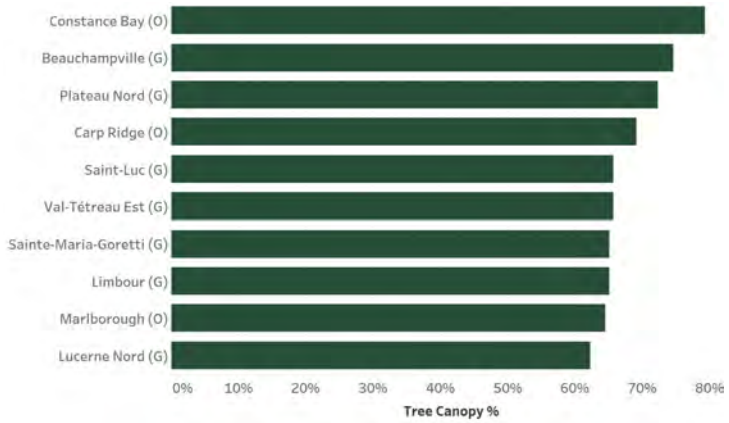



Figure 13: The 10 neighbourhoods with the highest percentage of tree canopy: (O) indicates Ottawa and (G) indicates Gatineau

## Dissemination Areas

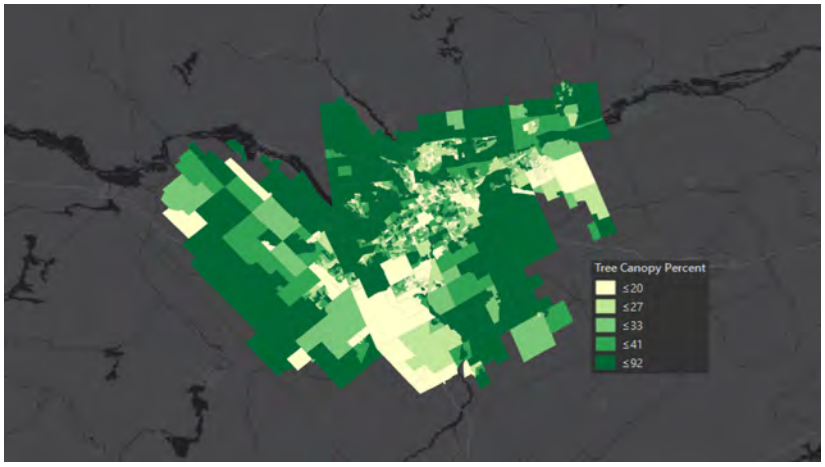



Figure 14: Dissemination area percentage tree canopy

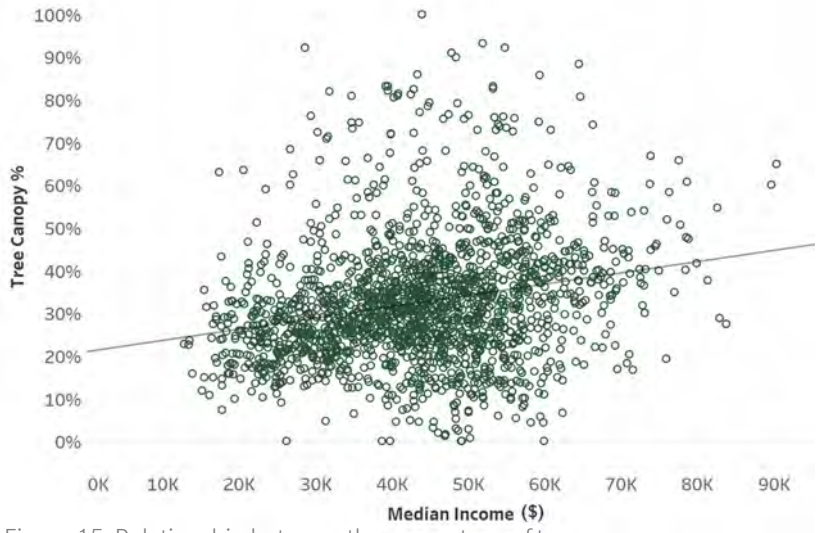



Figure 15: Relationship between the percentage of tree canopy and median income

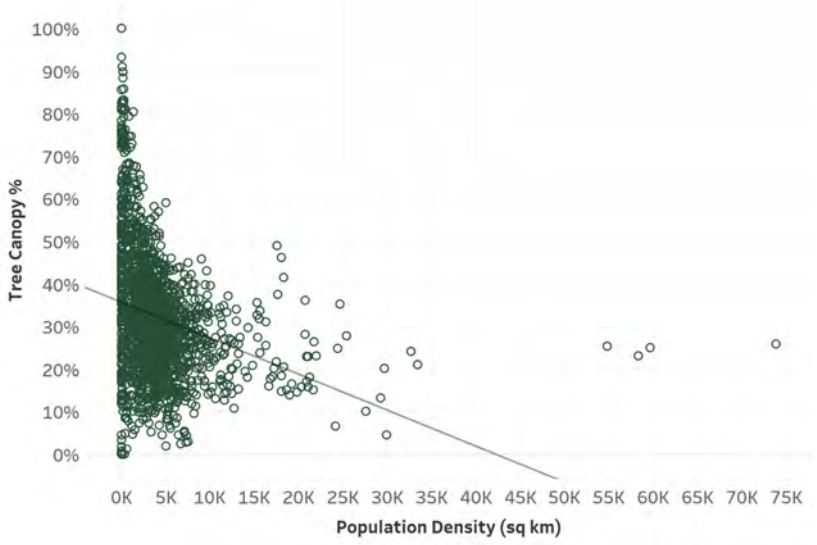



Figure 16: Relationship between the percentage of tree canopy and population density

Statistics Canada uses dissemination areas to summarize socio-demographic information. The entire country is divided into dissemination areas that have a population of 400 to 700 persons. Thus, dissemination areas in rural parts of the country have a greater land area compared with those in population-dense urban regions. While a person may not associate their home with a dissemination area, as they do with their neighbourhood, dissemination areas have a wealth of demographic information associated with them. Linking tree canopy with socio-demographic information can help highlight areas where inequities or instances of environmental injustice may be present.

This study explored the relationship between tree canopy and two variables stored within the dissemination area data set: median income, and population density. A statistically significant relationship exists between median income and the percentage of tree canopy, meaning that areas with wealthy individuals tend to have higher amounts of tree canopy. This relationship does not always hold true, as evident in some lower-income rural areas with high amounts of tree canopy, and wealthy downtown areas with lower amounts of tree canopy. A statistically significant inverse relationship exists between tree canopy and population density. Despite this relationship, there are highly populated areas that have relatively high percentages of tree canopy due to the presence of urban forests.

## Zoning

Zoning provides a mechanism to control the types of uses permitted in a particular land area. These uses, in turn, can significantly influence the amount of tree canopy. Industrial- and commercial-zoned areas typically have substantially less tree canopy cover than that of conservation areas. This study looked at the relationship between tree canopy and zoning in Ottawa and Ottawa's urban area. Future work will include an examination of Gatineau's zoning. Ottawa has dozens and dozens of zoning categories. To simplify the reporting, these zoning categories were consolidated into 10 general classes. For each of the 10 classes, tree canopy metrics that summarize the total area of tree canopy and percentage of land covered by tree canopy were calculated (*Figure 17*). An additional analysis computed the percentage of all tree canopy within the urbanized area that resided within each zoning class (*Figure 18)*. Land reserved for recreation or conservation (the "environmental protection" and "open space" classes) contains the vast amount of Ottawa's tree canopy. While a few government entities make decisions about the tree canopy in the lands zoned as "open space" and "environmental protection," tens of thousands of individuals make decisions about tree canopy on land zoned as "residential." These individuals collectively provide a public good which generates ecosystem services that benefit the Capital Region.

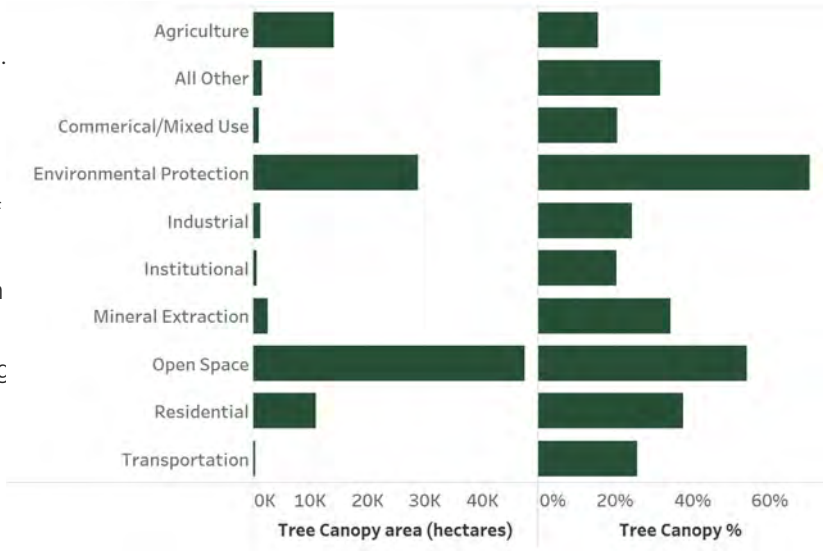



Figure 17: Area and percentage of tree canopy cover by zoning for all of Ottawa

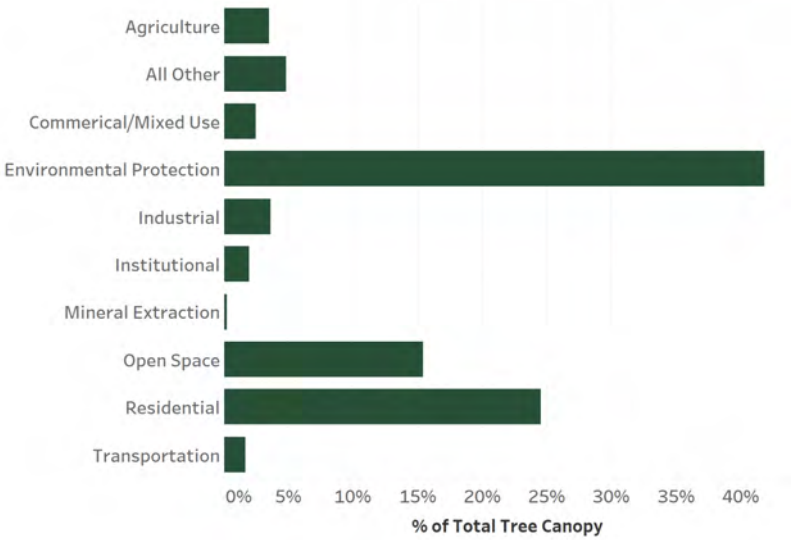



Figure 18: Percentage of total tree canopy in each zoning class for Ottawa's urban area

Within the urbanized area, lands zoned as "environmental protection" have the greatest percentage of urban tree canopy, at over 40 percent, but lands zoned as "residential" play a prominent role, with nearly 25 percent of the urban tree canopy.

# FINDINGS

Overall, the region has a robust amount of tree canopy. The tree canopy managed by the partners provides important ecosystem services to the residents of the region.

The tree canopy is not evenly distributed, with many areas having far less than the regional average. This extends to ecosystem services, which are not evenly distributed.

Environmental justice issues are cause for concern, particularly the fact that wealth may provide greater access to tree canopy.

Urbanization, zoning and land use history all play a role in influencing the current state of the tree canopy.

# RECOMMENDATIONS

The tree canopy assessment data should be integrated into planning decisions at all levels of government. For example, prioritizing conservation and planting initiatives.

The tree canopy should be reassessed at 5- to 10-year intervals to monitor change.

Preserving the existing tree canopy is the most effective means of ensuring future tree canopy, as loss happens at a point in time, but gain is a process that occurs over a longer period of time.

This assessment is not a replacement for field data collection on tree species, size and health.

For more information about how this assessment and data will be used:

NCC Forest Strategy

Ottawa's Urban Forest Management Plan

Ville de Gatineau's Plan de gestion des arbres et des boisés *(French only)*

National Capital Commission
Commission de la capitale nationale

# NCC Forest Strategy

## PUBLIC CONSULTATION REPORT
## MAY 31 TO JUNE 14, 2019

Canada

## Table of Contents

# I. Project description

## A. Background

In keeping with commitments made in its Plan for Canada's Capital, 2017–2067, and Sustainable Development Strategy, 2018–2023, the National Capital Commission (NCC) is developing a forest strategy which will guide the management of trees and forests on NCC lands over the coming decades. As part of this initiative, we are inviting members of the public to share their vision and priorities for natural and urban forests in the National Capital Region.

## B. Objectives

The NCC's forest strategy will include the following components:

- a vision and objectives for the next 30 years
- a five-year action plan
- a list of prioritized potential planting sites, and
- canopy cover and planting targets

The strategy will address the management of trees and forests in urban areas, as well as in natural areas like the Greenbelt and Gatineau Park.

Regional partnerships are key to protecting trees and forests across the National Capital Region. The NCC will work with the Ville de Gatineau and City of Ottawa to identify shared goals and more effectively coordinate action.

# II. Public consultation process

## A. Overview

The consultation process for this project is multi-phased. It will include two rounds of online public consultations. The first round, which focused on visioning, objectives and concrete actions, was held in May and June 2019. The second, which will invite members of the public to read and comment on a draft of the strategy, will take place in the spring of 2020.

### Objectives

The objectives of the consultation were as follows:

1. To provide members of the public with an early opportunity to shape the NCC's Forest Strategy.
2. To better understand the public's priorities and preferences with regard to forest management on a 30-year horizon, and seek ideas for potential actions in the next five years.

### a. Date and time

May 31 to June 14, 2019

### b. Format

Online survey

## B. Consultation procedure and tools

### a. Online public survey

The online survey was divided into three sections. The first invited respondents to articulate their vision for the trees and forests on NCC lands over the next 30 years. In the second, respondents were provided with 100 points and asked to distribute these according to the forest management objectives that they would most want to see accomplished. A follow-up question invited respondents to propose objectives that they felt were missing from the list. In the final section of the survey, respondents were asked to indicate what concrete actions they thought the NCC could take to achieve the objectives outlined in the previous section.

## C. Invitation and promotion

An email invitation was sent using Public Affairs distribution lists, which include the following stakeholders:

- Interest groups, user groups and environmental groups
- Residents' associations
- Individuals
- Sustainable Development Strategy newsletter mailing list

Messages were also posted on the NCC's social media accounts (Facebook and Twitter), and in *Le Droit* and the *Ottawa Citizen* soliciting the participation of all interested members of the public.

## D. Participants

### a. Survey respondents

A total of 241 people provided responses to the full online survey.

# III. Stakeholder and public consultation highlights

The feedback provided by respondents was overwhelmingly positive, constructive and consistent. Though details regarding implementation varied, five forest management initiatives received broad endorsement across all three sections of the questionnaire:

- Increasing the number, diversity and connectedness of trees in the National Capital Region.
- Ensuring that forests are healthy and resilient.
- Making tree-covered spaces more accessible and recreation-friendly.
- Strengthening the protection granted to trees and forests.
- Launching community engagement and educational efforts that aim to involve local organizations and citizens in forest management initiatives.

In the comments made by respondents, there was widespread recognition and appreciation of the many benefits humans derive from trees and forests: cleaner air, wildlife habitat, sun and noise protection, improved physical and psychological well-being, and so on. Many of the initiatives discussed as part of the consultation were framed as a means of enhancing and expanding these benefits.

On the whole, however, respondents tended to prioritize initiatives that have a direct effect on the health of trees and forest ecosystems (e.g. biodiversity, forest cover, connectivity) over those that operate through human engagement with the forest (e.g. education and interpretation, equitable access, minimizing health risks, and so on).

# IV. Analysis of results and main comments received

## A. Online public survey

**Vision for forests in the National Capital Region**

When asked to share their vision for NCC trees and forests over the next 30 years, respondents put forward a broad array of ideas and suggestions. The most frequently mentioned of these are summarized below:

- Expanding the total area occupied by trees and forests in the National Capital Region, and increasing the canopy cover.
- Fostering greater biodiversity in our forests, and ensuring a sustainable balance between older and younger trees.
- Managing trees and forests so that they remain healthy and beautiful.
- Allowing forests to grow and evolve naturally with minimal human intervention.
- Making forests accessible to the public on all fronts: public transit to get there, pathways within to explore them, and affordable recreational opportunities under and among the trees.
- Preference was given, when planting new trees, to native species and to species that are resilient to climate change.
- Supporting the growth of more mature forests.
- Greater regulatory protection for forests, and maintenance to combat pollution and safety issues.
- Greater protection and care for wildlife habitats.
- Reforestation in areas where the stock of trees has dwindled.
- More conservation forests with little or no recreational access.
- Greater tree density in the National Capital Region's parks and forests.

- More emphasis on, and resources dedicated to, fostering connectivity between forests.
- Planting more food-bearing trees.

Below are some examples of comments received.

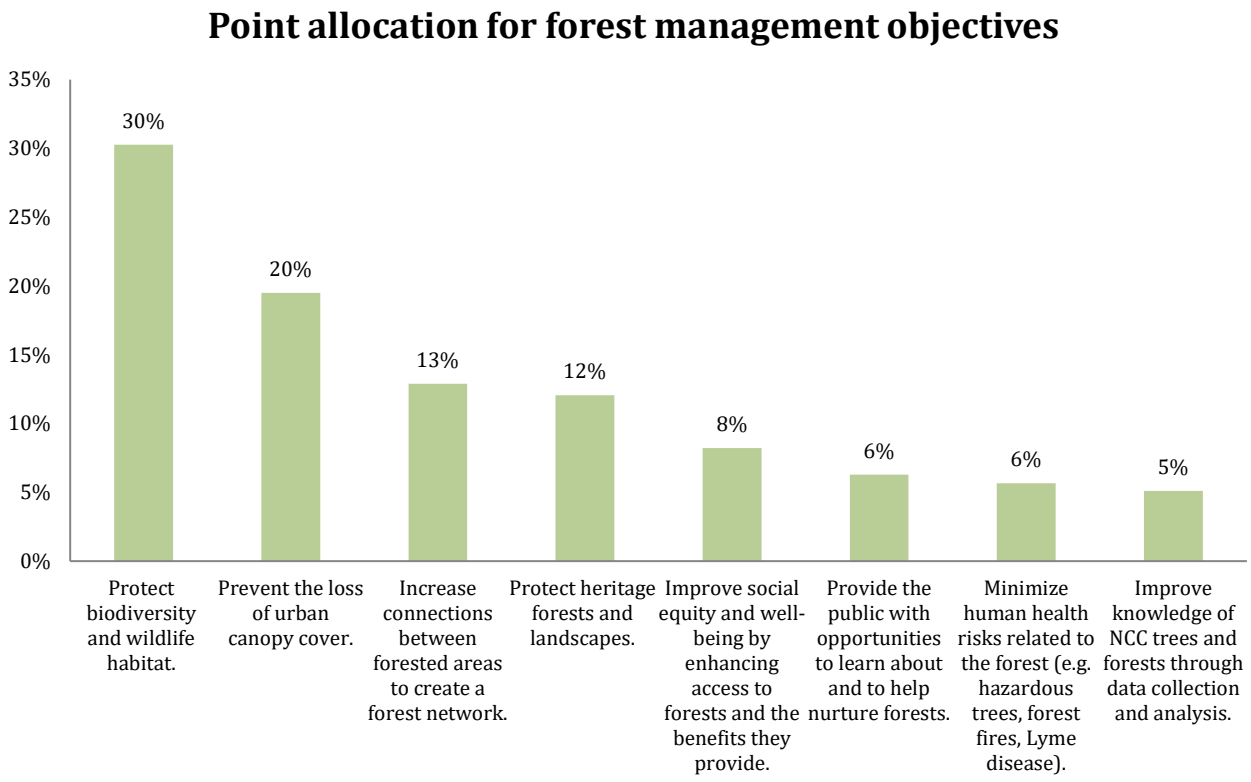
| Topic | Sample comment |
|---|---|
| **Area, density and connectivity** | We need to retain what we have now, and plant more trees to provide those that have been lost, particularly within urban areas, i.e. the Greenbelt and national interest lands due to diseases such as emerald ash borer.<br><br>More is always better when it comes to trees.<br><br>Connected via eco-corridors which are essential for maintaining forest health. Wildlife travelling through eco-corridors spread seeds and genetic materials that cross-fertilize the connected areas.<br><br>Thick forests with mature trees.<br><br>A lot better than they do now. I believe Ottawa's canopy is only about 26% and should be up around 40 to 50% for maximum benefit.<br><br>I would like to see >50% of all NCC lands with full canopy native trees. |
| **Forest composition** | Dense forest with a large amount of biodiversity and a resurgence of local species.<br><br>Trees of various species, the large majority of them native species, and including fruit trees (with information panels to inform passersby about harvesting the fruit when ripe).<br><br>A diverse canopy of many different species, with as many trees planted as possible at varying ages.<br><br>Diverse, plentiful, with staggered plantings continually to ensure generational renewal.<br><br>The forest needs to be larger and more biodiverse in 30 years. |
| **Public use** | Access and recreation should be encouraged and yet controlled to ensure a healthy forest.<br><br>Lush, with paths to allow others to see the beauty in some areas, while others left for wildlife to make their homes.<br><br>I think there should be forests that are easily accessible by anyone from anywhere in the city. I also think more trees and greenery should be planted everywhere throughout the city. Concrete jungles aren't healthy. |

| | |
|---|---|
| | Natural, but with usable spaces so the NCC [land] will truly be enjoyable by everyone. Hoping for more long-distance bike loops in the forest, walking paths, educational programs. |
| **Protection** | Protection, protection, protection. Create marked trails, plant trees and have cleanup days.<br><br>Protected from garbage, such as papers, plastics and from potential disasters such as forest fires, oil spills and dumping of garbage.<br><br>I would like mature trees along the Rideau Canal and in Ballantyne Park and all parks within 1 km of the Rideau Canal, Rideau River and Ottawa River to be given protection from development.<br><br>Protect existing forests and enhance their growth, and provide protection for wildlife. |

**Prioritization exercise**

As part of the prioritization exercise, respondents were provided with a "budget" of 100 points that they could freely allocate to eight, pre-selected forest management objectives *(see Figure 1).*

**Figure 1.**



The objectives that attracted the highest share of points all directly related to the health of forests, while objectives with a more social or human-centred orientation received markedly fewer points. Initiatives geared toward biodiversity, canopy cover and connectivity alone received 63 percent of all allocated points.

Nearly half of all respondents put forward additional objectives that they felt should be considered by the NCC. Of these, the most frequently mentioned were the following:

- Avoiding any urban development that would compromise or remove forested areas.
- Greater cooperation with local organizations and engagement with the public on issues related to forest management.
- More educational initiatives geared toward helping the public better appreciate the ecological and health benefits of trees and forests.
- Create more public spaces in nature and improve access to forests via cycling and hiking trails.
- Diligent reforestation of NCC properties where existing trees are dying or few in number.
- Greater regulatory protection for forested areas from development and political interference.
- Increasing the rate at which trees are planted and the area they cover.
- Increase the biodiversity of our forests, with a focus on native tree species and those resilient to climate change.

Below are some examples of comments received.

| Topic | Sample comment |
|---|---|
| **Threats and protection** | Protection of natural areas by preventing development is extremely important to the health of residents, well-being, ecosystems, biodiversity action on climate change.<br><br>Reduce urban sprawl drastically. Stop greenlighting massive housing projects that leave little to no greenspace.<br><br>Maintain or increase the amount of NCC land by creating stronger restrictions on land development and land sales.<br><br>Protect the Greenbelt / Gatineau Park from any further development! |
| **Engagement and education** | Partnerships with educational institutions, e.g. forest schools. Pairing schools with specific trails, green spaces to encourage students to take ownership / have respect for our forests.<br><br>Educate people on using Leave No Trace tactics while enjoying these places. Having more people use natural spaces is great, as long as they respect those areas to keep them in good condition for future generations to enjoy.<br><br>Increased public engagement on the role of forests, tree cover and biodiversity |

| | |
|---|---|
| | Better partnerships with established community groups who are already working on these issues; e.g., Adopt a Park groups (city); community associations, and so on. “Train the trainer” model keeps cost down and spreads education / best practices further. |
| **Public use** | Some forests should be opened up to recreational activities. XC skiing, cycling, trail running, obstacle course training (Cross fit), disc golf, dog walking, and so on. Not all forests, but some forests, people should have access to.<br><br>I hope the forests on NCC land will become more accessible through hiking trails and bike paths. The residents of Ottawa and tourists should be able to enjoy nature in person.<br><br>More picnic areas and maybe playgrounds near forested areas.<br><br>Mixed use. We have large fields as sports parks with no trees. Large forests with no localized areas for recreation. |
| **Planting** | Replanting trees for fuller, more vibrant environments, with the benefit of increased air quality.<br><br>Mass reforestation of NCC properties: divided medians, parkways, clearings. All our tall majestic trees have died in the past decade, replaced by invasive shrubs.<br><br>Increase the number and diversity of trees at every possible opportunity.<br><br>Increase tree planting. Focus on agricultural lands and marginal lands to establish windbreaks and new forests. |

**Concrete actions**

In the third and final section of the survey, respondents were invited to propose concrete actions that would contribute to the accomplishment of the NCC’s forest management objectives. The actions most frequently put forward by respondents included the following:

- Plant more trees, particularly in urban areas. Replace dead or diseased trees, and give priority to native species.
- Forge partnerships with organizations that share similar objectives, and support citizen and community involvement in forest management.
- Launch educational initiatives to help the public better understand the importance of forests and how to enjoy their benefits responsibly.
- Bolster the laws, policies and infrastructure that protect NCC forests, particularly to prevent urban development from encroaching on these lands. Designate more forests as spaces for conservation.
- Collect and analyze data to better understand factors that bear upon the well-being of NCC forests, and adopt an evidence-based approach to forest management.
- Make forests more accessible to the public by improving trails and facilities.

- Create and maintain wildlife corridors and connections between forested areas. Protect and support wildlife habitats in NCC forests.
- Acquire and reforest more land.
- Offer members of the public better public transit options to improve equitable access to NCC forests.

Below are some examples of comments received.

| Topic | Sample comment |
|---|---|
| **Planting and land acquisition** | Aggressive tree planting with associated watering and maintenance to ensure healthy establishment through the first five years. Need to redouble efforts to retain the trees we have in our capital and make tree protection mandatory in all federal projects in the National Capital Region.<br><br>Plant more trees, especially fruit and nut trees.<br><br>Plant more trees in urban areas, and protect existing forests on NCC [lands].<br><br>Buy more land, restore to natural state.<br><br>Purchase land and reforest site, encourage land owners to preserve and plant trees. |
| **Engagement and education** | Advertising with educational material (about trees, plants, invasive/natural species, birds, animals, endangered species, climate effects and pollution effects, indicator species), along with invites to informational tours of paths in forests, wetlands and so on.<br><br>More information for users to inform them about responsible use… Keep people informed about ways to contribute to keeping the park at its best.<br><br>Involve citizens, educate them and partner with First Nations.<br><br>Work with public health officials and local medical leaders to organize a response to the increasing local risks of Lyme disease and other tick-borne illnesses that would include a public outreach campaign to inform people of risk mitigation strategies when visiting natural spaces, education for front-line medical practitioners on how to recognize and respond to tick-borne illnesses, and raising the profile of the impacts of these illnesses at the federal and provincial levels to secure additional funding for action to combat it. |
| **Protection** | Mandate protection, require safety for older trees on new-build sites, more urban neighbourhoods with tree protection in conjunction with City forest/tree management.<br><br>Extend protection for heritage forests; review planning bylaws and advocate for tree/canopy protection when assessing proposals; keep |

| | |
|---|---|
| | planting; improve public understanding of need (self-interest works) for healthy canopy and forests.<br><br>Protect the land.<br><br>Pay more attention to developments that destroy green spaces. |
| **Studies** | Data collection is essential to plan how to go about protecting some areas, while also making sure that there is accessible forest for the public.<br><br>Do more research, don't rush into things until they have been completely thought out.<br><br>Research, in collaboration with academia, and act according to the findings.<br><br>Develop good maps of the areas (unless these already exist), and carefully select which types of forest management or development will be done in each area. Ensure that most of the forest land is protected from major human developments. Become well aware of the types of developments on land beside NCC lands. Do a general survey of tree types, and add a certain portion of diversity to different areas. |
| **Public use** | Improve access to woodlands, forests and their use, for citizens to enjoy them and to be able to experience the forest, which will increase the motivation to protect and preserve it, and to take ownership for taking care of it.<br><br>Create more accessible forest areas for the public.<br><br>Improve the biking trails on the Ontario side of NCC [lands] (Quebec side seems paved in many places, and so on. Gatineau Park is beautiful. Also allow for improving roads in and through parks, such as adding a lane. Add more to the Greenbelt by buying more land in the west end. Allow for lunch or dinner escapes with federally run welcome areas, restaurants and observation areas to appreciate the beauty and majesty of the natural forests.<br><br>Improve access to NCC forest by providing free parking and shuttle services to encourage use by economically disadvantaged persons. |
| **Wildlife** | Restoring breeding grounds for turtles so they don’t have to lay eggs on the side of the roads.<br><br>Consider ecosystem fragmentation with projects that cross the green space. Over- or underpasses for wildlife around roads and light rail tracks.<br><br>Plant more trees, to give wildlife more homes/safe places. Increase awareness of how important it is to conserve our parks/nature. |

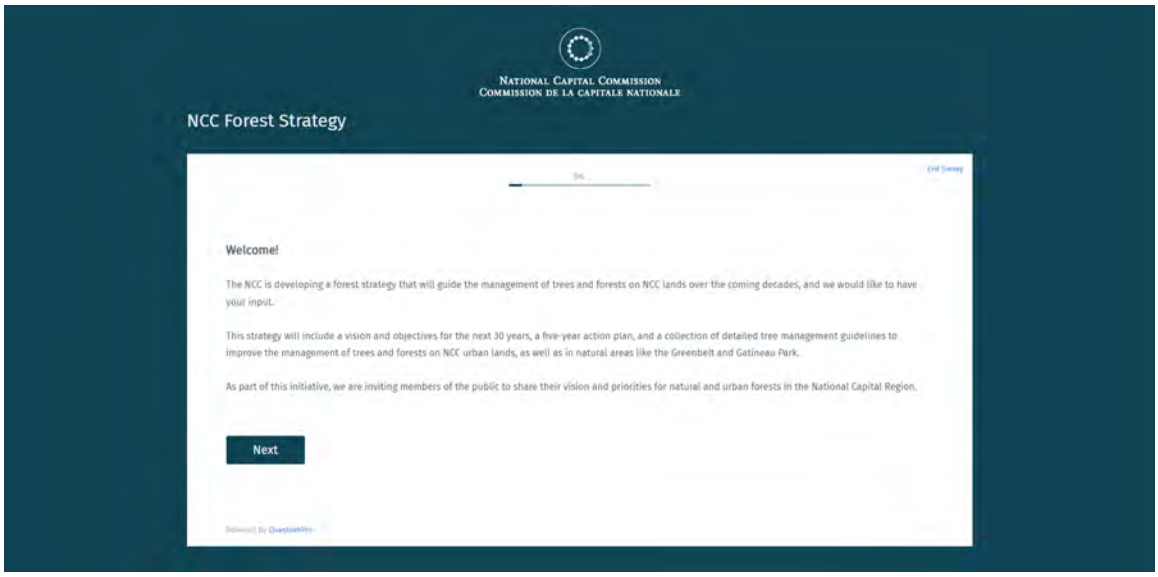
## V. Integration of results

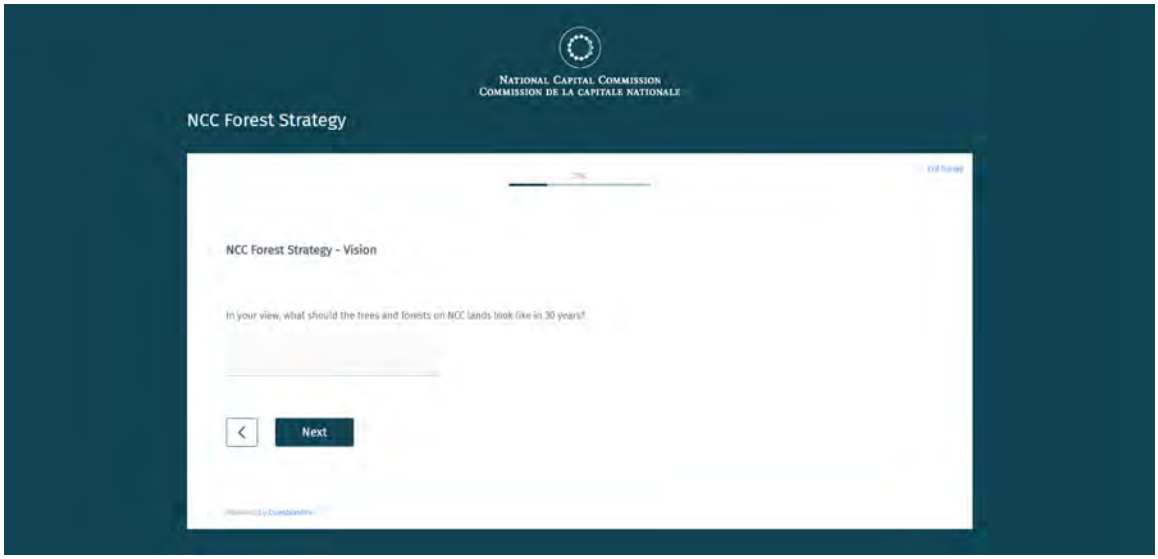
The comments received during the online consultation are well aligned with the forest strategy content developed thus far. The project team has reviewed all comments and ideas, and some have already been incorporated into the Forest Strategy framework. Other comments and ideas, which need more analysis, will be incorporated into the draft of the Forest Strategy.

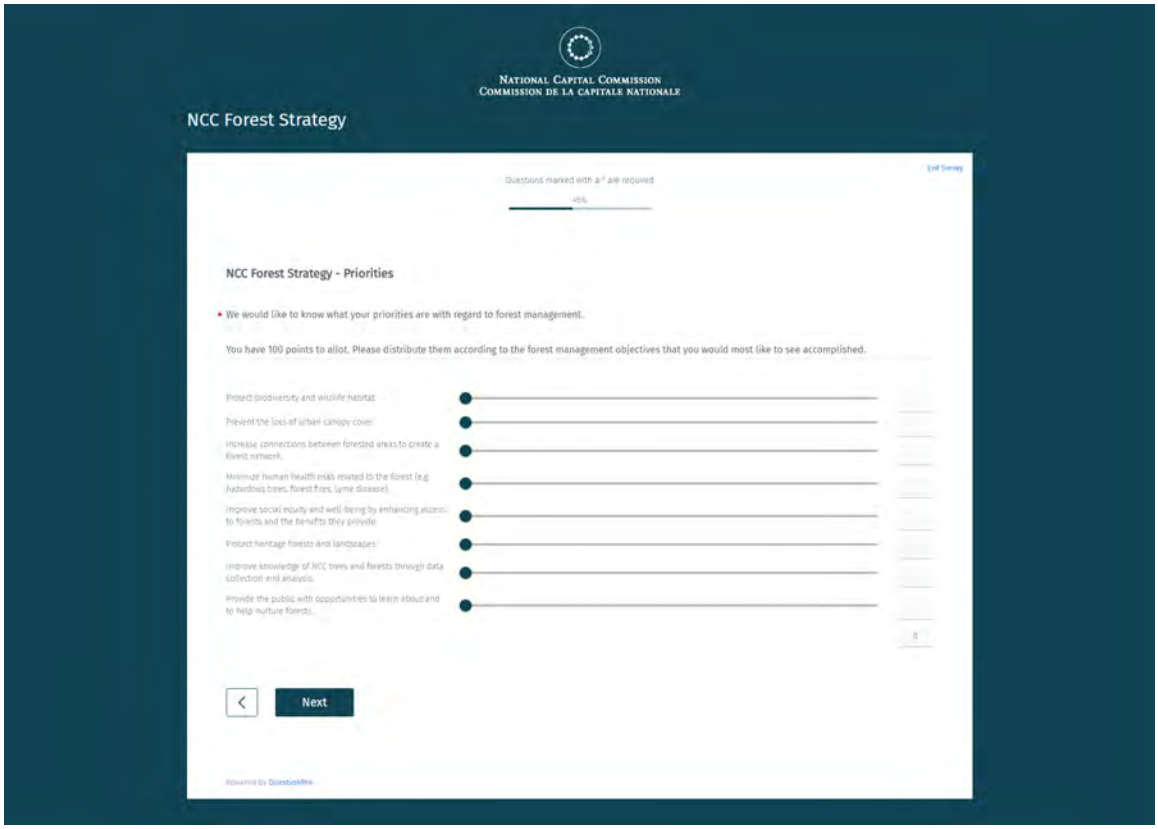
## VI. Next steps

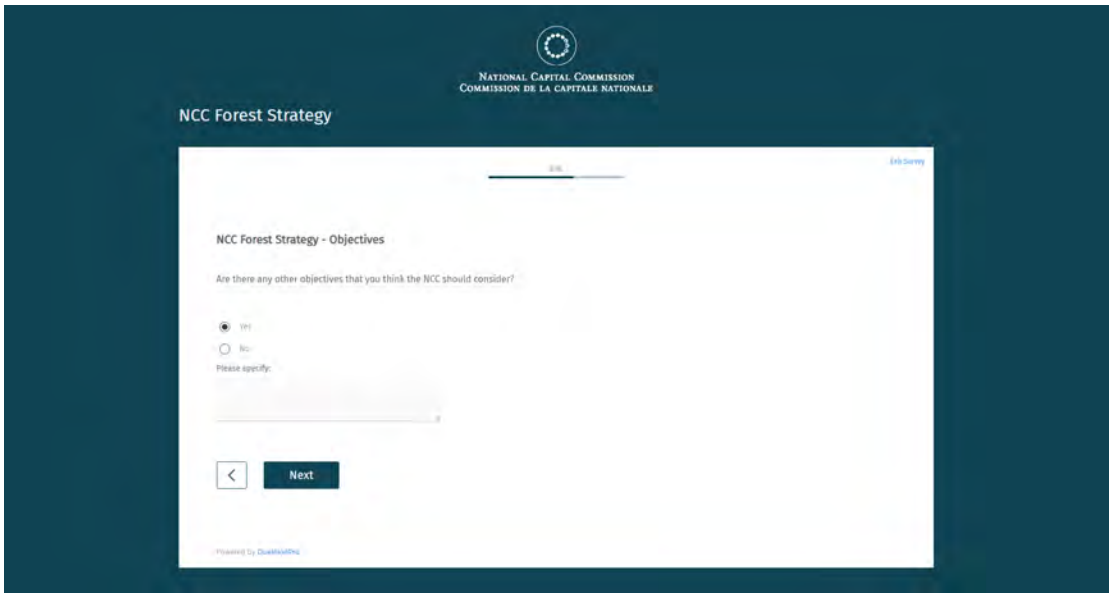
The draft Forest Strategy will be presented to the Board of Directors in November 2019. Regional forestry stakeholders will be invited to an in-person consultation in October 2019, and the public will have another opportunity to provide comments on a draft strategy in spring 2020. The final version of the strategy will be submitted for approval by the NCC's Board of Directors in September 2020.

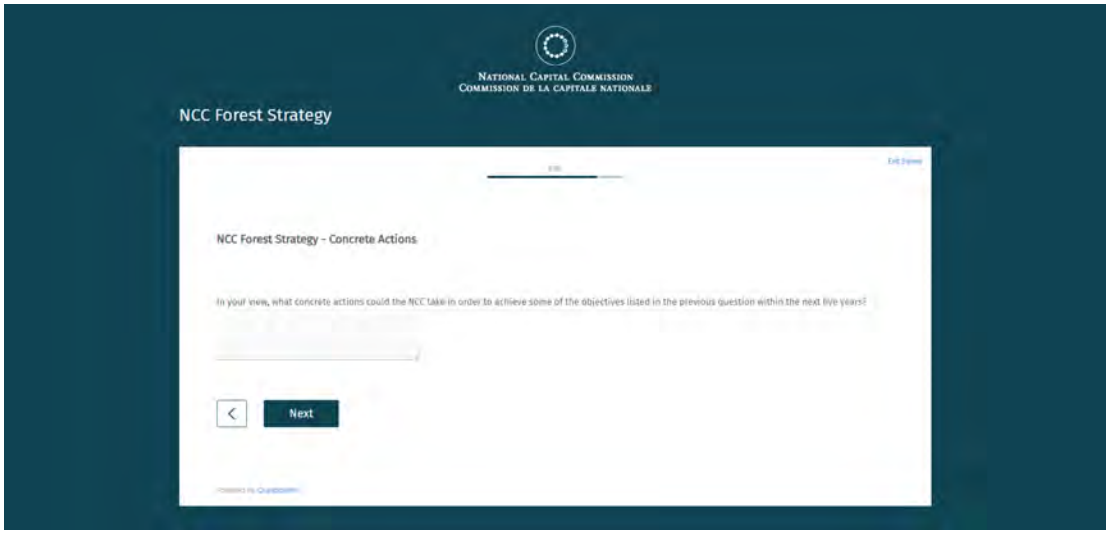
## VII. Appendix 1: Online survey

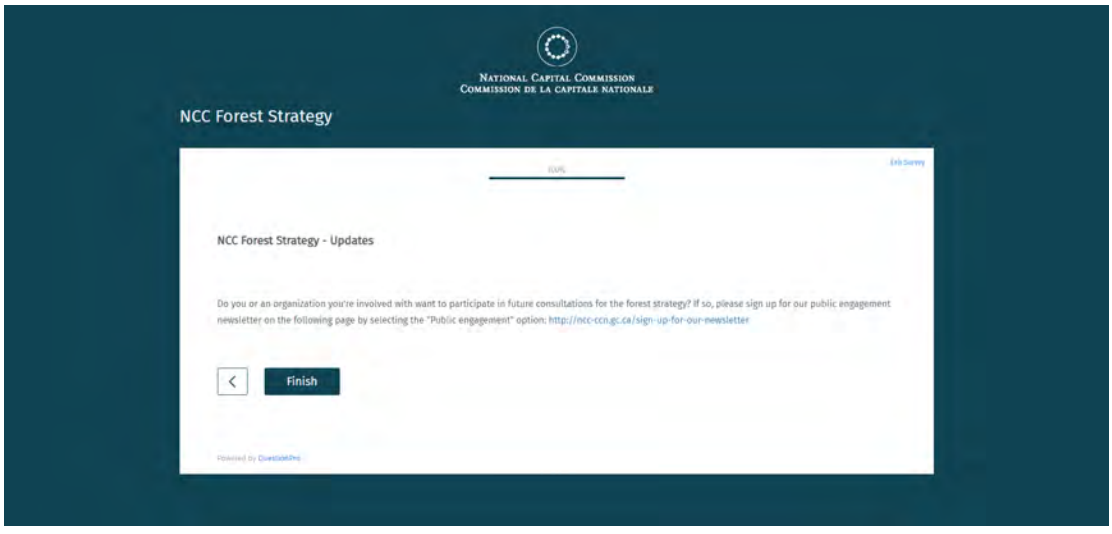


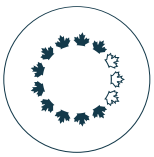

National Capital Commission
Commission de la capitale nationale
NCC Forest Strategy
NCC Forest Strategy - Vision
In your view, what should the trees and forests on NCC lands look like in 30 years?
Next


National Capital Commission
Commission de la capitale nationale
NCC Forest Strategy
NCC Forest Strategy - Priorities
We would like to know what your priorities are with regard to forest management.
You have 100 points to allot. Please distribute them according to the forest management objectives that you would most like to see accomplished.
Next


National Capital Commission
Commission de la capitale nationale
NCC Forest Strategy
Exit Survey
NCC Forest Strategy - Objectives
Are there any other objectives that you think the NCC should consider?
Yes
No
Please specify:
Next


National Capital Commission
Commission de la capitale nationale
NCC Forest Strategy
Exit Survey
NCC Forest Strategy - Concrete Actions
In your view, what concrete actions could the NCC take in order to achieve some of the objectives listed in the previous question within the next five years?
Next


National Capital Commission
Commission de la capitale nationale
NCC Forest Strategy
Exit Survey
NCC Forest Strategy - Updates
Do you or an organization you're involved with want to participate in future consultations for the forest strategy? If so, please sign up for our public engagement newsletter on the following page by selecting the "Public engagement" option: http://ncc-ccn.gc.ca/sign-up-for-our-newsletter
Finish



NATIONAL CAPITAL COMMISSION
COMMISSION DE LA CAPITALE NATIONALE

# NCC Forest Strategy

## STAKEHOLDER CONSULTATION REPORT

OCTOBER 9, 2019

Canada

**Background**
In keeping with commitments made in its Plan for Canada's Capital, 2017–2067, and Sustainable Development Strategy, 2018–2023, the National Capital Commission (NCC) is developing a forest strategy which will guide the management of trees and forests on NCC lands over the coming decades. As part of this initiative, we are inviting members of the public to share their vision and priorities for natural and urban forests in the National Capital Region.

**Objectives**
The NCC's forest strategy will include the following components:

- a vision and objectives for the next 30 years
- a five-year action plan
- a list of prioritized potential planting sites, and
- canopy cover and planting targets

The strategy will address the management of trees and forests in urban areas, as well as in natural areas like the Greenbelt and Gatineau Park. Regional partnerships are key to protecting trees and forests across the National Capital Region. The NCC will work with Kitigan Zibi Anishinabe First Nation and the Algonquins of Pikwakanagan, the Ville de Gatineau and the City of Ottawa to identify shared goals and more effectively coordinate action.

**Consultation process**
Objectives: Seek input from regional stakeholders and partners, and validate with forest experts, on the 19 actions and overall framework.

Date and time: Wednesday October 9th, 9:00 – 11:00 am.

Format: First, a presentation was given to present an overview of the draft Forest Strategy. Second, a prioritization exercise was organized for the stakeholders and partners to vote for the most important actions and identified new actions. Third, a discussion followed to receive input from participants on potential partnerships with the NCC.

Invitation: Invitations were sent to a list of regional stakeholders who work on tree/forest initiatives, or broad environmental initiatives. In addition, representatives from Kitigan Zibi Anishinabe First Nation, and the Algonquins of Pikwakanagan as well as representatives from the City of Ottawa and la Ville de Gatineau were invited.

Participants:

| Name | Organization |
|---|---|
| 1. Wayne Odjick | Kitigan Zibi Anishinabe First Nation |
| 2. Laurence Coulombe | Conseil régional de l'environnement et du développement durable de l'Outaouais (CREDDO) |
| 3. James Holland | South Nation Conservation Authority |
| 4. Melanie Lacroix | Ville de Chelsea - agente en environnement |
| 5. Mélissa Chabot | Ville de Chelsea - agente en environnement |
| 6. John McDonnell | Canadian Parks & Wilderness Society-Ottawa Valley Branch (CPAWS) |
| 7. Sarah Quann | Tree Canada |
| 8. Ginette Hupé | Ecology Ottawa |

This summary presents the results from this workshop.

**Prioritization of the proposed actions**

The 19 proposed actions for the upcoming Forest Strategy were presented on 5 posters – one for each of the goals (protect, plant, manage, engage, understand). Participants were asked to review the proposed actions on these boards. They were provided with 5 stickers and asked to prioritize the actions based on the following question: Which are the most important actions for the NCC to accomplish in the next 5 years?

The six main collective priorities were the following:

| Action | # of Stickers |
|---|---|
| 8. Plant trees strategically: in areas with below-average urban forest cover; where economically vulnerable populations are at risk from urban heat islands; as visual and auditory buffers. | 6 |
| 3. Develop NCC-wide minimum guidelines for construction & operational activities and compensation. | 4 |
| 7. Identify tree species, varieties, cultivars, or geographic seed sources that are suited for the National Capital Region's future climate for different land-types and functions. | 4 |
| 17. Continue to welcome forest research on NCC lands | 4 |
| 19. Develop a GIS forest inventory collection and maintenance plan. | 4 |
| 12. Integrate the value of trees into the NCC's Asset Management Program. | 3 |

In addition, other collective concerns included:

| Action | # of Stickers |
|---|---|
| 1. Develop NCC-wide heritage tree protection guidelines and identify heritage and cultural landscapes where these guidelines will be applied. | 2 |
| 18. Update the 2017 canopy cover study in 2026. | 2 |
| 5. Develop NCC-wide guidelines on tree planting, establishment, and maintenance. | 1 |
| 10. Develop a risk-based management approach to prioritize dead trees for removal and understand forest fire risk. | 1 |
| 11. Implement an urban tree lifecycle maintenance program (e.g. 7-year review cycle). | 1 |
| 13. Plant trees species that are important to indigenous people across the NCR. | 1 |
| 14. Use Anishinaabe Algonquin tree names in NCC literature and signage. | 1 |
| 15. Create a reconciliation healing forest | 1 |
| 16. Create an educational demonstration site by converting managed forests in the Greenbelt to more native inventory following the forestry cycle. | 1 |

The following new actions and ideas were suggested:

| Suggested actions |
|---|
| [with regard to Indigenous engagement] + ecotourism, + employment, + co-op/training, + education/demonstration |
| Connectivity & ecological corridors mapping between natural areas (NCC lands + others) |
| Integrate planning with existing Natural Heritage System planning that has undergone public consultation. |
| Link to/align with the Natural Heritage Manual 2010 & Ontario provincial policy statement |
| Prioritize maintenance of ecologically significant habitats, especially for species at risk. |

**Discussion**
Opportunities for partnerships were shared after the first part of the workshop. Below is a summary of the key suggestions provided by stakeholders during this discussion.

- It would be good to share the planting potential map with stakeholders in January 2020 and focus on areas along the boundaries of NCC-managed land where partners are (or could be) leading projects on partnership with the NCC to leverage efforts (e.g. sentier de l'île + CREDDO Verdissement de l'île de Hull project.
- Develop key messages and metrics articulating the economic, ecological and social benefits of specific tree planting projects to share with tree planting partners.
- Potential to share citizen science tree data.
- Capitalize on existing Neighbour*wood* initiatives.
- Access to the interactive canopy cover map would be helpful for NGO's to share with their clients.
- Could collaborate on educating nursery operators on the needs of partners in the region.

**Integration of Results**
Some input has already been included in the draft strategy, and some other comments will be discussed with the Core Team and integrated as part of the revised draft strategy.

**Next Steps**
A revised draft of the Forest Strategy will be presented to the public and stakeholders in Spring 2020, and the final strategy will be presented for approval to the Board of Directors in Fall 2020.