



Toronto Biodiversity Strategy

Date: August 12, 2019

To: Infrastructure and Environment Committee

From: Chief Planner and Executive Director, City Planning and General Manager,
Parks, Forestry and Recreation

Wards: All

SUMMARY

This report presents Toronto's first Biodiversity Strategy for adoption. The Strategy aims to support healthier, more robust biodiversity and increased awareness of nature in Toronto through a comprehensive vision, ten principles and 23 actions under the themes of Protect, Restore, Design and Engage. The Biodiversity Strategy and this report's recommendations are intended to further advance the City's role as a leader in protecting and restoring urban biodiversity through development of an ecological integrity framework, advancing the work on invasive species management and joining the Biophilic Cities Network.

Toronto, named after Tkaronto, the Mohawk word meaning 'where there are trees in the water', describes a deep rooted and meaningful relationship in natural stewardship between the people and the place. Now, well into the 21st century, biodiversity is under threat. According to a 2019 United Nations report, nature is declining globally at rates unprecedented in human history and the rate of species extinctions is accelerating. The report concludes that it is not too late to make a difference but we need to start now at every level from the local to the global.

Biodiversity is key to a healthy natural environment and is fundamental to supporting the livability and resilience of the city. Much of Toronto's native biodiversity has been lost as settlement and urbanization removed most of the original forest, filled in some ravines and damned waterways. Over many decades, the built environment, the increased use of our natural spaces, and climate change have impacted the health and function of the ecosystem, including a loss of habitat and a proliferation of invasive species. More recently Toronto has made significant strides to protect and manage natural habitats. Natural regeneration is occurring in some areas and Toronto is nurturing its natural parklands through managed restoration and stewardship. Municipal, provincial and federal policies and regulations now protect natural areas and biodiversity is being recognized as a significant element of the built environment. Unfortunately the current reality presents a significant challenge. Based on a comparison of fauna and flora data completed by TRCA in the City's ravines and natural areas, we know that approximately

75% of the City's ravines and natural areas surveyed contain invasive species and one-third of these are severely impacted.

The Biodiversity Strategy is an important document that addresses biodiversity loss in Toronto. The Strategy integrates existing and proposed work across City Divisions and the TRCA to maximize effectiveness in the protection and enhancement of biodiversity. In so doing, it makes a critical contribution to a more resilient, healthy, beautiful and liveable city.

The Strategy not only implements the natural environment policies of the Official Plan, but also supports and is complementary to the actions of the Resilience, Ravine and Pollinator Strategies and aligns with Toronto's Strategic Forest Management Plan. In particular, it is aligned with the actions of the Ravine Strategy to address shared issues including the management of invasive species, use of native plant material, and ecological integrity.

The Biodiversity Strategy was developed through extensive consultation with the public, external stakeholders and an expert Advisory Group, in partnership with the Parks Forestry and Recreation Division, the Environment and Energy Division, and the Toronto and Region Conservation Authority.

RECOMMENDATIONS

The Chief Planner and Executive Director, City Planning and General Manager, Parks Forestry and Recreation recommend that City Council:

1. Adopt the Toronto Biodiversity Strategy as presented in Attachment 1 to this report.
2. Direct the General Manager, Parks, Forestry and Recreation, in consultation with the Chief Planner and Executive Director, City Planning and Chief Executive Officer, Toronto and Region Conservation Authority (TRCA), and external experts, to develop an ecological integrity monitoring and reporting framework for Toronto's natural areas and ravines through the Ecosystem Services Working Group. This work will build on metrics from existing City and TRCA programs and data for monitoring change in the condition of natural areas and ravines.
3. Direct the General Manager, Parks, Forestry and Recreation, in consultation with the Chief Planner and Executive Director, City Planning, and the Chief Executive Officer, Toronto and Region Conservation Authority (TRCA), and external experts, to:
 - a) continue to work on implementation of the City and TRCA invasive species management programs and strategies; and
 - b) undertake a review of gaps and opportunities for improvement in implementation of the invasive species management programs through the Ecosystem Services Working Group.
4. Adopt the Resolution for the City of Toronto to join the Biophilic Cities Network, as contained in Attachment 3 of this report, given Toronto's leadership in recognizing the importance of the natural environment to a liveable city.

5. Direct the Chief Planner and Executive Director, City Planning and the General Manager, Parks, Forestry and Recreation, to submit the Resolution for the City of Toronto to join the Biophilic Cities Network and the completed Biophilic City application to the Biophilic Cities Network to become an official partner in the Biophilic Cities network.

FINANCIAL IMPACT

There are no financial implications resulting from this report. The Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

On July 12, 2018, the Parks and Environment Committee received a draft strategy and directed City Planning, in collaboration with Parks, Forestry and Recreation, Environment and Energy, and the Toronto and Region Conservation Authority to undertake public consultation on the Draft Biodiversity Strategy and report back with a final recommended Biodiversity Strategy in the second quarter of 2019. The Committee also requested that consideration be given to including "Protect Biodiversity" as the first action; include a review of the existing policies for their effectiveness in protecting biodiversity and to integrate "ecological integrity" as a policy, management, and scientific framework for the final recommended Biodiversity Strategy.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.PE29.2>

On September 18, 2015, the Parks and Environment Committee referred a letter from Councillor Mike Layton requesting that Toronto develop a biodiversity strategy to the City Manager for a report back to Parks and Environment Committee.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.PE5.6>

COMMENTS

Purpose of the Biodiversity Strategy

Biodiversity refers to the variety of life. It is the variability among living organisms from all sources, including, among other things, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part. This includes diversity within species, between species and of ecosystems. Simply put it is about diversity amongst local species such as trees, shrubs, ground covers, herbaceous plants, fungi, fish, insects, mammals and birds in our natural and built systems. Biodiversity is an integral of the urban ecosystem, not just the ravines and natural areas, but throughout the City. New opportunities for biodiversity can be found in tableland parks, backyards, on green rooftops and even along our streets. Biodiversity is under threat - nature is declining globally at rates unprecedented in human history and the rate of species extinctions is accelerating, according to the May 2019 report from the United Nations Intergovernmental Science-Policy Platform on

Biodiversity and Ecosystem Services. The Report also suggests that it is not too late to make a difference but we need to start now at every level from the local to the global.

Biodiversity is key to a healthy natural environment and is fundamental to supporting the livability and resilience of the city. The natural capital of Toronto's ravines has been estimated to provide more than \$822 million in benefits to people, including recreation, physical and mental health, air quality and carbon sequestration. The aim of Toronto's first Biodiversity Strategy is to protect the health of our existing biodiversity, and restore and enhance the quality and quantity of habitat within and beyond the natural areas and increase awareness of nature and our collective role in ensuring a robust and diverse ecosystem. It is intended to address challenges to biodiversity in Toronto such as loss of habitat and connections, loss of native species, proliferation of invasive species, climate change and impacts from humans. The Strategy intends to further advance Toronto's role as a leader in protecting and restoring urban biodiversity.

The Biodiversity Strategy integrates existing and proposed work across City Divisions and the TRCA to maximize effectiveness in the protection and enhancement of biodiversity.

The Strategy implements Official Plan policies to protect and improve the health of the ecosystem through minimizing proliferation of invasive species; to sustain, restore and enhance its health through consideration of seasonal movements of migration species and potential impacts of a changing climate; and policies to protect Environmentally Significant Areas (ESA's).

The Biodiversity Strategy complements the Toronto Ravine Strategy and its implementation through proposed actions that support the protection, restoration and enhancement of biodiversity in the ravine system. The Biodiversity Strategy sets out actions to address a number of issues that are of concern to ravines including the management of invasive species, use of native plant material, and ecological integrity.

The Biodiversity Strategy also complements and builds on the Pollinator Strategy adopted by Council in April 2018 through actions to increase habitat and support awareness of healthy biodiversity. The Strategy also supports the goals and actions of the Resilience Strategy and aligns with Toronto's Strategic, Forest Management Plan.

Consultation on the Draft Strategy

Consultation on the draft Biodiversity Strategy was broad and varied to ensure that the City engaged with, received comments from, and considered the feedback and insights of a range of stakeholder groups and residents. The consultation also sought to raise awareness of and generate interest in biodiversity in Toronto.

An outside facilitation firm was retained to support the public engagement program. The full report on the Biodiversity Strategy consultation activities is available on the Biodiversity website (<https://www.toronto.ca/explore-enjoy/parks-gardens-beaches/ravines-natural-parklands/biodiversity-in-the-city/>). A summary can be found in Attachment 2. The consultation process involved the following consultation activities.

Expert Advisory Group

An Advisory Group of scientists and other experts met November 28, 2018, January 30 and April 4, 2019 to provide advice on revised drafts of the Biodiversity Strategy and actions. Members included representatives from: Toronto Field Naturalists; Protect Nature; Parks Canada; Royal Ontario Museum (ROM); Toronto Zoo; Toronto and Region Conservation Authority (TRCA); FLAP; Toronto Entomologists Association; Toronto Ornithological Club; Mycology Society of Toronto; North American Native Plant Society; Ontario Invasive Plant Council; Ontario Federation of Anglers and Hunters; the Indigenous community; York University; University of Toronto Forestry; Landscape Ontario; and the Ontario Association of Landscape Architects. On average, 20 – 25 individuals participated in each Advisory Group Meeting.

Urban Biodiversity Workshop

The Urban Biodiversity Workshop was a two-day event held on October 23 and 24, 2018 co-hosted by the City with the University of Toronto Daniels Faculty of Architecture, Landscape and Design. The first day included a panel discussion with invited experts. The second day was a workshop that asked a range of community advocates, stakeholders, subject matter experts and students to learn about and share advice on the Draft Biodiversity Strategy. The workshop included presentations from subject matter speakers, followed by plenary and small group discussions. About 40 people from 20 organizations participated in the Urban Biodiversity Workshop.

Public Meetings

The City hosted public meetings on February 20, 26 and 28, 2019 in North York, Scarborough and Etobicoke respectively consisting of an overview presentation, questions of clarification, and small group and full room discussions. The public meeting held March 2, 2019 at the Royal Ontario Museum included overview presentations, plenary discussions, and an interactive open house. The meetings were advertised on Facebook and reached more than 52,000 individuals in Toronto. Over 100 people participated across the four public meetings.

Planning Review Panel

Further valuable input was received by the 32 members of the Planning Review Panel on March 2, 2019 through facilitated discussion following a presentation on the draft Strategy. The Planning Review Panel summary report is available on the Biodiversity website.

Workshops with Toronto Ravine Revitalization Study group

A workshop was held May 27, 2019 with City and TRCA staff and representatives from the Toronto Ravine Revitalization Study (TRRS) group to discuss comments and suggestions they had on the draft Biodiversity Strategy. Key comments and suggestions included: adding more scientific definitions of biodiversity and ecological integrity within the document; incorporating ecological integrity as a framework; strengthening the link between the Biodiversity Strategy and the Ravine Strategy; and putting more focus on revitalizing and limiting loss of natural features. A second workshop was held July 22,

2019 to discuss definitions of biodiversity and ecological integrity, a made-in-Toronto approach to an ecological integrity framework and invasive species management.

Key Messages from the Consultation

Many well considered, informed comments from the public and stakeholder groups have contributed richness, depth and new ideas to the recommended Biodiversity Strategy. The key messages of what was heard are summarized as follows:

- **Strong support for the Biodiversity Strategy:** Participants were generally very happy the City was developing a Biodiversity Strategy and aspiring to be a world leader. Many said this kind of Strategy was both important and needed in Toronto.
- **Need to carefully consider if/how to approach the concept of ecological integrity:** Some said it was very important to include this concept, saying it provides a scientific framework to guide measurement, evaluation, implementation, and enforcement of the Strategy. Some were concerned that the concept could be confusing and challenging to apply in an urban environment as it is primarily used in natural environments such as national parks.
- **Importance of public education:** Many said public education around biodiversity is crucial. They appreciated Actions that focused on public education and suggested the Strategy do more.
- **More citizen stewardship and partnership opportunities:** Participants generally felt that involvement in stewardship could make a big difference in achieving the Strategy's vision. Residents and citizen scientists have interest, time, and energy to support protection and restoration efforts, and the Biodiversity Strategy should support these interests while ensuring volunteer-based activities follow best practices.
- **Importance of enforcement and strengthening existing protections:** Protection was identified as one of the most important themes of the Biodiversity Strategy and it was suggested that the City's existing by-laws should be better enforced and policies should be better implemented.
- **Promote and prioritize native species and management of invasive species:** The Biodiversity Strategy should encourage and/or require the promotion, protection, and prioritization of native species wherever possible, including in its Principles and Actions. The Strategy should also emphasize removal of invasive species.
- **Authentic, meaningful engagement with Indigenous communities:** The City should identify opportunities to engage and create authentic relationships with Indigenous communities through the implementation of the Strategy. The Strategy should promote a 'two-eyed way of seeing' that uses western and Indigenous knowledge together and thinks seven generations into the future.
- **Embed biodiversity thinking into City processes, by-laws, and decision making:** Staff, politicians, and other decision makers should be informed about the impacts of development on biodiversity so they can make informed decisions.

Recommended Biodiversity Strategy

The Biodiversity Strategy consists of a vision, ten principles and 23 actions under four themes: Protect, Restore, Design and Engage. The Strategy's actions are complementary to provincial and national initiatives. They also contribute to larger global initiatives, such as the 2010 United Nations (UN) Convention on Biological Diversity which prioritizes biodiversity conservation in cities and highlights links between urbanization, biodiversity and ecosystem services that are important for a sustainable and resilient society.

Vision

Imagine a Toronto with flourishing natural habitat and an urban environment which supports a great diversity of wildlife. Envision a city whose residents treasure their daily encounters with the remarkable and inspiring world of nature, and the variety of plants and animals with whom we share this place. A Toronto that aspires to be a world leader through citizens who take pride and engage in the protection, restoration and enhancement of our local flora and fauna.

Principles

1. Biodiversity is fundamental to the health of all beings
2. Biodiversity has intrinsic value
3. Biodiversity is key to resilience
4. Use ecological integrity to assess ecosystem health and guide management
5. Focus on habitat and native species
6. Integrate biodiversity into all aspects of city life
7. Collaborate with a broad range of stakeholders
8. Develop authentic reciprocal relationships with Indigenous communities
9. Support equitable access
10. Measure and report on results

Themes and Actions

The following provides an overview of the four themes and their associated actions. The full list of actions can be found within the Biodiversity Strategy which is Attachment 1 appended to this report.

Protect

As is typical for an urban environment, biodiversity in Toronto has been impacted by urbanization, resulting in a loss of habitat and a proliferation of invasive species. Despite this, Toronto's ravines and natural areas continue to provide habitat for numerous species including a number of locally, regionally and provincially sensitive species and species-at-risk. The TRCA compared data on fauna and flora in Toronto's ravines and natural areas over the past several decades and found that all 18 area-sensitive bird species expected to be present in urban landscapes were present, and 24 of the 30 mammal species found in the TRCA's jurisdiction (which includes sensitive species that are mostly present in the northern part of the TRCA's jurisdiction) were also present.

While the ravines, natural areas and urban forest are protected by Official Plan policy, the Zoning Bylaw, the Tree and Ravine and Natural Feature Protection Bylaws and the TRCA Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, further actions are needed to achieve healthy biodiversity. Actions 1 to 7 strive to go beyond existing protections by developing a made-in-Toronto ecological integrity framework, developing plans for regional species of concern reporting on the progress of advancing actions, updating watershed plans, supporting development of a regional biodiversity strategy, educating municipal decision makers, and developing best practice guidelines for buffers adjacent to major new development.

There has been considerable discussion and interest on how best to effectively achieve ecological integrity in an urban environment. An important first step is to develop a made-in-Toronto ecological integrity framework. This approach will include metrics that build on existing City and TRCA programs and data from partnerships with the University of Toronto (e.g. monitoring, restoration and management) to monitor change in the condition of natural areas and ravines and guide management. This report contains a recommendation to develop an ecological integrity monitoring and reporting framework, including metrics, for monitoring change in natural areas, through the Ecosystem Services Working Group, which was established through the adoption of the Ravine Strategy by Council in October 2017.

Restore

To restore biodiversity in the city, healthy habitats need to be enhanced and expanded. Healthy habitats provide refuge, shelter, food and fresh water and breeding grounds to meet all their life cycle needs.

Actions 8 to 12 under Restore include reviewing policies and bylaws for opportunities to enhance biodiversity; identifying opportunities and priority sites for restoration; advancing the program for management of terrestrial invasive species; expanding communication about management of terrestrial invasive vegetation and planting of native species; and to continue and expand training for City operations and maintenance staff on biodiversity best practices.

Terrestrial invasive plant species are a significant threat to the biodiversity health in the City's natural areas. The above noted TRCA review of data on fauna and flora found that 75% of the natural areas surveyed contained at least one of the 15 identified high-risk terrestrial invasive plant species, with about one-third of the surveyed area being severely impacted.

Invasive species management is extremely complex, especially in highly altered and continually disturbed ecosystems such as Toronto. The City and TRCA work with the Ontario Invasive Plant Council in developing and continually updating strategies and programs to effectively respond to the threat of invasive plants. To be effective, management must consider the health of the existing ecosystem, the level of infestation and the likelihood of eradicating or controlling the invasive species in order to target actions that will have the greatest impact and highest probability of success.

This report proposes that work continue on implementation of the City and TRCA invasive species management programs and strategies and that gaps and opportunities for improvement in implementation of the strategies be reviewed through the Ecosystem Services Working Group.

Design

The city is part of nature and the design of our urban environment must consider the most compatible ways to cohabit with nature. It is important to consider the ways the design of our built form can support healthy ecosystems in order to give biodiversity a foothold in a highly urbanized region. A leading edge example is Toronto's requirement for new development to make windows visible to birds to avoid collisions resulting in injury or death.

Actions 13 to 16 include developing best practices for biodiversity sensitive design; identifying and constructing 'eco-passages' and 'wildlife corridors'; a review and update of existing city design standards, guidelines and incentive programs (such as adding criteria for biodiversity to the Pollinator Stewardship Incentive Program); and promotion and expansion of awards and certification programs to better support biodiversity.

Engage

Toronto has many engaged citizens who are committed and passionate about biodiversity, evident in the collaborative process that produced the Biodiversity booklet series, the Pollinator Strategy and participation in the review of the Biodiversity Strategy.

Actions 17 to 23 further increase awareness and engage the public through undertaking innovative, collaborative interpretive projects; developing strategic and targeted campaigns about the importance of biodiversity; expanding the urban Biodiversity booklet series; developing guidelines on 'Backyard Biodiversity a toolkit for children; self-guided tours; interactive maps about the historical landscape and ecology; and development of partnerships with international organizations such as Biophilic Cities or the National Park Cities.

This report proposes that the City of Toronto join the Biophilic Cities Network, which is a global network of partner cities working collectively to improve the connection between residents and urban nature. Members include cities such as Wellington, New Zealand; Singapore; San Francisco, California; Pittsburgh, Pennsylvania; Austin, Texas, and Edmonton, Alberta. A Biophilic City acknowledges the importance of daily contact with nature as an element of a meaningful urban life, as well as the ethical responsibility that cities have to conserve the global nature as shared habitat for non-human life and people. To become a member, a city must pay a nominal registration fee and pass an official resolution summarizing existing biophilic qualities and current initiatives and a statement of goals and aspirations for the future.

Conclusion

Toronto's first Biodiversity Strategy sets a comprehensive vision, ten principles and 23 actions under the themes of Protect, Restore, Design and Engage. The Strategy provides a structure to bring together the work of experts across several City Divisions, the TRCA and external stakeholders in support of healthier, more robust biodiversity and increased awareness of nature.

Toronto is proactive about protecting natural systems and creating new opportunities that support biodiversity. The Biodiversity Strategy and the recommendations of this report are intended to further advance the City's role as a leader in protecting and restoring urban biodiversity through development of an ecological integrity framework, advancing the work on invasive species management and joining the Biophilic Cities Network.

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ATTACHMENTS

Attachment 1: Wild, Connected and Diverse: A Biodiversity Strategy for Toronto
Attachment 2: Summary of Public Consultation
Attachment 3: Resolution for the City of Toronto to join the Biophilic Cities Network